حرارت گستر
HARARAT GOSTAR
QUALITY THROUGH DESIGN & WORKMANSHIP
STEAM & WATER TREATMENT

HEAT EXCHANGER

MODEL: WU

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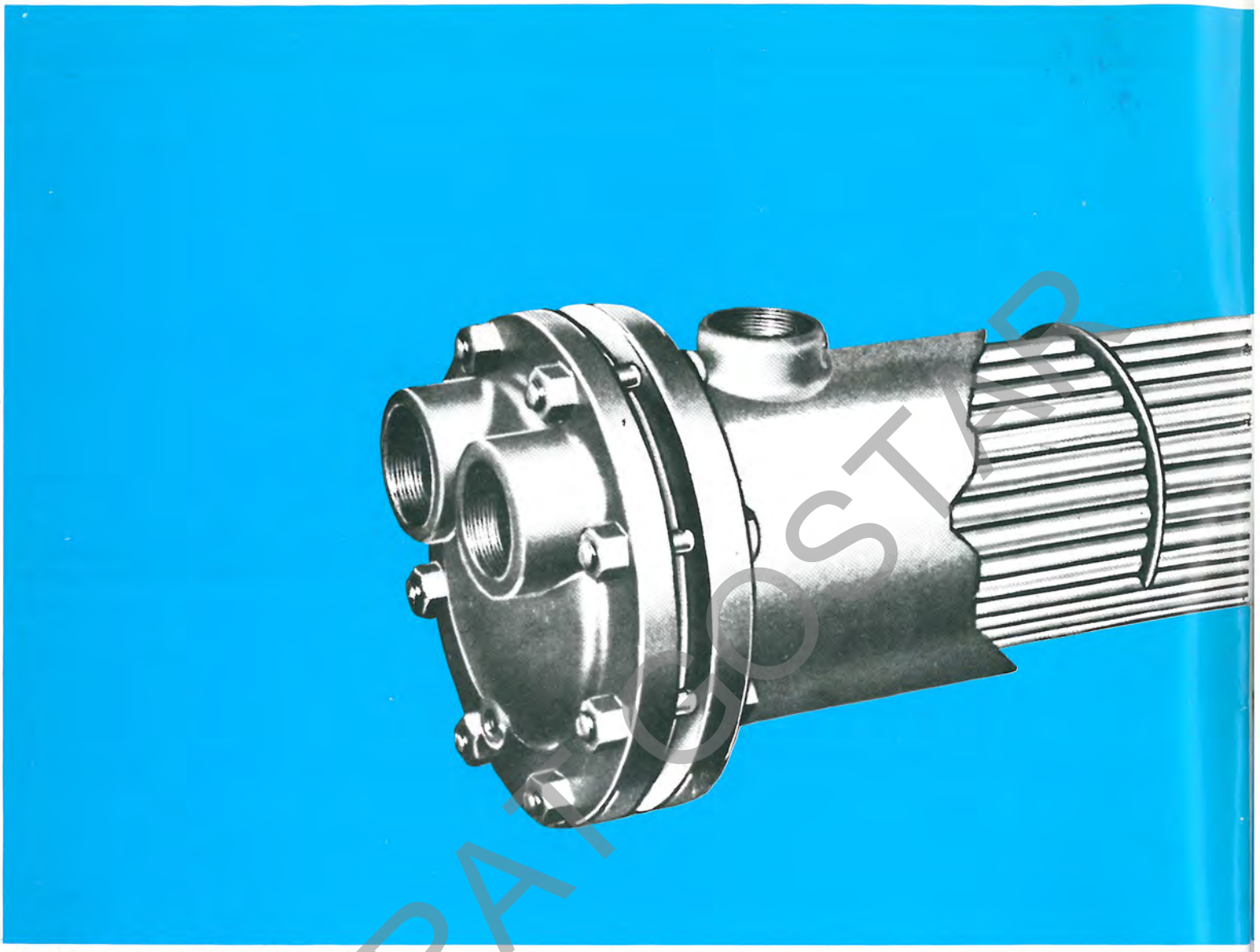


Type "WU" Heat Exchangers

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.

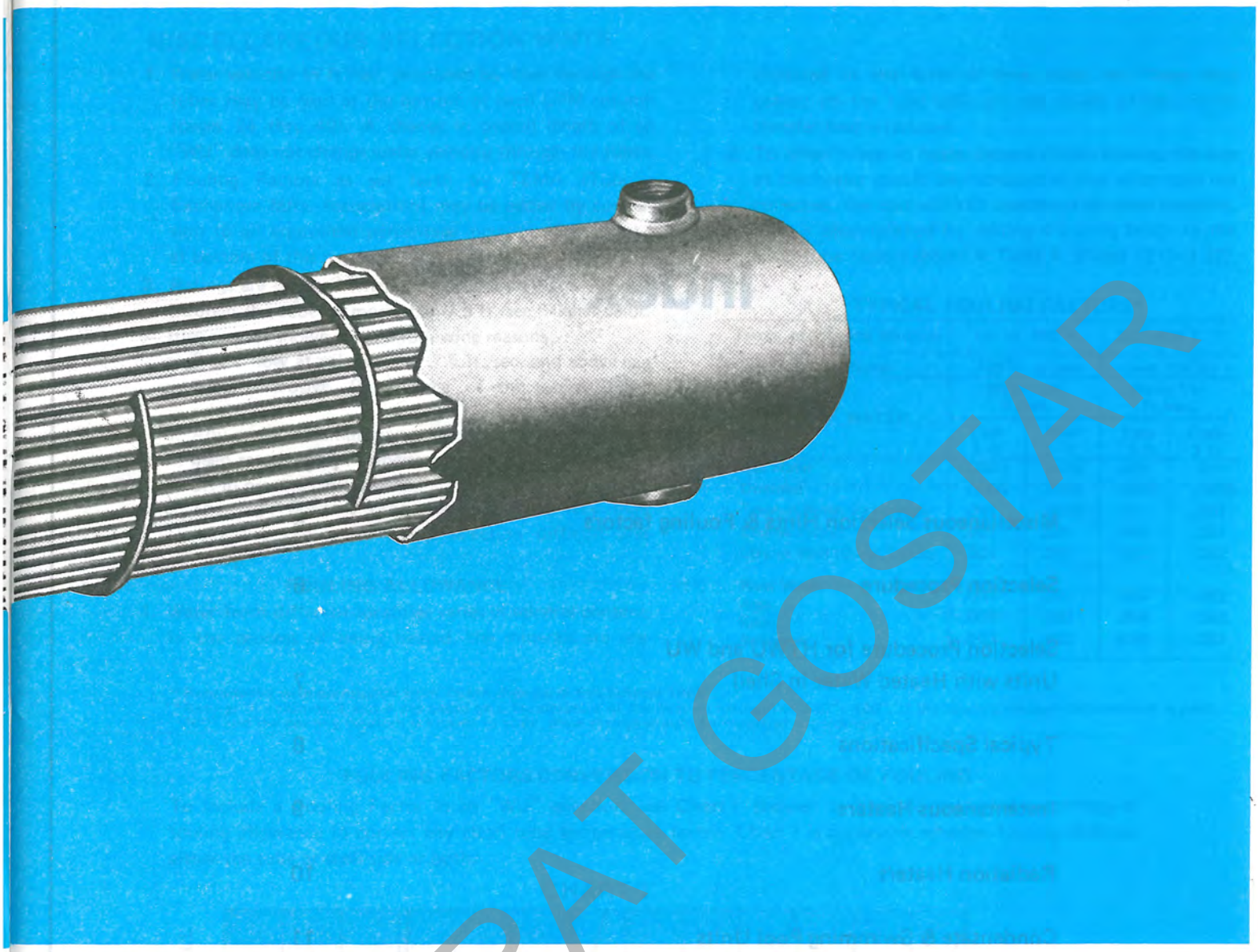
This catalog lists ratings for most commonly required system temperature rises for a wide range of heating water temperatures. *All ratings are based on the heating water in the shell and the water to be heated in the tubes.* (See Page 7 for reverse condition.)

"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 HARARAT GOSTAR

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	¾" 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	Fabricated Steel Bonnet		NA					
24"	150	150		300								
26"	150	150		300								
28"	150	150		300								
30"	150	150		300								

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

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

FOULING ALLOWANCE

1. Water from different localities varies in mineral content. In the process of being heated, the minerals are precipitated in the form of lime, scale, etc. They then collect on the tube walls and the ability of the unit to transfer heat is reduced.
2. To offset a loss in heater capacity from fouling, the size of the heater should be increased so that after scale has collected, the unit will still operate at its rated capacity. This is accomplished by adding a fouling factor to the clean tube factors shown in Table A. (Pages 12 thru 23).

TYPICAL FOULING FACTORS*

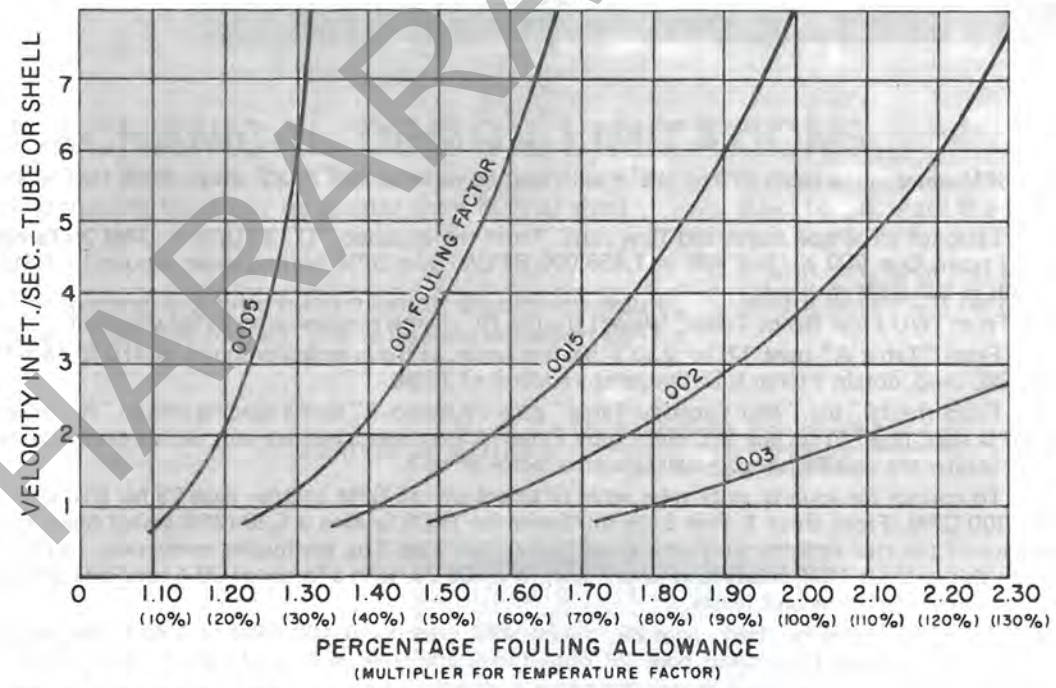
Temp. of Heating Medium	Up to 240°F.		240°-400°F.**	
Temp. of Water	125°F. or less		Over 125°F.	
TYPE OF WATER	Water Vel. ft./sec.		Water Vel. ft./sec.	
	Less 3 ft.	Over 3 ft.	Less 3 ft.	Over 3 ft.
Sea Water	.0005	.0005	.001	.001
Distilled	.0005	.0005	.0005	.0005
Treated Boiler Feedwater	.001	.0005	.001	.001
Engine Jacket	.001	.001	.001	.001
City or Well (Great Lakes)	.001	.001	.002	.002
River Water:				
Aras	.003	.002	.004	.002
Karaj	.003	.002	.004	.003
Sefidrood	.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 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



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.

TUBE AND SHELL SIDE CORRECTION FACTORS

Aver. 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

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

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

WU FLOW RANGE TABLE (GPM)

Shell Dia.	Tube Flow	Shell Flow	Max. Shell Flow ** With Stock Units
4"	2–30	15–64	62
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 be built to order.

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: (Optimum Unit)

STEP 1 – Establish all temperatures and flow rates. From the equation "Q" BTU/hr = GPM X Temperature Change X Factor, Q = 200 X 15 X 485 = 1,455,000 BTU/hr and GPM heating water required = 1,455,000 ÷ (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 a 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 × (TD/TR) × F × (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–$\frac{3}{4}$" or $\frac{7}{8}$" O.D. Copper
c. Heads–Cast Iron or Steel
d. Tube Sheets–Steel
e. Baffles, Tie-Rods, Spacers–Steel

3. CONSTRUCTION:

A manufacturers' data report for pressure vessels, form No. U-1 as required by the provisions of the ASME Code Rules, is to be furnished to the engineer for the owner upon request. This form must be signed by an authorized inspector, holding a National Board commission, certifying that construction conforms to the latest ASME Code for pressure vessels for:

a. _____ PSIG design pressure
b. _____ °F temperature

as detailed in form No. U-1. The ASME "U" symbol should also be stamped on the Heat Exchanger(s). In addition, each unit is registered 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 HARARAT GOSTAR . 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. Booster pump specified will produce this flow blue 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 is shown inblue(omitted below 1 ft.).

Heater Number	Boiler Pump Size	GPH of Water Heated Inside Copper Tubes From—						
		40°–140°			40°–180°		140°–180°	
		With Boiler Water At—						
		180°	200°	210°	200°	210°	200°	210°
WU43-44	1½" Booster @ 33 GPM	54	96	114	30	40	96	138
WU44-44		99	156	186	45	60	150	222
WU45-44		144	216	252	60	87	204	306
WU46-44		192	276	324	84	120	258	384 1.5
WU47-44		234	336 1.0	396 2.0	111	153	312	474 3.0
WU63-43	2" 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 1.0
WU66-43		432	624	732 1.1	198	270	588	864 1.4
WU67-43		528	744	876 1.8	246	333	690 1.2	1008 2.8
WU68-43		618	864 1.0	1020 2.8	291	390	798 2.3	1140 3.4
WU84-44	3" LD Booster @ 80 GPM	480	744	888	192	252	720	1140
WU85-44		690	1020	1212	300	402	960	1550 1.1
WU86-44		864	1272	1464 1.3	390	528	1200	1860 1.6
WU87-44		1044	1500 1.5	1740 1.6	480	624	1440 1.5	2220 2.7
WU88-44		1212 1.3	1728 2.0	2016 2.5	564	708	1680 1.9	2640 4.2
WU89-44		1380 1.8	1956 2.9	2256 3.4	648	750	1920 3.1	3000 5.5
WU104-45	PD-35 Booster @ 110 GPM	816	1284	1548	324	462	1200	1980
WU105-45		1164	1754	2074	480	678	1560	2580 1.0
WU106-45		1458	2100	2490 1.0	636	888	1920	3120 1.4
WU107-45		1740	2460	2880 1.4	768	1092	2280 1.0	3600 2.1
WU108-45		2040	2850 1.5	3300 2.0	918	1296	2760 1.3	4020 2.8
WU109-45		2310 1.4	3180 1.9	3690 2.8	1056	1464	3300 2.1	4380 3.5
WU124-46	PD-37 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 1.3
WU127-46		2430	3510 1.0	4080 1.3	1020	1464	3240	4740 1.8
WU128-46		2790	3960 1.3	4620 2.0	1200	1716	3720 1.2	5400 2.4
WU129-46		3090	4380 1.9	5100 2.6	1380	1944	4140 1.9	6000 3.3

RATINGS... USED AS A RADIATION HEATER

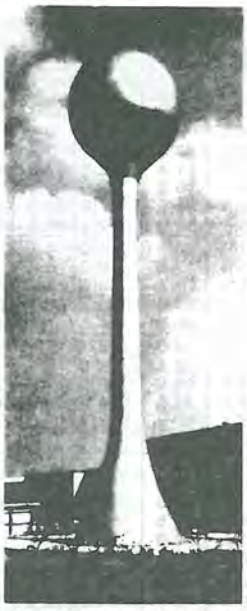
1. Capacities are in gallons per minute (GPM).
2. Ratings include a small fouling factor of .0005.
3. Ratings are also based on boiler water being circulated at the indicated flow rates. The Booster pump specified will produce the indicated flow if the "WU" is mounted next to the boiler and the pressure drop through boiler and piping does not exceed 3 to 4 ft.
4. Pressure drop in feet shown in blue (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°-160°			130°-150°			120°-140°				110°-130°		
		With Boiler Water at—										180°						
		210°	210°	200°	210°	180°	200°	210°	180°	200°	210°	Water	50% Anti-Freeze	200°	210°	180°	200°	210°
WU43-( )4	1½" Booster @ 33 GPM	**2.3**	**4.7**	**4.5**	**6.7** 1.5	**4**	**8.8** 2.5	**12** 4.5	**6.2** 1.0	**12** 4.5	**12.5*** 4.7	**8.5** 7.6	**7** 1.8	**12** 4.5	**12.5*** 4.7	**12.5** 4.8	13	15
WU44-( )4		**3.5**	**6.9** 1.7	**6.7** 1.6	**9.5** 3.3	**6** 1.2	**12** 4.8	13	**9** 2.5	13	16	**12.5** 5.0	**11** 4.8	15	19	13	18	22
WU45-( )4		**4.7**	**8.9** 3.2	**8.6** 3.0	**12** 6.0	**8** 2.5	13	17	**12** 5.0	17	21	13	**12.5*** 6.0	20	24	16	23	25*
WU46-( )4		**5.8** 1.9	**11** 5.0	**10** 4.5	13	**10** 4.0	16	21	**12.5*** 6.0	21	25	16	14	25	25*	20	25*	—
WU47-( )4		**6.9** 2.2	**12.5** 6.2	**12** 7.0	15	**12** 6.0	19	25	—	25	—	19	17	—	—	24	—	—
WU63-( )3	2" Booster @ 55 GPM	**5**	**10**	**9**	**15**	**10**	**20** 1.6	**27** 2.4	**14**	**26**	**31*** 3.0	**20** 1.6	**16**	**31** 3.0	**31*** 3.0	**27**	**31*** 3.0	35
WU64-( )3		**7.7**	**14**	**13**	**21** 1.9	**13**	**27** 3.3	**31*** 3.9	**20** 1.7	**31** 3.9	36	**27** 3.2	**24** 3.0	37	42	**31**	41	48 1.1
WU65-( )3		**10**	**18** 2.0	**17** 1.8	**27** 3.9	**17** 1.7	**31*** 5.0	37	**26** 3.7	37	45 1.8	**31*** 4.6	**31*** 4.7	45 1.5	52 1.7	35	52 1.7	54 1.8
WU66-( )3		**12.7**	**22** 2.8	**21** 3.2	**31*** 5.6	**21** 3.0	36 1.0	45 1.7	**31** 5.5	45 1.7	54 2.2	35 1.0	31	52 2.1	62 2.5	42 1.4	62 2.5	62 2.6
WU67-( )3		**15** 2.1	**27** 5.0	**25** 4.5	32	**25** 4.5	42 1.6	52 2.2	32	52 2.2	62 3.1	40 1.5	36 1.2	60 3.0	—	50 2.1	—	—
WU68-( )3		**17** 3.0	**31** 7.2	**29** 7.0	37 1.3	**29** 7.0	48 2.4	62 3.4	37 1.3	60 3.3	—	47 2.1	44 2.1	62* 3.5	—	57 3.1	—	—
WU84-( )4	3" LD Booster @ 80 GPM	**16**	**32** 1.2	**30** 1.1	**47** 2.3	**30** 1.1	**60** 3.7	**62*** 3.8	**44** 2.0	**62** 3.8	76	**57** 3.1	**50** 2.6	74	89	58	87	104 1.2
WU85-( )4		**21**	**41** 2.1	**39** 2.0	**55** 4.2	**39** 2.0	**62*** 5.1	82 1.1	**54** 4.2	80 1.1	98 1.5	**62** 5.1	52	96 1.4	115 2.0	75	115 2.0	125* 2.3
WU86-( )4		**26** 1.3	**48** 4.1	**47** 4.1	**62** 5.5	**45** 4.0	76 1.1	98 1.7	**60** 5.5	96 1.7	118 2.2	73 1.0	62	116 2.2	125* 2.7	92 1.6	125* 2.7	—
WU87-( )4		**30** 1.7	**54** 4.6	**55** 4.6	68 1.1	**50** 4.4	89 1.6	112 2.5	64 1.0	112 2.5	125* 3.1	86 1.6	77 1.2	125* 3.1	—	107 2.2	—	—
WU88-( )4		**35** 2.9	**62** 7.0	**62** 7.0	77 1.3	**56** 6.0	101 2.4	122 3.2	73 1.3	125 3.5	—	97 2.3	88 2.0	—	—	122 3.2	—	—
WU89-( )4		**39** 3.6	—	—	87 2.0	**62** 7.8	110 3.2	125* 4.0	82 1.9	—	—	104 2.8	97 2.3	—	—	125* 4.0	—	—
WU104-( )5	PD-35 Booster @ 110 GPM	**28**	**55** 1.0	**52** 1.0	**79** 2.1	**50**	**100** 3.1	128	**74** 1.8	**112**	137	**98** 3.1	**95** 3.1	132	160	**112** 3.6	156	185 1.1
WU105-( )5		**38**	**68** 1.6	**67** 1.6	**95** 3.5	**63**	**112** 4.2	148	**92** 3.1	140	172 1.2	**112*** 4.2	**112** 4.2	168 1.2	201 1.5	132	198 1.5	225 1.9
WU106-( )5		**46** 1.1	**80** 3.0	**79** 3.0	**110** 5.0	**76** 2.6	130	168 1.4	**108** 5.0	165 1.4	205 2.0	126	115	200 2.0	230 2.3	156 1.2	240 2.5	240* 2.5
WU107-( )5		**52** 1.6	**90** 4.1	**90** 4.1	116	**86** 4.0	150 1.3	188 2.0	**112*** 6.0	187 2.0	230 2.6	146 1.2	131	220 2.4	240* 2.9	179 1.7	—	—
WU108-( )5		**57** 2.0	**97** 5.5	**96** 5.5	128	**96** 5.5	166 1.7	208 2.6	121	208 2.6	240* 3.3	162 1.6	150 1.4	240 3.3	—	218 2.7	—	—
WU109-( )5		**61** 2.5	**107** 7.5	**105** 7.5	140 1.4	**106** 7.5	181 2.4	220 3.1	132	225 3.2	—	175 2.1	163 1.9	—	—	230 3.4	—	—
WU124-( )6	PD-37 Booster @ 125 GPM	**38**	**77**	**75**	**110** 2.0	**69**	**155** 3.3	**162*** 3.5	**102** 1.6	**162*** 3.5	192	**135** 2.7	**126** 2.3	179	219	**132** 2.5	213	257 1.0
WU125-( )6		**50**	**89** 1.6	**86** 1.6	**133** 3.1	**85** 1.6	**162*** 4.4	194	**125** 2.7	190	234	**162** 4.4	**135** 5.2	225	269 1.4	168	262 1.3	315 1.7
WU126-( )6		**60** 1.0	**104** 2.4	**103** 2.4	**150** 4.7	**99** 2.3	176	223 1.0	**142** 4.6	219	270 1.7	168	**162** 5.3	265 1.6	310 2.1	200	305 2.0	345 2.4
WU127-( )6		**68** 1.3	**117** 3.2	**116** 3.2	**162** 6.0	**111** 3.1	199 1.2	248 1.5	**158** 6.0	244 1.4	300 2.2	192 1.0	174	297 2.2	345 2.9	231 1.4	345 2.9	—
WU128-( )6		**74** 1.9	**128** 4.7	**125** 4.7	165	**121** 3.8	217 1.4	272 2.2	**162*** 7.0	266 2.2	330 3.0	210 1.4	192 1.2	320 2.9	—	258 2.2	—	—
WU129-( )6		**79** 2.1	**136** 5.7	**133** 5.7	178 1.2	**130** 5.4	229 1.8	300 3.0	169	288 2.8	345* 4.0	230 1.6	204 1.4	345 4.0	—	279 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"

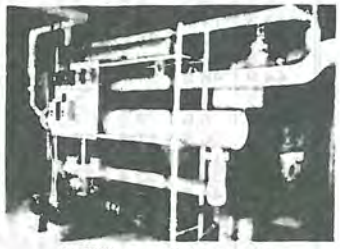
SWIMMING POOL AND STORAGE TOWER HEATING

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.

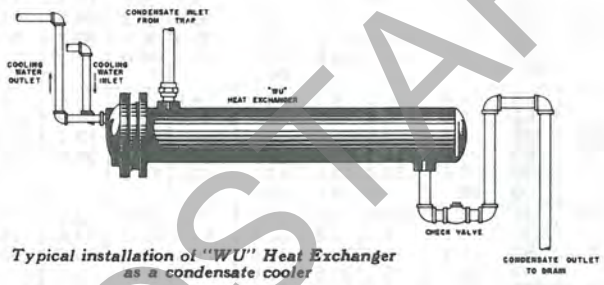
When using a "WU" Heat Exchanger as a storage tower heater, the local office of the Fire Underwriters' Board should be consulted for specific approval of the installation.

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°F, 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 blue (omitted below 1 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 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	1,090	4.4	820	2.6	740	3.0
WU45-44	976	4.0	1,370	5.5	1,020	3.3	920	3.7
				1.4				
WU46-44	1,170	4.7	1,640	6.6	1,230	4	1,100	4.4
		1.1		1.8				
WU47-44	1,370	5.5	1,920	7.7	1,440	4.6	1,290	5.2
		1.7		2.5				1.6
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
				1.7				
WU87-44	6,740	27	9,420	37	7,000	22	6,350	25
		1.7		2.6				
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

Note: All units above are factory stocked.

FOR SWIMMING POOLS* AND STORAGE TOWERS

180° Pumped Boiler 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
		1.4
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
		1.3
WU88-24		5,450
		2.0
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
		1.3
WU108-25		9,600
		1.6
WU109-25		10,600
		2.4

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

TYPE "WU" HEAT EXCHANGERS

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

TABLE A — CLEAN TUBE TEMPERATURE FACTORS

Heated Water		120° HEATING WATER TEMPERATURE DROP									130° HEATING WATER 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.	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
	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
50	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
	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				
55	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
	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				
60	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
	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				
65	70	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
	75	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
	80	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
	90	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		
	100	47.9	53.2	60.5	71.8						35.0	37.7	41.0	45.1	50.7	58.8				
	110	84.1	103.0								53.8	59.3	66.7	77.5						
70	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		
	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						
75	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		
	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						
80	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			
	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						
90	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				
	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						
100	105	14.2	18.1	28.7							8.2	9.3	10.9	13.6	20.6					
	110	35.8	52.0								18.5	21.4	26.0	35.6						
	115										32.2	38.6	51.0							
110	115										13.7	17.4	27.5							
	120										34.4	50.1								

FOR LOW TEMPERATURE RANGE

Heated Water		140° HEATING WATER TEMPERATURE DROP									150° HEATING WATER 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
	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
50	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	
	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			
55	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
	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		
60	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			
65	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				
70	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			
	120	55.1	60.5	67.8	78.2						41.5	44.3	47.8	52.0	57.5	65.0				
75	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		
	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				
80	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		
	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				
90	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		
	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				
100	110	12.4	13.6	15.2	17.5	20.9	27.8				9.3	10.0	10.8	11.8	13.1	14.9	23.0			
	120	30.3	34.3	40.1	50.1						21.3	23.2	25.5	28.6	33.0	40.2				
	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						
	130	33.2	48.4								17.2	19.9	24.2	33.1						

TYPE "WU" HEAT EXCHANGERS

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

TABLE A — CLEAN TUBE TEMPERATURE FACTORS

		160° HEATING WATER									170° HEATING WATER									
Heated 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
	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
45	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
	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
50	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
	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		
55	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
	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	
60	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	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		
	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			
70	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		
	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					
80	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	
	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					
90	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	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						
100	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						
110	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						
120	130	11.6	12.8	14.2	16.3	25.9					8.7	9.3	10.1	11.0	13.9	21.5				
	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						
130	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	150	31.2	45.4								16.22	18.74	22.74	31.09						

FOR LOW TEMPERATURE RANGE

Heated Water		180° HEATING WATER — TEMPERATURE DROP											
In	Out	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°
40	60	6.5	6.6	6.8	7.0	7.4	7.9	8.4	9.0	9.8	10.7	11.8	13.4
	80	13.9	14.3	14.7	15.1	16.1	17.2	18.5	20.1	22.0	24.6	28.1	33.6
	100	22.7	23.4	24.2	25.0	26.8	28.9	31.5	34.9	39.3	45.8		
	120	34.0	35.2	36.5	37.9	41.2	45.4	50.9	58.7				
	140	49.8	52.0	54.5	57.3	64.4	74.7						
	160	77.7	83.4	90.6	100.0								
	180												
50	70	6.9	7.1	7.3	7.5	8.0	8.5	9.1	9.9	10.8	12.0	13.7	16.1
	90	14.9	15.4	15.8	16.3	17.5	18.8	20.5	22.5	25.1	28.8	34.6	
	110	24.8	25.6	26.5	27.5	29.7	32.5	36.0	40.7	47.6			
	130	37.8	39.4	41.0	42.9	47.4	53.4	62.1					
	150	57.8	61.0	64.8	69.2	81.6							
	170	105.3	121.1										
	190												
60	80	7.4	7.6	7.8	8.1	8.6	9.3	10.1	11.0	12.3	14.0	16.5	21.4
	100	16.2	16.7	17.3	17.9	19.3	21.0	23.1	25.9	29.7	35.9		
	120	27 4	28.4	29.5	30.8	33.7	37.4	42.5	50.1				
	140	43.1	45.1	47.4	50.0	56.8	66.8						
	160	70.7	76.2	83.1	92.4								
	180												
	200												
80	100	8.8	9.1	9.4	9.8	10.6	11.7	13.0	14.9	17.7	23.3		
	120	19.9	20.7	21.6	22.6	25.0	28.1	32.5	39.8				
	140	35.5	37.3	39.3	41.7	48.0	57.8						
	160	62.8	68.0	74.8	84.0								
	180												
	200												
100	120	11.1	11.6	12.1	12.8	14.3	16.4	19.7	26.3				
	140	26.5	28.0	29.8	31.8	37.3	46.8						
	160	53.6	58.5	65.0	74.1								
	180												
	200												
110	115	2.8	3.0	3.1	3.3	3.7	4.3	5.2	7.1				
	120	5.9	6.2	6.5	6.9	7.8	9.1	11.3	16.8				
	125	9.2	9.7	10.2	10.8	12.3	14.6	18.8					
	130	12.8	13.5	14.3	15.2	17.5	21.2	28.6					
	150	32.4	34.7	37.5	41.1	52.6							
	170	78.2	93.3										
	190												
120	125	3.3	3.5	3.7	3.9	4.6	5.6	7.7					
	130	6.9	7.3	7.8	8.3	9.8	12.2	18.5					
	135	10.9	11.6	12.4	13.3	15.8	20.5						
	140	15.4	16.4	17.6	19.0	23.2	31.8						
	160	42.3	46.7	52.7	61.7								
	180												
130	135	4.0	4.3	4.6	5.0	6.1	8.5						
	140	8.5	9.1	9.8	10.7	13.5	20.8						
	145	13.5	14.6	15.9	17.5	23.0							
	150	19.4	21.1	23.2	26.0	36.5							
	170	64.9	79.8										
	190												
140	145	5.1	5.5	6.1	6.8	9.7							
	150	10.9	12.0	13.4	15.3	24.3							
	155	18.0	19.9	22.6	26.7								
	160	26.7	30.2	35.3	44.1								
	180												
	200												
150	155	7.0	7.9	9.3	11.6								
	160	15.8	18.2	22.1	30.2								
	165	27.5	32.9	43.4									
	170	45.3	59.6										
	190												
	210												
160	165												
	170												
	175												
	180												
	200												
	220												
170	175												
	180												
	185												
	190												
	210												
	230												
180	185												
	190												
	195												
	200												
	220												
	240												
190	195												
	200												
	205												
	210												
	230												
	250												
200	205												
	210												
	215												
	220												
	240												
210	215												
	220												
	225												
	230												
	250												
220	225												
	230												
	235												
	240												
230	235												
	240												
240	245												
	250												

Heated Water		190° HEATING WATER — TEMPERATURE DROP											
In	Out	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°
40	60	5.88	6.02	6.17	6.32	6.66	7.04	7.47	7.97	8.55	9.25	10.11	11.20
	80	12.54	12.86	13.20	13.55	14.34	15.23	16.26	17.48	18.95	20.77	23.12	26.37
	100	20.35	20.91	21.51	22.15	23.58	25.25	27.22	29.64	32.68	36.72	42.56	
	120	29.95	30.89	31.90	33.00	35.48	38.49	42.24	47.14	53.99			
	140	42.71	44.33	46.10	48.06	52.72	58.81	67.36					
	160	62.33	65.60	69.37	73.86	85.97							
	180	108.98	124.53										
50	70	6.23	6.39	6.55	6.73	7.11	7.55	8.05	8.64	9.35	10.22	11.34	12.86
	90	13.39	13.76	14.14	14.56	15.47	16.52	17.77	19.27	21.14	23.57	26.94	32.22
	110	21.97	22.63	23.34	24.10	25.82	27.87	30.38	33.56	37.81	44.01		
	130	32.86	34.01	35.26	36.63	39.82	43.81	49.08	56.58				
	150	48.21	50.35	52.76	55.48	62.30	72.16						
	170	75.36	80.85	87.75	96.86								
	190												
60	80	6.65	6.83	7.02	7.22	7.66	8.17	8.78	9.50	10.40	11.54	13.10	15.46
	100	14.42	14.87	15.30	15.78	16.87	18.16	19.71	21.65	24.17	27.69	33.26	
	120	23.97	24.77	25.63	26.56	28.71	31.34	34.70	39.22	45.90			
	140	36.64	38.10	39.71	41.51	45.84	51.61	59.99					
	160	56.06	59.16	62.77	67.06	78.99							
	180	102.14	117.46										
	200												
80	100	7.76	8.00	8.26	8.55	9.19	9.96	10.92	12.15	13.85	16.42	21.38	
	120	17.27	17.88	18.55	19.28	20.98	23.12	25.92	29.89	36.30			
	140	29.85	31.12	32.54	34.14	30.03	43.38	51.58					
	160	49.10	51.99	55.40	59.50	71.21							
	180	94.65	109.74										
	200												
100	120	9.48	9.85	10.26	10.70	11.77	13.14	15.05	17.99	23.75			
	140	22.00	23.02	24.18	25.49	28.77	33.50	41.41					
	160	41.09	43.73	46.87	50.72	62.19							
	180	86.16	101.04										
	200												
110	115	2.43	2.52	2.63	2.75	3.03	3.39	3.91	4.72	6.41			
	120	5.01	5.22	5.44	5.70	6.31	7.12	8.28	10.22	15.03			
	125	7.77	8.11	8.47	8.89	9.89	11.25	13.27	16.88				
	130	10.75	11.23	11.76	12.36	13.84	15.90	19.10	25.47				
	150	25.77	27.22	28.89	30.87	36.20	45.36						
	170	52.13	56.88	63.12	71.96								
	190												
120	125	2.76	2.89	3.03	3.19	3.58	4.14	5.02	6.87				
	130	5.73	6.00	6.31	6.66	7.54	8.80	10.92	16.27				
	135	8.95	9.40	9.90	10.48	11.96	14.18	18.18					
	140	12.47	13.13	13.88	14.75	17.01	20.55	27.74					
	160	31.44	33.71	36.46	39.92	51.03							
	180	76.08	90.76										
130	135	3.22	3.39	3.59	3.82	4.43	5.40	7.47					
	140	6.73	7.12	7.56	8.08	9.48	11.85	17.92					
	145	10.62	11.26	12.01	12.90	15.38	19.91						
	150	14.97	15.93	17.08	18.47	22.50	30.87						
	170	41.13	45.42	51.26	60.01								
	190												
140	145	3.88	4.14	4.45	4.82	5.92	8.29						
	150	8.22	8.81	9.51	10.39	13.10	20.22						
	155	13.16	14.17	15.42	17.02	22.33							
	160	18.89	20.50	22.54	25.23	35.43							
	180	63.18	77.62										
	200												
150	155	4.93	5.36	5.91	6.64	9.45							
	160	10.65	11.68	13.03	14.90	23.65							
	165	17.49	19.41	22.02	25.94								
	170	26.03	29.41	34.35	42.86								
	190												
	210												
160	165	6.83	7.73	9.03	11.24								
	170	15.36	17.73	21.52	29.41								
	175	26.74	32.06	42.30									
	180	44.09	58.05										
	200												
	220												
170	175	11.38	14.47	22.88									
	180	28.75	41.76										
	185	67.78											
	190												
	210												
	230												
180	185	41.24											
	190												
	195												
	200												
	220												
	240												
190	195												
	200												
	205												
	210												
	230												
	250												
200	205												
	210												
	215												
	220												
	240												
210	215												
	220												
	225												
	230												
	250												
220	225												
	230												
	235												
	240												
230	235												
	240												
240	245												
	250												

TYPE "WU" HEAT EXCHANGERS

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

TABLE A 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	69.26					
	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	20.37	22.69	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	5.53	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	22.30			
	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						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	26.94						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	3.38	3.90	4.73	6.47				
	150	6.55	6.92	7.35	7.86	9.22	11.51	17.41						5.43	5.68	5.97	6.30	7.12	8.31	10.31	15.34				
	155	10.33	10.96	11.68	12.55	14.95	19.35							8.48	8.90	9.37	9.92	11.31	13.39	17.16					
	160	14.57	15.51	16.62	17.97	21.88	30.01							11.82	12.43	13.14	13.96	16.08	19.42	26.19					
	180	40.06	44.24	49.91	58.43									29.83	31.97	34.57	37.84	48.33							
	200													72.29	86.20										
150	155	3.78	4.03	4.33	4.69	5.76	8.06							3.05	3.21	3.40	3.62	4.19	5.11	7.06					
	160	8.01	8.57	9.26	10.11	12.75	19.67							6.39	6.75	7.16	7.65	8.97	11.20	16.94					
	165	12.81	13.80	15.02	16.57	21.72								10.07	10.68	11.38	12.22	14.56	18.84						
	170	18.40	19.97	21.95	24.57	34.49								14.20	15.11	16.19	17.51	21.31	29.21						
	190	61.59	75.65											39.07	43.14	48.67	56.96								
	210																								
160	165	4.80	5.22	5.76	6.47	9.20								3.68	3.93	4.22	4.57	5.61	7.85						
	170	10.38	11.38	12.69	14.51	23.03								7.81	8.36	9.03	9.86	12.42	19.15						
	175	17.05	18.91	21.46	25.26									12.50	13.46	14.64	16.15	21.17							
	180	25.37	28.66	33.47	41.76									17.95	19.47	21.40	23.95	33.61							
	200													60.11	73.82										
	220																								
170	175	6.66	7.53	8.80	10.95									4.68	5.09	5.61	6.30	8.96							
	180	14.97	17.29	20.97	28.66									10.13	11.10	12.38	14.15	22.45							
	185	26.08	31.27	41.24										16.64	18.45	20.93	24.64								
	190	43.01	56.61											24.76	27.97	32.66	40.74								
	210																								
	230																								
180	185	11.10	14.11	22.31										6.50	7.35	8.59	10.69								
	190	28.05	40.74											14.62	16.88	20.47	27.97								
	195	66.14												25.47	30.52	40.25									
	200													42.00	55.27										
	220																								
	240																								
190	195	40.25												10.84	13.78	21.79									
	200													27.40	39.79										
	205													64.61											
	210																								
	230																								
	250																								
200	205													39.34											
	210																								
	215																								
	220																								
	240																								
210	215																								
	220																								
	225																								
	230																								
	250																								
220	225																								
	230																								
	235																								
	240																								
230	235																								
	240																								
240	245																								
	250																								

FOR LOW TEMPERATURE RANGE

Heated Water		220° HEATING WATER — TEMPERATURE DROP											
In	Out	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
	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
	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
	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
	140	29.83	30.62	31.47	32.38	34.39	36.74	39.53	42.94	47.26	53.03		
	160	39.99	41.24	42.59	44.05	47.39	51.48	56.66	63.61				
	180	54.39	56.56	58.97	61.68	68.31	77.50						
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
	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
	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
	130	23.37	23.97	24.61	25.29	26.79	28.52	30.55	32.99	36.00	39.87	45.17	53.30
	150	32.25	33.19	34.20	35.29	37.75	40.69	44.29	48.90	55.13			
	170	44.09	45.65	47.36	49.24	53.67	59.37	67.18					
	190	62.37	65.45	69.00	73.16	84.35							
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
	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
	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
	140	25.16	25.86	26.61	27.41	29.21	31.33	33.87	37.03	41.12	46.78		
	160	35.25	36.40	37.65	39.00	42.12	45.98	50.96	57.81	68.37			
	180	49.53	51.59	53.89	56.49	62.90	71.96						
	200	74.86	80.02	86.45	94.86								
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
	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
	140	20.06	20.65	21.28	21.96	23.50	25.32	27.56	30.40	34.19	39.72		
	160	30.09	31.12	32.24	33.47	36.33	39.92	44.66	51.40				
	180	44.26	46.19	48.36	50.83	57.01	65.94						
	200	69.34	74.35	80.64	88.97								
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
	140	14.36	14.81	15.30	15.82	17.02	18.47	20.29	22.66	26.00	31.33		
	160	24.34	25.23	26.20	27.28	29.80	33.04	37.45	44.06				
	180	38.40	40.19	42.21	44.52	50.40	59.20						
	200	63.26	68.10	74.25	82.50								
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
	120	3.39	3.49	3.60	3.71	3.97	4.27	4.64	5.11	5.72	6.60	8.03	11.48
	125	5.20	5.36	5.53	5.71	6.11	6.60	7.20	7.95	8.97	10.47	13.08	
	130	7.10	7.32	7.56	7.81	8.39	9.08	9.94	11.04	12.56	14.87	19.33	
	150	15.85	16.40	17.00	17.66	19.20	21.12	23.66	27.24	33.03			
	170	27.46	28.62	29.91	31.35	34.89	39.75	47.19					
	190	45.28	47.92	51.03	54.77	65.48							
120	125	1.81	1.87	1.93	1.99	2.14	2.33	2.55	2.85	3.26	3.90	5.22	
	130	3.71	3.83	3.96	4.10	4.42	4.80	5.29	5.94	6.86	8.38	12.07	
	135	5.71	5.90	6.10	6.32	6.83	7.46	8.26	9.33	10.92	13.70		
	140	7.82	8.08	8.37	8.69	9.42	10.32	11.49	13.10	15.57	20.37		
	160	17.75	18.46	19.23	20.10	22.16	24.89	28.79	35.19				
	180	31.73	33.32	35.15	37.25	42.74	51.39						
130	135	2.00	2.07	2.14	2.22	2.42	2.65	2.97	3.40	4.08	5.50		
	140	4.11	4.25	4.41	4.59	5.00	5.52	6.20	7.19	8.81	12.81		
	145	6.34	6.58	6.83	7.12	7.78	8.63	9.78	11.47	14.48			
	150	8.73	9.06	9.43	9.83	10.79	12.04	13.77	16.44	21.67			
	170	20.29	21.22	22.27	23.47	26.46	30.77	37.99					
	190	37.98	40.39	43.27	46.80	57.32							
140	145	2.24	2.32	2.42	2.53	2.78	3.11	3.58	4.31	5.85			
	150	4.62	4.80	5.01	5.24	5.79	6.53	7.59	9.35	13.74			
	155	7.16	7.47	7.80	8.18	9.09	10.33	12.17	15.46				
	160	9.91	10.35	10.83	11.38	12.73	14.61	17.52	23.34				
	180	23.81	25.14	26.67	28.48	33.37	41.76						
	200	48.27	52.65	58.39	66.54								
150	155	2.55	2.66	2.79	2.94	3.30	3.80	4.60	6.30				
	160	5.29	5.54	5.82	6.14	6.94	8.09	10.03	14.93				
	165	8.27	8.68	9.14	9.67	11.02	13.05	16.71					
	170	11.53	12.13	12.81	13.61	15.67	18.92	25.51					
	190	29.12	31.20	33.73	36.92	47.13							
	210	70.59	84.17										
160	165	2.98	3.13	3.32	3.53	4.09	4.98	6.88					
	170	6.23	6.58	6.99	7.46	8.75	10.92	16.50					
	175	9.83	10.42	11.10	11.92	14.20	18.36						
	180	13.86	14.75	15.80	17.08	20.78	28.48						
	200	38.16	42.12	47.51	55.60								
	220												
170	175	3.60	3.83	4.12	4.46	5.47	7.65						
	180	7.62	8.16	8.81	9.62	12.11	18.68						
	185	12.20	13.14	14.29	15.76	20.65							
	190	17.52	19.01	20.89	23.38	32.80							
	210	58.73	72.12										
	230												
180	185	4.58	4.97	5.48	6.15	8.75							
	190	9.89	10.84	12.09	13.82	21.92							
	195	16.25	18.03	20.44	24.06								
	200	24.20	27.32	31.90	39.79								
	220												
	240												
190	195	6.35	7.18	8.39	10.44								
	200	14.29	16.49	20.00	27.32								
	205	24.89	29.83	39.34									
	210	41.06	54.03										
	230												
	250												
200	205	10.60	13.47	21.30									
	210	26.79	38.90										
	215	63.19											
	220												
	240												
210	215	38.48											
	220												
	225												
	230												
	250												
220	225												
	230												
	235												
	240												
230	235												
	240												
240	245												
	250												

Heated Water		230° HEATING WATER — TEMPERATURE DROP											
In	Out	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°
40	60	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	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	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	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	27.04	27.70	28.40	29.14	30.78	32.65	34.83	37.40	40.54	44.47	49.69	
	160	35.74	36.74	37.80	38.95	41.52	44.56	48.24	52.88	58.99			
	180	47.39	48.99	50.74	52.66	57.14	62.84	70.51					
50	70	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	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	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	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	28.99	29.76	30.58	31.45	33.39	35.66	38.35	41.64	45.80	51.37		
	170	38.90	40.11	41.41	42.85	46.05	50.00	55.01	61.73				
	190	52.95	55.05	57.38	60.01	66.43	75.33						
60	80	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	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	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	22.72	23.30	23.91	24.56	26.01	27.68	29.64	31.98	34.88	38.62	43.73	
	160	31.36	32.28	33.25	34.31	36.68	39.52	43.00	47.45	53.48			
	180	42.92	44.43	46.09	47.91	52.20	57.72	65.28					
	200	60.75	63.74	67.19	71.23	82.09							
80	100	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	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	18.02	18.50	19.02	19.56	20.78	22.21	23.90	25.96	28.56	32.02	37.02	
	160	26.62	27.43	28.31	29.25	31.40	34.00	37.24	41.46	47.40			
	180	38.09	39.50	41.05	42.76	46.82	52.14	59.60					
	200	55.77	58.65	61.97	65.90	76.62							
100	120	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	12.82	13.18	13.57	13.99	14.93	16.03	17.37	19.04	21.22	24.26	29.06	
	160	21.38	22.07	22.82	23.63	25.50	27.79	30.71	34.64	40.46			
	180	32.78	34.06	35.48	37.06	40.85	45.91	53.28					
	200	50.31	53.05	56.25	60.04	70.62							
110	115	1.50	1.53	1.58	1.62	1.72	1.83	1.97	2.13	2.33	2.59	2.95	3.51
	120	3.05	3.13	3.22	3.31	3.52	3.75	4.04	4.38	4.81	5.38	6.19	7.50
	125	4.67	4.79	4.93	5.07	5.40	5.78	6.23	6.78	7.48	8.42	9.79	12.18
	130	6.35	6.53	6.72	6.92	7.38	7.91	8.55	9.35	10.37	11.76	13.88	17.92
	150	13.99	14.43	14.90	15.41	16.56	17.97	19.73	22.03	25.26	30.43		
	170	23.73	24.59	25.53	26.57	29.03	32.17	36.44	42.86				
	190	37.46	39.19	41.16	43.41	49.12	57.68						
120	125	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	3.30	3.40	3.50	3.61	3.86	4.16	4.51	4.97	5.56	6.41	7.79	11.14
	135	5.07	5.22	5.38	5.56	5.95	6.42	7.00	7.73	8.72	10.16	12.69	
	140	6.92	7.13	7.36	7.60	8.16	8.83	9.66	10.73	12.20	14.45	18.76	
	160	15.45	15.99	16.57	17.21	18.70	20.57	23.02	26.50	32.12			
	180	26.79	27.91	29.16	30.57	34.00	38.73	45.96					
130	135	1.76	1.82	1.88	1.94	2.09	2.26	2.48	2.77	3.16	3.79	5.07	
	140	3.61	3.73	3.85	3.99	4.30	4.67	5.15	5.78	6.67	8.14	11.73	
	145	5.56	5.75	5.94	6.16	6.65	7.26	8.03	9.08	10.61	13.32		
	150	7.62	7.88	8.16	8.46	9.17	10.05	11.18	12.75	15.14	19.80		
	170	17.32	18.00	18.75	19.59	21.60	24.25	28.04	34.26				
	190	30.97	32.52	34.29	36.34	41.68	50.10						
140	145	1.95	2.01	2.09	2.17	2.35	2.58	2.89	3.31	3.97	5.35		
	150	4.00	4.15	4.30	4.47	4.87	5.37	6.04	6.99	8.57	12.46		
	155	6.19	6.41	6.66	6.94	7.58	8.40	9.52	11.17	14.09			
	160	8.51	8.83	9.19	9.58	10.52	11.73	13.41	16.00	21.09			
	180	19.80	20.71	21.73	22.89	25.80	30.00	37.03					
	200	37.08	39.44	42.24	45.68	55.93							
150	155	2.18	2.27	2.36	2.46	2.71	3.03	3.49	4.20	5.70			
	160	4.50	4.68	4.89	5.11	5.65	6.36	7.39	9.11	13.37			
	165	6.99	7.28	7.61	7.98	8.86	10.06	11.85	15.06				
	170	9.67	10.10	10.57	11.10	12.42	14.24	17.08	22.73				
	190	23.26	24.55	26.04	27.80	32.56	40.74						
	210	47.16	51.43	57.04	64.98								
160	165	2.49	2.60	2.72	2.86	3.21	3.71	4.49	6.14				
	170	5.17	5.41	5.68	5.99	6.77	7.89	9.78	14.55				
	175	8.07	8.47	8.92	9.44	10.75	12.73	16.29					
	180	11.26	11.84	12.51	13.28	15.30	18.46	24.88					
	200	28.45	30.48	32.95	36.05	46.02							
	220	69.01	82.27										
170	175	2.91	3.06	3.24	3.44	3.99	4.85	6.71					
	180	6.09	6.43	6.82	7.29	8.54	10.66	16.10					
	185	9.60	10.17	10.84	11.64	13.86	17.92						
	190	13.54	14.41	15.43	16.68	20.29	27.80						
	210	37.30	41.17	46.43	54.33								
	230												
180	185	3.51	3.74	4.02	4.36	5.34	7.47						
	190	7.45	7.97	8.61	9.40	11.83	18.24						
	195	11.93	12.84	13.96	15.40	20.17							
	200	17.13	18.58	20.42	22.85	32.04							
	220	57.44	70.53										
	240												
190	195	4.47	4.86	5.36	6.01	8.55							
	200	9.67	10.60	11.82	13.51	21.42							
	205	15.89	17.63	19.99	23.52								
	210	23.67	26.72	31.19	38.90								
	230												
	250												
200	205	6.22	7.03	8.21	10.21								
	210	13.98	16.13	19.56	26.72								
	215	24.36	29.18	38.48									
	220	40.18	52.86										
	240												
210	215	10.38	13.18	20.84									
	220	26.22	38.07										
	225	61.85											
	230												
	250												
220	225	37.67											
	230												
	235												
	240												
230	235												
	240												
240	245												
	250												

TYPE "WU" HEAT EXCHANGERS

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

TABLE A — CLEAN TUBE TEMPERATURE FACTORS

Heated Water		240° HEATING WATER — TEMPERATURE DROP											
In	Out	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
	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
	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
	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
	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
	160	32.28	33.10	33.97	34.89	36.94	39.30	42.09	45.46	49.64	55.11		
	180	42.02	43.27	44.61	46.06	49.36	53.36	58.37	64.98				
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
	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
	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
	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
	150	26.30	26.94	27.61	28.33	29.91	31.71	33.81	36.30	39.32	43.12	48.15	
	170	34.79	35.75	36.79	37.89	40.37	43.31	46.88	51.36	57.27			
	190	46.16	47.71	49.41	51.27	55.61	61.14	68.57					
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
	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
	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
	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
	160	28.22	28.96	29.75	30.60	32.47	34.66	37.26	40.44	44.47	49.85		
	180	37.89	39.06	40.32	41.69	44.82	48.64	53.50	60.01				
	200	51.61	53.65	55.92	58.46	64.70	73.34						
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
	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
	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
	160	23.84	24.49	25.19	25.95	27.63	29.60	31.98	34.93	38.76	44.06		
	180	33.45	34.53	35.69	36.97	39.90	43.52	48.20	54.63				
	200	47.06	49.00	51.17	53.62	59.66	68.20						
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
	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
	160	19.03	19.58	20.18	20.82	22.25	23.97	26.06	28.72	32.28	37.47		
	180	28.59	29.56	30.62	31.77	34.46	37.84	42.30	48.65				
	200	42.10	43.93	45.98	48.31	54.14	62.58						
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
	120	2.76	2.83	2.90	2.98	3.15	3.34	3.56	3.83	4.15	4.55	5.08	5.83
	125	4.22	4.33	4.44	4.56	4.82	5.12	5.48	5.90	6.41	7.07	7.94	9.21
	130	5.74	5.88	6.04	6.20	6.57	7.00	7.49	8.09	8.83	9.77	11.06	13.02
	150	12.50	12.85	13.23	13.63	14.54	15.61	16.91	18.52	20.63	23.58	28.24	
	170	20.85	21.52	22.25	23.04	24.85	27.07	29.91	33.73	39.37			
	190	31.99	33.24	34.61	36.15	39.84	44.76	51.92					
120	125	1.46	1.50	1.54	1.58	1.67	1.78	1.91	2.07	2.26	2.52	2.86	3.40
	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
	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
	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
	160	13.65	14.07	14.53	15.02	16.14	17.51	19.21	21.45	24.58	29.60		
	180	23.16	23.99	24.91	25.92	28.31	31.36	35.52	41.76				
130	135	1.58	1.62	1.67	1.72	1.83	1.97	2.13	2.33	2.60	2.96	3.53	4.70
	140	3.22	3.31	3.41	3.52	3.76	4.05	4.40	4.83	5.41	6.23	7.57	10.82
	145	4.94	5.09	5.25	5.42	5.80	6.25	6.81	7.53	8.48	9.89	12.34	
	150	6.75	6.95	7.18	7.41	7.95	8.60	9.41	10.45	11.88	14.06	18.25	
	170	15.08	15.60	16.17	16.79	18.23	20.05	22.44	25.82	31.28			
	190	26.16	27.25	28.47	29.84	33.18	37.78	44.82					
140	145	1.72	1.77	1.83	1.89	2.03	2.21	2.42	2.69	3.08	3.68	4.93	
	150	3.53	3.64	3.76	3.89	4.19	4.56	5.02	5.63	6.49	7.92	11.41	
	155	5.43	5.61	5.80	6.01	6.49	7.08	7.83	8.84	10.34	12.97		
	160	7.44	7.69	7.96	8.26	8.94	9.80	10.90	12.42	14.75	19.28		
	180	16.91	17.58	18.31	19.12	21.08	23.66	27.35	33.40				
	200	30.26	31.77	33.49	35.49	40.70	48.90						
150	155	1.90	1.97	2.04	2.11	2.29	2.52	2.81	3.22	3.87	5.21		
	160	3.91	4.05	4.20	4.36	4.75	5.24	5.89	6.82	8.35	12.13		
	165	6.04	6.26	6.50	6.77	7.40	8.20	9.28	10.89	13.73			
	170	8.31	8.63	8.97	9.36	10.26	11.45	13.08	15.60	20.56			
	190	19.34	20.23	21.22	22.36	25.19	29.28	36.13					
	210	36.25	38.55	41.29	44.64	54.64							
160	165	2.13	2.21	2.30	2.40	2.64	2.96	3.40	4.10	5.55			
	170	4.40	4.58	4.77	4.99	5.51	6.21	7.21	8.88	13.04			
	175	6.83	7.12	7.43	7.79	8.65	9.82	11.57	14.69				
	180	9.45	9.86	10.32	10.84	12.12	13.90	16.66	22.18				
	200	22.73	23.99	25.45	27.17	31.81	39.79						
	220	46.13	50.30	55.78	63.53								
170	175	2.43	2.54	2.66	2.80	3.14	3.62	4.38	5.99				
	180	5.05	5.28	5.55	5.85	6.61	7.71	9.55	14.19				
	185	7.89	8.28	8.72	9.22	10.50	12.43	15.91					
	190	11.00	11.57	12.22	12.98	14.94	18.03	24.29					
	210	27.83	29.81	32.22	35.25	44.98							
	230	67.53	80.49										
180	185	2.84	2.99	3.16	3.37	3.90	4.74	6.55					
	190	5.95	6.28	6.67	7.12	8.34	10.41	15.72					
	195	9.39	9.95	10.60	11.38	13.54	17.51						
	200	13.24	14.09	15.09	16.31	19.83	27.17						
	220	36.50	40.28	45.43	53.15								
	240												
190	195	3.44	3.66	3.93	4.26	5.22	7.30						
	200	7.29	7.80	8.42	9.19	11.57	17.83						
	205	11.67	12.56	13.66	15.06	19.73							
	210	16.76	18.18	19.97	22.35	31.33							
	230	56.23	69.04										
	250												
200	205	4.38	4.76	5.24	5.88	8.36							
	210	9.47	10.38	11.56	13.22	20.95							
	215	15.56	17.25	19.56	23.02								
	220	23.17	26.15	30.53	38.07								
	240												
210	215	6.09	6.88	8.03	9.99								
	220	13.69	15.79	19.15	26.15								
	225	23.85	28.58	37.67									
	230	39.35	51.77										
	250												
220	225	10.16	12.91	20.41									
	230	25.69	37.29										
	235	60.60											
	240												
230	235	36.92											
	240												
240	245												
	250												

Heated Water		250° HEATING WATER — TEMPERATURE DROP											
In	Out	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°
40	60	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	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	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	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	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	29.40	30.09	30.81	31.57	33.25	35.15	37.35	39.92	43.02	46.84	51.78	
	180	37.75	38.75	39.82	40.97	43.53	46.53	50.14	54.62	60.43			
50	70	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	8.03	8.18	8.33	8.49	8.82	9.19	9.60	10.05	10.55	11.11	11.75	12.49
	110	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	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	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	31.45	32.24	33.08	33.97	35.95	38.24	40.94	44.19	48.24	53.52		
	190	40.96	42.17	43.47	44.88	48.08	51.95	56.81	63.21				
60	80	4.00	4.07	4.15	4.23	4.40	4.58	4.78	5.00	5.25	5.53	5.84	6.20
	100	8.39	8.55	8.72	8.90	9.27	9.68	10.13	10.64	11.21	11.85	12.60	13.47
	120	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	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	25.62	26.24	26.89	27.58	29.11	30.85	32.88	35.29	38.21	41.88	46.75	
	180	33.91	34.85	35.84	36.92	39.32	42.17	45.63	49.96	55.70			
	200	45.02	46.53	48.17	49.98	54.20	59.56	66.78					
80	100	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	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	14.91	15.25	15.61	15.98	16.81	17.74	18.81	20.05	21.52	23.30	25.53	28.47
	160	21.55	22.10	22.67	23.28	24.63	26.19	28.03	30.22	32.94	36.43	41.22	
	180	29.80	30.66	31.57	32.56	34.79	37.46	40.73	44.91	50.57			
	200	40.83	42.26	43.81	45.53	49.58	54.78	61.92					
100	120	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	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	17.12	17.57	18.06	18.57	19.71	21.05	22.63	24.57	27.01	30.25	34.95	
	180	25.33	26.09	26.91	27.80	29.82	32.27	35.32	39.30	44.89			
	200	36.28	37.61	39.07	40.69	44.53	49.55	56.61					
110	115	1.24	1.27	1.30	1.33	1.40	1.47	1.56	1.66	1.78	1.92	2.10	2.32
	120	2.52	2.58	2.64	2.70	2.84	3.00	3.18	3.39	3.64	3.94	4.32	4.81
	125	3.85	3.94	4.03	4.13	4.35	4.60	4.88	5.21	5.61	6.09	6.70	7.51
	130	5.22	5.34	5.47	5.61	5.91	6.26	6.66	7.12	7.68	8.37	9.25	10.45
	150	11.27	11.56	11.87	12.20	12.93	13.78	14.77	15.98	17.48	19.42	22.13	26.37
	170	18.57	19.11	19.69	20.31	21.70	23.37	25.40	27.98	31.44	36.48		
	190	27.92	28.68	29.89	31.01	33.63	36.92	41.25	47.42				
120	125	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	2.69	2.76	2.83	2.90	3.07	3.25	3.47	3.73	4.04	4.43	4.94	5.66
	135	4.12	4.22	4.33	4.44	4.70	4.99	5.33	5.74	6.24	6.87	7.72	8.95
	140	5.59	5.74	5.89	6.05	6.40	6.82	7.30	7.88	8.59	9.51	10.76	12.65
	160	12.20	12.54	12.91	13.30	14.18	15.22	16.48	18.05	20.09	22.96	27.49	
	180	20.36	21.02	21.72	22.49	24.25	26.41	29.17	32.88	38.37			
130	135	1.42	1.46	1.50	1.54	1.63	1.74	1.86	2.02	2.20	2.45	2.79	3.31
	140	2.90	2.98	3.06	3.14	3.34	3.56	3.83	4.15	4.56	5.09	5.85	7.08
	145	4.44	4.56	4.68	4.82	5.13	5.48	5.90	6.42	7.08	7.97	9.26	11.51
	150	6.04	6.21	6.39	6.58	7.01	7.51	8.11	8.86	9.82	11.13	13.12	16.94
	170	13.33	13.74	14.18	14.66	15.75	17.08	18.74	20.91	23.96	28.84		
	190	22.62	23.44	24.33	25.32	27.64	30.61	34.66	40.74				
140	145	1.54	1.58	1.63	1.68	1.79	1.92	2.08	2.27	2.53	2.88	3.44	4.57
	150	3.14	3.23	3.33	3.44	3.67	3.95	4.28	4.71	5.27	6.07	7.37	10.53
	155	4.83	4.97	5.12	5.28	5.66	6.10	6.64	7.34	8.26	9.63	12.02	
	160	6.59	6.79	7.01	7.24	7.76	8.39	9.18	10.19	11.58	13.69	17.77	
	180	14.73	15.24	15.79	16.40	17.80	19.57	21.89	25.19	30.51			
	200	25.57	26.64	27.82	29.15	32.41	36.90	43.77					
150	155	1.68	1.73	1.79	1.85	1.99	2.15	2.36	2.63	3.00	3.59	4.80	
	160	3.45	3.55	3.67	3.80	4.09	4.45	4.89	5.49	6.33	7.72	11.12	
	165	5.30	5.48	5.66	5.87	6.33	6.91	7.64	8.62	10.08	12.64		
	170	7.27	7.51	7.78	8.06	8.73	9.56	10.64	12.11	14.38	18.79		
	190	16.53	17.18	17.89	18.69	20.59	23.11	26.70	32.60				
	210	29.59	31.07	32.75	34.70	39.78	47.79						
160	165	1.86	1.92	1.99	2.07	2.24	2.46	2.75	3.15	3.77	5.08		
	170	3.82	3.96	4.10	4.26	4.64	5.12	5.75	6.65	8.15	11.83		
	175	5.90	6.12	6.35	6.61	7.22	8.01	9.06	10.62	13.40			
	180	8.12	8.43	8.77	9.14	10.03	11.18	12.77	15.23	20.06			
	200	18.92	19.78	20.75	21.86	24.62	28.62	35.30					
	220	35.47	37.72	40.39	43.67	53.44							
170	175	2.08	2.16	2.25	2.35	2.58	2.89	3.32	4.00	5.42			
	180	4.30	4.47	4.66	4.88	5.39	6.07	7.04	8.67	12.73			
	185	6.68	6.96	7.27	7.61	8.46	9.60	11.30	14.34				
	190	9.24	9.65	10.10	10.60	11.85	13.58	16.28	21.66				
	210	22.25	23.47	24.90	26.57	31.11	38.90						
	230	45.16	49.24	54.59	62.18								
180	185	2.38	2.48	2.60	2.74	3.07	3.54	4.28	5.85				
	190	4.94	5.17	5.43	5.72	6.46	7.53	9.33	13.87				
	195	7.72	8.10	8.53	9.02	10.27	12.15	15.55					
	200	10.77	11.32	11 96	12.69	14.61	17.62	23.74					
	220	27.24	29.18	31.53	34.50	44.01							
	240	66.14	78.83										
190	195	2.78	2.93	3.10	3.29	3.81	4.64	6.40					
	200	5.82	6.15	6.53	6.97	8.16	10.18	15.37					
	205	9.19	9.74	10.38	11.14	13.25	17.13						
	210	12.97	13.79	14.77	15.96	19.40	26.57						
	230	35.75	39.45	44.48	52.04								
	250												
200	205	3.37	3.59	3.85	4.17	5.11	7.14						
	210	7.13	7.64	8.24	9.00	11.32	17.44						
	215	11.43	12.30	13.37	14.74	19.31							
	220	16.42	17.81	19.56	21.88	30.67							
	240	55.10	67.64										
210	215	4.29	4.66	5.13	5.76	8.18							
	220	9 27	10 16	11.32	12.94	20.51							
	225	15.24	16.90	19.16	22.54								
	230	22.70	25.62	29.91	37.29								
	250												
220	225	5.96	6.74	7.87	9.79								
	230	13.41	15.48	18.76	25.62								
	235	23.38	28.01	36.92									
	240	38.57	50.74										
230	235	9.96	12.65	20.00									
	240	25.19	36.56										
240	245	36.21											
	250												

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	4.71
	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	6.12
	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	1.89
	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	19.82
	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	2.14
	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	2.50
	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	3.07
	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	4.25
	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				

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

TABLE A 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	1.27	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		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	2.76	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		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		9.70	10.81	12.28	14.44	18.14	
	230	20.23	23.70	29.44			16.00	18.08	21.03	25.80		
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		10.51	11.83	13.68	16.56	22.41	
	240	22.82	27.53	36.56			17.55	20.13	24.03	31.23		
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		3.83	4.28	4.91	5.86	7.60	
	210	6.51	7.53	9.12	12.23		5.21	5.85	6.74	8.11	10.75	
	230	14.78	17.60	22.60			11.49	13.11	15.50	19.65		
	250	26.34	33.26				19.50	22.83	28.33			
200	205	1.66	1.93	2.35	3.21		1.33	1.49	1.73	2.09	2.82	
	210	3.42	3.99	4.92	6.90		2.71	3.06	3.56	4.35	6.03	
	215	5.28	6.21	7.73	11.31		4.16	4.72	5.51	6.81	9.80	
	220	7.27	8.60	10.87	16.83		5.69	6.47	7.61	9.53	14.44	
	240	16.88	20.83	29.32			12.71	14.76	18.02	24.77		
210	215	1.86	2.21	2.82	4.55		1.45	1.66	1.95	2.47	3.90	
	220	3.85	4.61	5.98	10.61		2.97	3.41	4.05	5.20	9.00	
	225	5.97	7.21	9.55			4.58	5.27	6.32	8.26		
	230	8.26	10.08	13.70			6.27	7.26	8.78	11.76		
	250	19.79	25.85				14.26	16.97	21.77			
220	225	2.12	2.61	3.60			1.60	1.86	2.27	3.09		
	230	4.41	5.47	7.81			3.30	3.85	4.73	6.64		
	235	6.89	8.67	12.92			5.10	5.98	7.45	10.88		
	240	9.60	12.27	19.53			7.01	8.29	10.47	16.19		
230	235	2.48	3.20	5.28			1.80	2.13	2.72	4.38		
	240	5.19	6.81	12.51			3.71	4.44	5.76	10.21		
240	245	2.99	4.20				2.05	2.51	3.47			
	250	6.33	9.22				4.26	5.28	7.53			

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	10.92
	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		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		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		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			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	5.27	7.36
	200	4.05	4.43	4.91	5.55	6.47	8.00	11.79	3.48	3.76	4.11	4.54	5.12	5.95	7.31	10.66
	220	8.70	9.60	10.76	12.38	14.90	19.90		7.39	8.04	8.85	9.89	11.34	13.57	17.94	
	240	14.21	15.86	18.09	21.43	27.43			11.90	13.04	14.50	16.48	19.39	24.54		
190	195	1.03	1.12	1.25	1.42	1.66	2.07	3.18	0.88	0.95	1.04	1.15	1.30	1.52	1.89	2.87
	200	2.09	2.29	2.55	2.90	3.42	4.33	7.22	1.79	1.94	2.12	2.35	2.67	3.13	3.94	6.49
	205	3.19	3.50	3.91	4.47	5.30	6.82		2.72	2.95	3.24	3.60	4.10	4.85	6.20	
	210	4.32	4.76	5.33	6.12	7.32	9.61		3.68	4.00	4.40	4.91	5.61	6.68	8.71	
	230	9.36	10.41	11.83	13.90	17.45			7.86	8.60	9.55	10.81	12.63	15.73		
	250	15.44	17.44	20.27	24.85				12.74	14.07	15.83	18.29	22.23			
200	205	1.10	1.21	1.36	1.56	1.88	2.51		0.93	1.01	1.12	1.25	1.43	1.72	2.28	
	210	2.24	2.47	2.78	3.22	3.91	5.36		1.89	2.06	2.28	2.55	2.94	3.56	4.84	
	215	3.42	3.79	4.28	4.97	6.10	8.68		2.89	3.15	3.48	3.92	4.54	5.54	7.79	
	220	4.65	5.16	5.85	6.84	8.51	12.69		3.91	4.28	4.74	5.35	6.23	7.70	11.34	
	240	10.15	11.41	13.18	15.95	21.57			8.41	9.27	10.39	11.95	14.36	19.17		
210	215	1.18	1.31	1.49	1.76	2.20	3.43		0.99	1.09	1.21	1.37	1.60	1.99	3.06	
	220	2.41	2.69	3.07	3.63	4.62	7.83		2.02	2.21	2.46	2.80	3.29	4.17	6.95	
	225	3.69	4.13	4.73	5.64	7.31			3.08	3.38	3.77	4.31	5.11	6.57		
	230	5.03	5.65	6.50	7.81	10.35			4.18	4.60	5.15	5.90	7.06	9.26		
	250	11.10	12.66	14.95	18.94				9.05	10.06	11.43	13.42	16.83			
220	225	1.28	1.44	1.66	2.01	2.71			1.06	1.17	1.31	1.51	1.82	2.42		
	230	2.62	2.96	3.43	4.19	5.81			2.16	2.39	2.69	3.10	3.77	5.17		
	235	4.02	4.55	5.32	6.57	9.44			3.30	3.66	4.13	4.80	5.89	8.36		
	240	5.49	6.24	7.34	9.18	13.91			4.49	4.99	5.65	6.61	8.20	12.23		
230	235	1.40	1.60	1.89	2.38	3.76			1.14	1.27	1.44	1.69	2.13	3.30		
	240	2.87	3.29	3.91	5.02	8.67			2.33	2.60	2.96	3.50	4.46	7.55		
240	245	1.55	1.80	2.19	2.98				1.24	1.39	1.61	1.94	2.62			
	250	3.19	3.72	4.57	6.41				2.53	2.86	3.32	4.05	5.60			

TYPE "WU" HEAT EXCHANGERS

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

TABLE A — 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	.063	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	12.28
	210	8.77	9.38	10.09	10.96	12.04	13.43	15.36	18.36		7.79	8.27	8.84	9.50	10.30	11.29	12.57	14.33	17.05	
160	165	0.67	0.72	0.77	0.82	0.89	0.98	1.09	1.24	1.47	0.60	0.64	0.68	0.72	0.78	0.84	0.92	1.02	1.16	1.38
	170	1.36	1.45	1.55	1.67	1.81	1.99	2.22	2.54	3.04	1.22	1.29	1.37	1.46	1.57	1.71	1.87	2.08	2.38	2.84
	175	2.06	2.20	2.35	2.53	2.75	3.03	3.39	3.90	4.70	1.85	1.95	2.08	2.22	2.39	2.59	2.85	3.18	3.65	4.39
	180	2.78	2.96	3.17	3.42	3.73	4.11	4.61	5.33	6.50	2.48	2.63	2.80	2.99	3.23	3.51	3.86	4.33	4.99	6.06
	200	5.82	6.22	6.69	7.26	7.96	8.86	10.10	11.99	15.61	5.17	5.49	5.86	6.30	6.82	7.47	8.30	9.44	11.16	14.44
	220	9.19	9.86	10.66	11.64	12.89	14.56	16.98	21.15		8.12	8.65	9.27	10.01	10.91	12.05	13.57	15.77	19.53	
170	175	0.70	0.75	0.80	0.87	0.94	1.04	1.17	1.36	1.68	0.63	0.66	0.71	0.76	0.82	0.89	0.98	1.10	1.27	1.56
	180	1.42	1.51	1.62	1.76	1.92	2.12	2.40	2.80	3.48	1.26	1.34	1.43	1.53	1.65	1.80	1.99	2.24	2.61	3.24
	185	2.15	2.30	2.47	2.67	2.92	3.24	3.67	4.31	5.46	1.92	2.03	2.17	2.33	2.51	2.75	3.04	3.44	4.02	5.07
	190	2.90	3.10	3.33	3.61	3.96	4.40	5.01	5.92	7.63	2.58	2.74	2.92	3.14	3.40	3.72	4.13	4.68	5.52	7.08
	210	6.09	6.53	7.06	7.70	8.51	9.58	11.12	13.70		5.39	5.74	6.15	6.63	7.22	7.96	8.95	10.35	12.69	
	230	9.66	10.41	11.31	12.44	13.91	15.95	19.15			8.48	9.07	9.75	10.58	11.62	12.95	14.81	17.68		
180	185	0.73	0.78	0.84	0.91	1.00	1.12	1.28	1.52	1.99	0.65	0.69	0.74	0.79	0.86	0.94	1.05	1.19	1.42	1.84
	190	1.48	1.59	1.71	1.86	2.04	2.28	2.62	3.14	4.21	1.32	1.40	1.49	1.61	1.74	1.91	2.14	2.44	2.92	3.89
	195	2.25	2.41	2.60	2.83	3.12	3.49	4.02	4.87	6.74	1.99	2.12	2.27	2.44	2.66	2.92	3.27	3.75	4.52	6.22
	200	3.04	3.26	3.52	3.83	4.23	4.76	5.51	6.74	9.73	2.69	2.86	3.06	3.30	3.59	3.96	4.44	5.13	6.25	8.95
	220	6.40	6.89	7.48	8.22	9.17	10.47	12.47	16.35		5.63	6.01	6.46	7.10	7.68	8.55	9.74	11.55	15.03	
	240	10.20	11.04	12.07	13.39	15.16	17.75	22.26			8.89	9.54	10.31	11.25	12.45	14.05	16.38	20.39		
190	195	0.77	0.82	0.89	0.97	1.07	1.21	1.41	1.74	2.62	0.68	0.72	0.77	0.84	0.91	1.01	1.13	1.31	1.61	2.41
	200	1.55	1.67	1.81	1.97	2.19	2.48	2.89	3.62	5.89	1.37	1.46	1.57	1.69	1.85	2.05	2.31	2.69	3.35	5.40
	205	2.36	2.54	2.75	3.01	3.35	3.80	4.47	5.68		2.08	2.22	2.38	2.58	2.82	3.13	3.54	4.15	5.25	
	210	3.19	3.43	3.72	4.09	4.55	5.19	6.15	7.97		2.81	3.00	3.22	3.49	3.82	4.25	4.83	5.71	7.35	
	230	6.75	7.30	7.97	8.83	9.96	11.60	14.35			5.90	6.32	6.83	7.44	8.22	9.25	10.73	13.20		
	250	10.81	11.76	12.96	14.52	16.71	20.16				9.36	10.08	10.95	12.03	13.44	15.41	18.48			
200	205	0.81	0.87	0.94	1.04	1.16	1.32	1.58	2.08		0.71	0.76	0.81	0.88	0.97	1.08	1.23	1.46	1.92	
	210	1.64	1.76	1.92	2.11	2.36	2.71	3.27	4.41		1.43	1.53	1.65	1.79	1.97	2.20	2.52	3.02	4.05	
	215	2.49	2.68	2.92	3.23	3.62	4.18	5.08	7.08		2.18	2.33	2.51	2.73	3.01	3.37	3.88	4.69	6.49	
	220	3.36	3.63	3.97	4.38	4.94	5.73	7.04	10.26		2.94	3.15	3.40	3.70	4.08	4.59	5.31	6.49	9.37	
	240	7.15	7.77	8.55	9.55	10.94	13.09	17.29			6.20	6.67	7.24	7.94	8.86	10.11	12.03	15.77		
210	215	0.85	0.92	1.01	1.11	1.26	1.47	1.82	2.76		0.74	0.80	0.86	0.94	1.04	1.17	1.36	1.68	2.52	
	220	1.73	1.87	2.05	2.27	2.58	3.02	3.80	6.25		1.51	1.62	1.75	1.91	2.11	2.39	2.79	3.49	5.68	
	225	2.63	2.85	3.13	3.48	3.96	4.67	5.97			2.29	2.46	2.66	2.91	3.23	3.67	4.31	5.48		
	230	3.56	3.87	4.25	4.74	5.42	6.44	8.39			3.09	3.32	3.60	3.95	4.40	5.01	5.94	7.68		
	250	7.61	8.32	9.23	10.44	12.20	15.19				6.54	7.07	7.72	8.54	9.63	11.21	13.86			
220	225	0.90	0.98	1.08	1.21	1.38	1.66	2.19			0.78	0.84	0.91	1.00	1.12	1.28	1.52	2.01		
	230	1.83	2.00	2.20	2.47	2.84	3.43	4.66			1.58	1.71	1.86	2.04	2.28	2.62	3.15	4.25		
	235	2.79	3.05	3.37	3.79	4.38	5.35	7.52			2.41	2.60	2.83	3.12	3.50	4.04	4.90	6.83		
	240	3.79	4.14	4.58	5.17	6.02	7.43	10.94			3.26	3.52	3.84	4.24	4.77	5.54	6.80	9.90		
230	235	0.96	1.05	1.17	1.32	1.54	1.92	2.95			0.82	0.89	0.97	1.08	1.22	1.42	1.76	2.67		
	240	1.95	2.14	2.38	2.70	3.18	4.02	6.70			1.67	1.81	1.98	2.20	2.49	2.92	3.67	6.03		
240	245	1.03	1.13	1.27	1.46	1.75	2.34				0.87	0.95	1.05	1.17	1.34	1.60	2.12			
	250	2.09	2.31	2.60	3.00	3.64	4.99				1.78	1.93	2.13	2.39	2.75	3.32	4.51			

FOR HIGH TEMPERATURE RANGE

Heated Water		420° HEATING 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	
160	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
	175	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

2 & 4 PASS	BAFFLE SPACE		2"	2½"	3"	4" STD
	SHELL FLOW GPM	A	24-32	33-40	41-48	49-64
		B	12-23	24-29	30-35	36-47

"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( )	25.6	23.1	19.1	16.4	15.6	13.0	13.3	10.8	11.6	9.3	8.9	7.0						
											1.9	1.9						
WU43-4( )	42.0	37.9	31.3	26.9	25.5	21.3	21.8	17.8	19.0	15.3	14.7	11.4						
							1.0	1.0	1.5	1.5	3.0	3.0						
WU44-4( )	58.4	52.7	43.5	37.5	35.5	29.6	30.2	24.7	26.5	21.3	20.4	15.9						
							1.4	1.4	2.1	2.1	4.2	4.2						
WU45-4( )	73.8	66.6	54.9	47.3	44.8	37.4	38.2	31.2	33.4	26.9	25.7	20.1						
					1.1	1.1	1.8	1.8	2.6	2.6	5.3	5.3						
WU46-4( )	90.2	81.4	67.2	57.8	54.8	45.8	46.7	38.1	40.9	32.8	31.5	24.5						
			1.0	1.0	1.3	1.3	2.1	2.1	3.2	3.2	6.5	6.5						
WU47-4( )	106.6	96.2	79.4	68.3	64.7	54.1	55.2	45.1	48.3	38.8	37.2	29.0						
			1.1	1.1	1.5	1.5	2.5	2.5	3.8	3.8	7.7	7.7						
Avg. Vel. 4"—4" Pass	.88 ft./sec.		1.8		2.7		3.5		4.4		6.6							
WU42-2( )			12.8	11.6	10.9	9.6	9.5	8.2	8.6	7.2	6.9	5.7	5.8	4.7	5.0	4.0	4.5	3.5
WU43-2( )			21.0	19.0	17.8	15.7	15.6	13.5	14.0	11.9	11.3	9.3	9.5	7.6	8.3	6.5	7.3	5.7
															1.1	1.1	1.5	1.5
WU44-2( )			29.2	26.4	24.8	21.8	21.8	18.7	19.5	16.5	15.7	12.9	13.2	10.6	11.5	9.1	10.2	7.9
													1.0	1.0	1.5	1.5	2.1	2.1
WU45-2( )			36.9	33.3	31.3	27.5	27.5	23.7	24.6	20.9	19.8	16.3	16.7	13.4	14.5	11.5	12.9	10.0
													1.3	1.3	1.9	1.9	2.7	2.7
WU46-2( )			45.1	40.7	38.2	33.6	33.6	28.9	30.1	25.5	24.2	19.9	20.4	16.4	17.8	14.0	15.7	12.3
											1.0	1.0	1.6	1.6	2.4	2.4	3.3	3.3
WU47-2( )			53.3	48.1	45.2	39.7	39.7	34.2	35.6	30.1	28.6	23.5	24.2	19.4	21.0	16.6	18.6	14.5
											1.1	1.1	1.9	1.9	2.8	2.8	3.9	3.9
Avg. Vel. 4"—2" Pass			.9 ft./sec.		1.3		1.8		2.2		3.3		4.4		5.5		6.6	

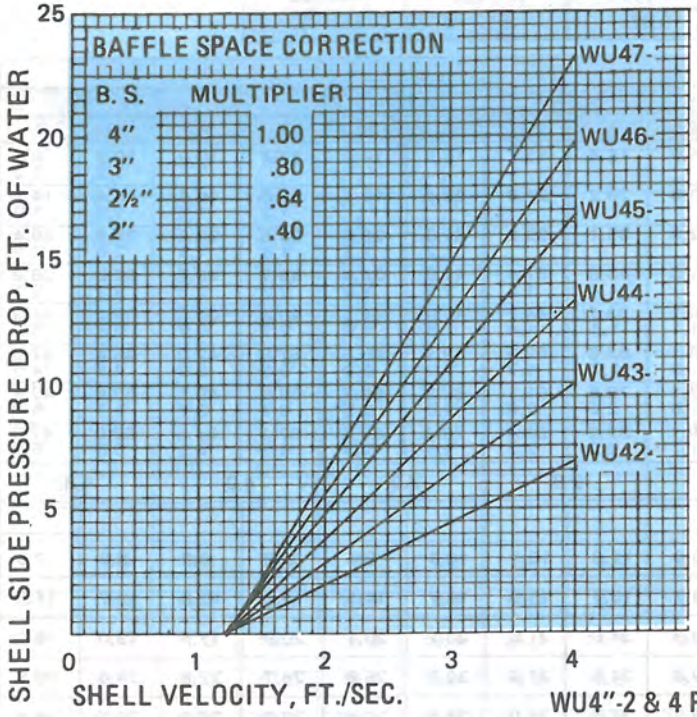
6" WU HEAT EXCHANGERS

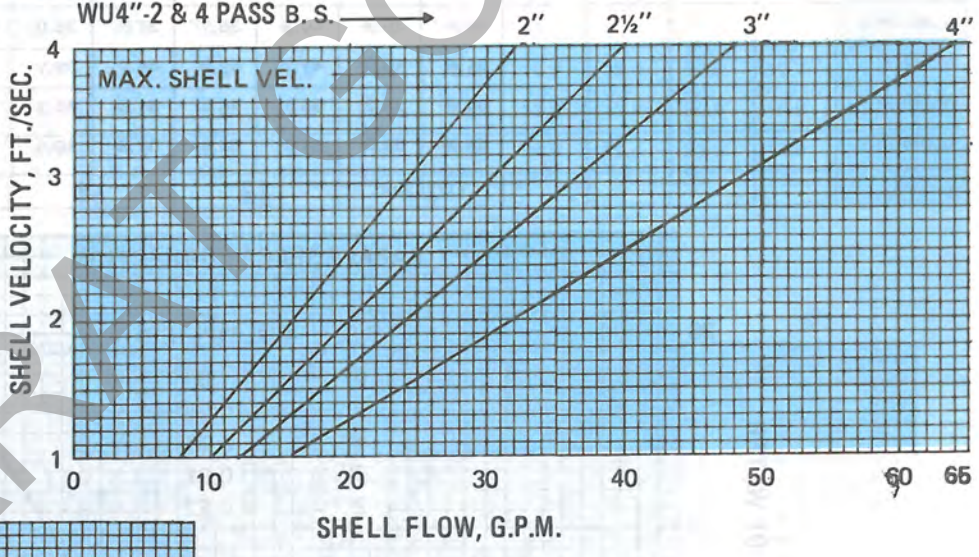
2 & 4 PASS	BAFFLE SPACE		2"	2½"	3" STD	4"
	SHELL FLOW GPM	A	30-39	40-50	45-60	61-80
		B	15-29	30-39	22-44	45-60

"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										
											1.0	1.0	1.3	1.3	1.6	1.6	2.4	2.4										
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										
									1.1	1.1	1.5	1.5	2.0	2.0	2.6	2.6	3.8	3.8										
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										
							1.0	1.0	1.5	1.5	2.1	2.1	2.8	2.8	3.5	3.5	5.2	5.2										
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										
							1.3	1.3	1.9	1.9	2.7	2.7	3.5	3.5	4.4	4.4	6.6	6.6										
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										
							1.6	1.6	2.3	2.3	3.2	3.2	4.3	4.3	5.4	5.4	8.0	8.0										
WU67-4( )	115.2	105.	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										
					1.0	1.0	1.9	1.9	2.8	2.8	3.8	3.8	5.0	5.0	6.3	6.3	94.	9.4										
WU68-4( )	132.0	120.7	100.	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										
			1.0	1.0	1.3	1.3	2.1	2.1	3.2	3.2	4.4	4.4	5.7	5.7	7.3	7.3	10.8	10.8										
Avg. Vel. 6"—4" Pass	0.8 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
																									1.0	1.0	1.2	1.2
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
																					1.0	1.0	1.3	1.3	1.6	1.6	1.9	1.9
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
																			1.1	1.1	1.4	1.4	1.7	1.7	2.2	2.2	2.6	2.6
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
																	1.0	1.0	1.3	1.3	1.8	1.8	2.2	2.2	2.7	2.7	3.3	3.3
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
																	1.2	1.2	1.6	1.6	2.1	2.1	2.7	2.7	3.3	3.3	4.0	4.0
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
																	1.4	1.4	1.9	1.9	2.5	2.5	3.2	3.2	3.9	3.9	4.7	4.7
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	26.4	28.0	22.5	25.4	20.2	23.3	18.3	21.8	16.8	20.1	15.5
															1.1	1.1	1.6	1.6	2.9	2.9	2.9	2.9	3.6	3.6	4.5	4.5	5.4	5.4
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	

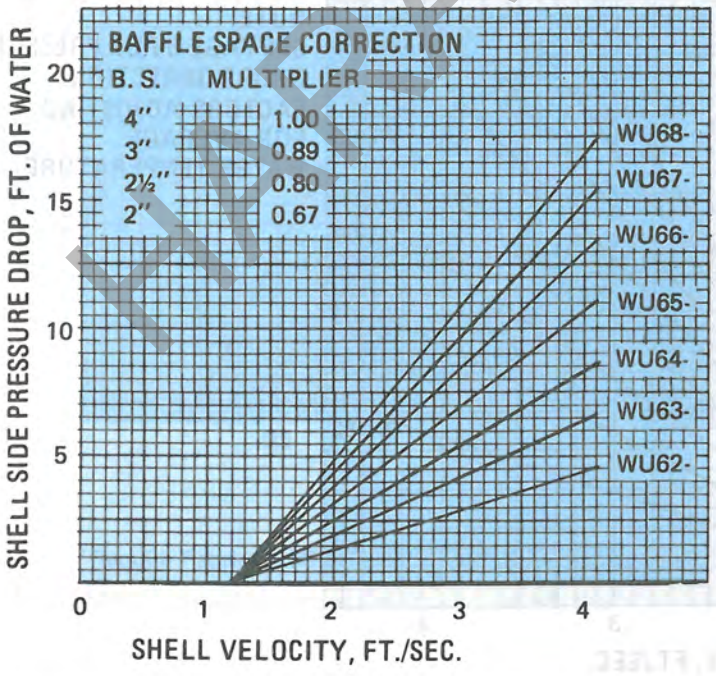
*Require Fabricated Steel heads. Consult Factory for Dimensions.

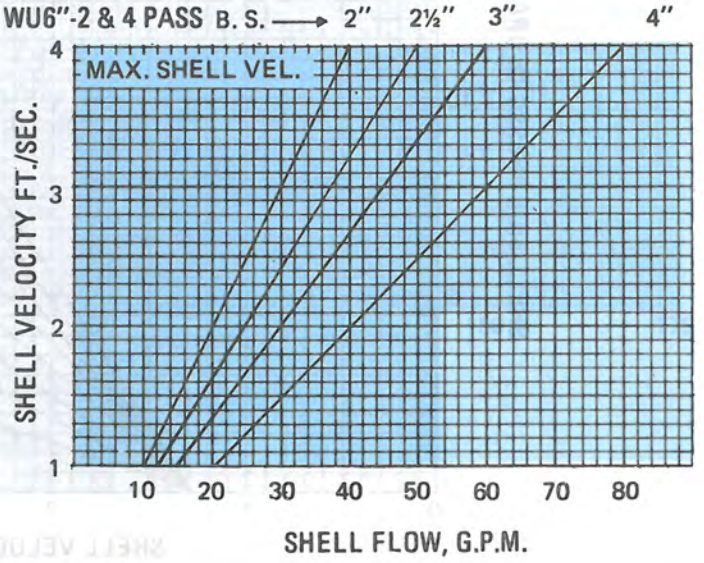
NOTE: Check Mechanical Design Limitations, Page 7.





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

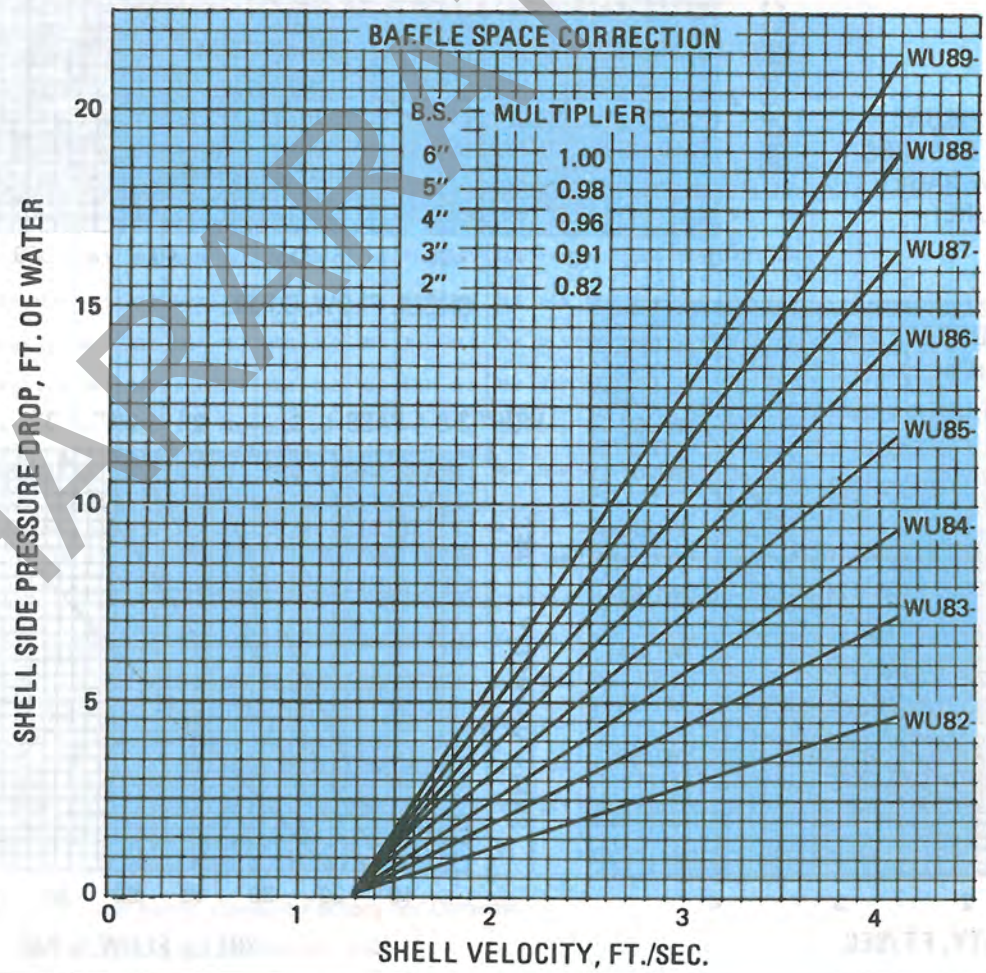




8" WU HEAT EXCHANGERS

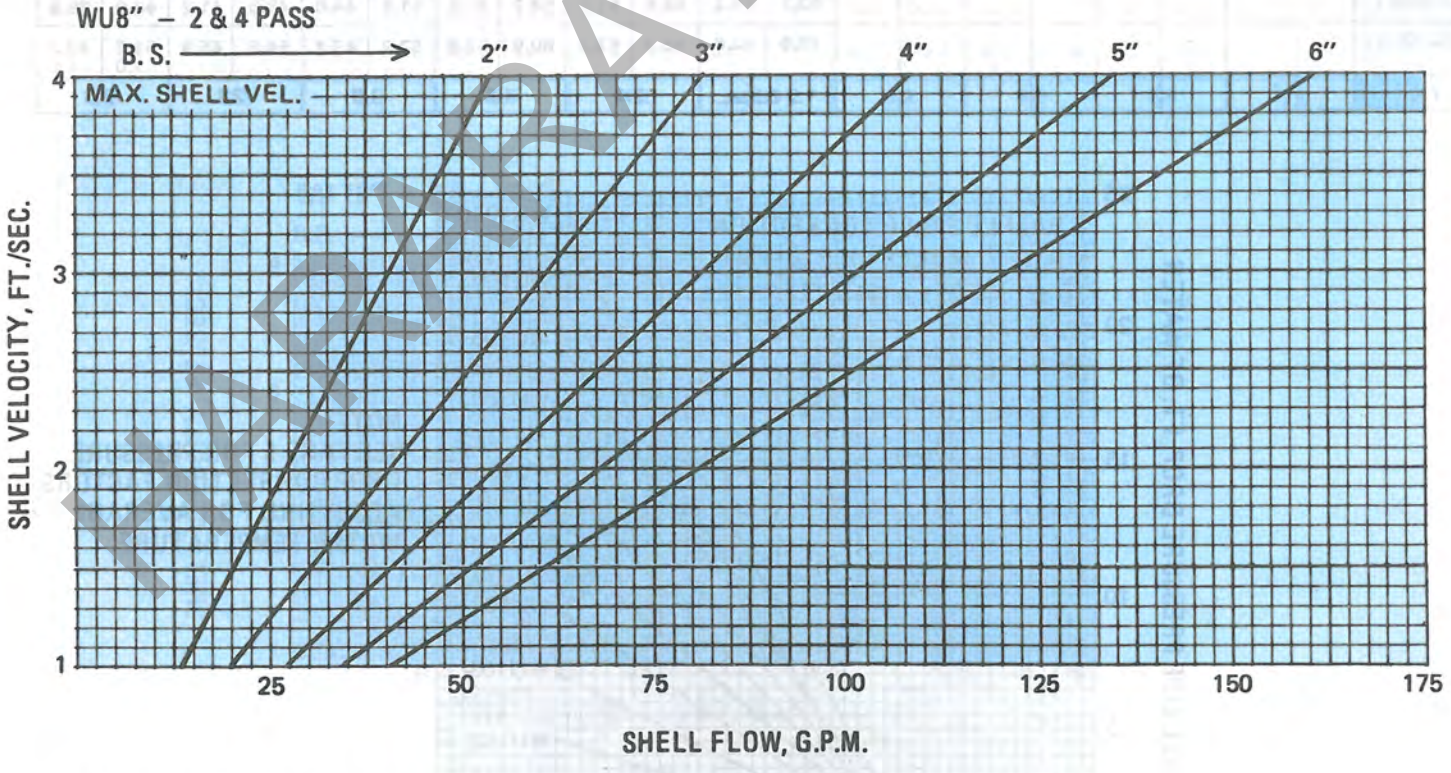
2 & 4 PASS	BAFFLE SPACE		2"	3"	4" (STD.)	5"	6"
	SHELL FLOW IN G.P.M.	A	40-50	51-80	81-110	111-130	131-160
		B	20-39	40-50	40-80	81-110	111-130

4 PASS	G.P.M. 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 1.2	9.6 1.2
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 1.3	16.6 1.3	18.4 1.8	14.7 1.8
WU84-4( )	52.7	46.6	46.4	40.2	41.7	35.6	38.1	32.0	35.1	29.2	32.6 1.2	26.8 1.2	28.6 1.8	23.2 1.8	25.6 2.5	20.4 2.5
WU85-4( )	67.5	59.7	59.5	51.6	53.5	45.6	48.8	41.0	45.0 1.4	37.4 1.4	41.8 1.5	34.4 1.5	36.7 2.3	29.7 2.3	32.8 3.1	26.2 3.1
WU86-4( )	80.6	71.3	71.1	61.6	63.9	54.5	58.3 1.1	49.1 1.1	53.7 1.4	44.7 1.4	49.9 1.8	41.1 1.8	43.8 2.7	35.5 2.7	39.2 3.8	31.3 3.8
WU87-4( )	95.5	84.4	84.1	72.9	75.7	64.5	69.0 1.3	58.1 1.3	63.6 1.7	52.9 1.7	59.1 2.2	48.6 2.2	51.9 3.2	42.0 3.2	46.4 4.5	37.0 4.5
WU88-4( )	110	97.5	97.2	84.3	87.4 1.1	74.6 1.1	79.7 1.5	67.1 1.5	73.5 2.0	61.1 2.0	68.2 2.5	56.1 2.5	59.9 3.7	48.5 3.7	53.6 5.1	42.8 5.1
WU89-4( )	123	109	109	94.3	97.8 1.2	83.5 1.2	89.2 1.7	75.1 1.7	82.2 2.2	68.4 2.2	76.4 2.8	62.9 2.8	67.1 4.2	54.3 4.2	60.0 5.8	47.9 5.8
4-P T.V.	1.2 ft./sec.		1.6		2.0		2.4		2.8		3.2		4.0		4.8	
2 PASS																
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.

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 1.5	8.6 1.5	10.0 1.9	7.8 1.9	9.2 2.4	7.1 2.4										
16.7 2.3	13.1 2.3	15.3 2.9	11.9 2.9	14.1 3.6	10.9 3.6										
23.2 3.2	18.3 3.2	21.2 4.1	16.6 4.1	19.6 5.0	15.2 5.0										
29.7 4.1	23.4 4.1	27.2 5.2	21.2 5.2	25.1 6.5	19.4 6.5										
35.5 4.9	28.0 4.9	32.5 6.3	25.4 6.3	30.0 7.7	23.2 7.7										
42.0 5.9	33.1 5.9	28.5 7.4	30.0 7.4	35.5 9.1	27.5 9.1										
48.6 6.8	38.3 6.8	44.4 8.6	34.7 8.6	41.0 10.6	31.8 10.6										
54.4 7.6	42.9 7.6	49.8 9.6	38.9 9.6	45.9 11.8	35.6 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 1.0	3.9 1.0	4.6 1.2	3.6 1.2
12.6	10.5	11.7	9.6	10.9	8.9	10.3	8.3	9.2	7.3	8.3 1.2	6.6 1.2	7.6 1.5	6.0 1.5	7.0 1.8	5.5 1.8
17.5	14.6	16.3	13.4	15.2	12.4	14.3	11.6	12.8 1.2	10.2 1.2	11.6 1.6	9.1 1.6	10.6 2.0	8.3 2.0	9.8 2.5	7.6 2.5
22.5	18.7	20.9	17.2	19.5	15.9	18.3 1.1	14.8 1.1	16.4 1.6	13.1 1.6	14.9 2.1	11.7 2.1	13.6 2.6	10.6 2.6	12.5 3.2	9.7 3.2
28.9	22.3	25.0	20.5	23.3 1.1	19.0 1.1	21.9 1.4	17.7 1.4	19.6 1.9	15.6 1.9	17.8 2.5	14.0 2.5	16.3 3.1	12.7 3.1	15.0 3.9	11.6 3.9
31.8	26.4	29.5 1.1	24.3 1.1	27.6 1.3	22.5 1.3	25.9 1.6	21.0 1.6	23.2 2.2	18.5 2.2	21.0 2.9	16.6 2.9	19.2 3.7	15.0 3.7	17.8 4.6	13.7 4.6
36.7 1.0	30.5 1.0	34.1 1.3	28.1 1.3	31.9 1.5	26.0 1.5	30.0 1.9	24.2 1.9	26.8 2.6	21.4 2.6	24.3 3.4	19.1 3.4	22.2 4.3	17.4 4.3	20.5 5.3	15.9 5.3
41.1 1.1	34.2 1.1	38.2 1.4	31.4 1.4	35.7 1.7	29.1 1.7	33.6 2.1	27.1 2.1	30.0 2.9	23.9 2.9	27.2 3.8	21.4 3.8	24.9 4.8	19.4 4.8	23.0 5.9	17.8 5.9
2.8		3.2		3.6		4.0		4.8		5.6		6.4		7.2	



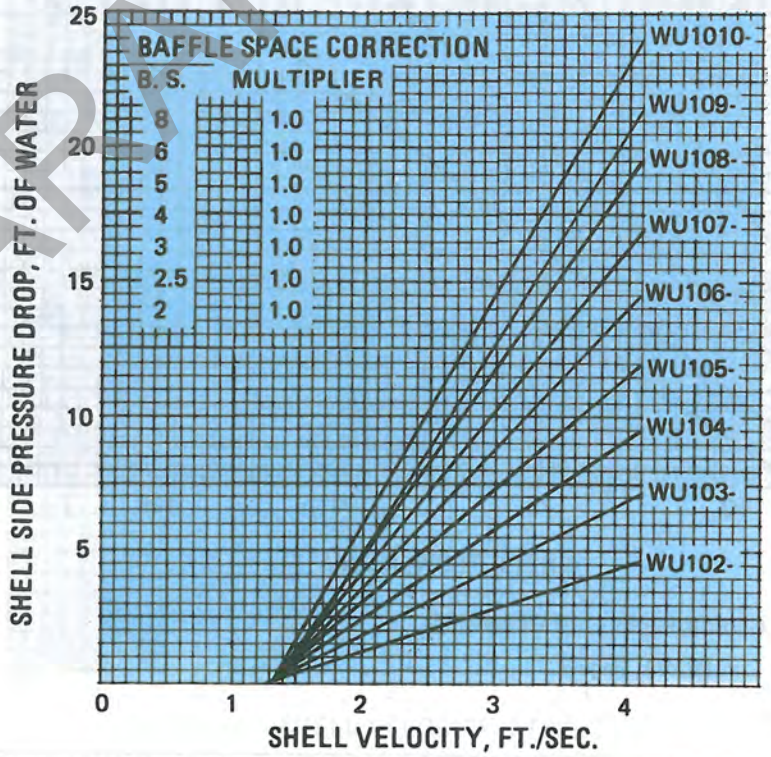
*Require Fabricated Steel heads. Consult Factory for Dimensions.

NOTE: Check Mechanical Design Limitations, Page 7.

10" WU HEAT EXCHANGERS

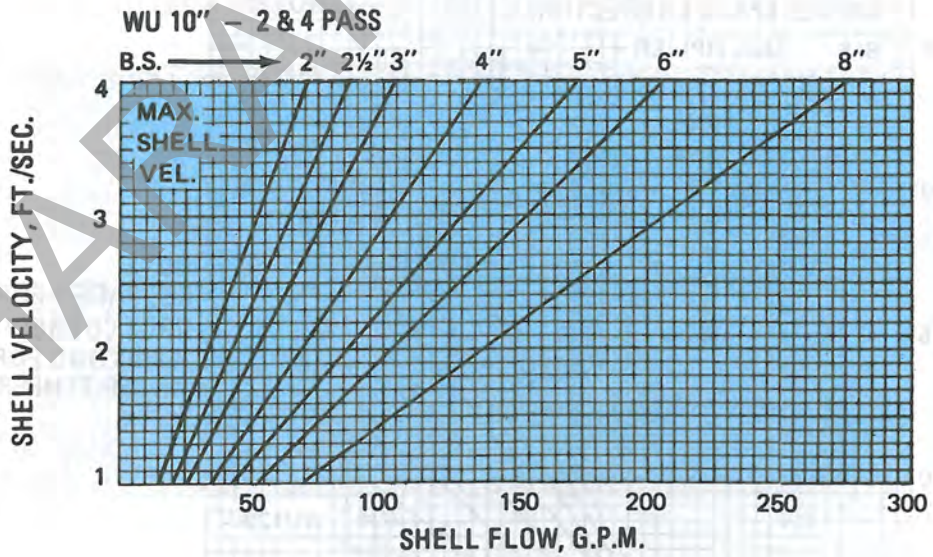
2 & 4 PASS	BAFFLE SPACE		2"	2½"	3"	4"	5" (Std.)	6"	8"
	Shell Flow in G.P.M.	A	52-70	71-87	88-105	106-138	130-173	174-207	208-276
		B	26-51	52-70	71-87	88-105	65-129	139-173	174-207

4 PASS	G. P. M. HEATED IN TUBES																			
	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
WU102-4( )	24.9	22.0	23.0	20.1	21.5	18.5	20.2	17.2	18.0	15.1	16.3	13.5	15.0	12.3	13.9 1.1	11.2 1.1	12.9 1.4	10.4 1.4	12.1 1.7	9.6 1.7
WU103-4( )	38.9	34.4	36	31.4	33.5	28.9	31.4	26.9	28.1	23.6	25.5 1.0	21.1 1.0	23.4 1.3	19.1 1.3	21.6 1.6	17.5 1.6	20.1 2.0	16.2 2.0	18.8 2.4	15.0 2.4
WU104-4( )	52.9	46.7	48.9	42.6	45.5	39.3	42.7	36.5	38.2	32.1	34.6 1.2	28.7 1.2	31.8 1.7	26.0 1.7	29.4 2.1	23.8 2.1	27.3 2.6	22.0 2.6	25.6 3.1	20.4 3.1
WU105-4( )	67.9	60.0	62.7	54.7	58.4	50.4	54.8	46.8	49.0 1.0	41.1 1.0	44.4 1.5	36.8 1.5	40.7 2.0	33.3 2.0	37.7 2.5	30.5 2.5	35.1 3.1	28.2 3.1	32.9 3.8	26.2 3.8
WU106-4( )	81.8	72.3	75.6	66.0	70.5	60.8	66.1	56.5	59.1 1.3	49.6 1.3	53.6 1.8	44.4 1.8	49.1 2.4	40.2 2.4	45.4 3.0	36.8 3.0	42.3 3.6	34.0 3.6	39.6 4.5	31.6 4.5
WU107-4( )	95.8	84.6	88.5	77.2	82.5	71.2	77.4 1.0	66.1 1.0	69.1 1.5	58.1 1.5	62.7 2.1	52.0 2.1	57.5 2.7	47.1 2.7	53.2 3.4	43.1 3.4	49.5 4.2	39.8 4.2	46.4 5.2	37.0 5.2
WU108-4( )	110	97	101	88.5	94.5	81.5	88.7 1.1	75.8 1.1	79.2 1.6	66.6 1.6	71.9 2.3	59.5 2.3	65.9 3.0	53.9 3.0	61.0 3.9	49.4 3.9	56.8 4.9	45.6 4.9	53.2 5.9	42.3 5.9
WU109-4( )	124	109	114	99.7	107 1.0	91.9 1.0	100 1.4	85.4 1.4	89.3 1.9	75.0 1.9	81.0 2.7	67.1 2.7	74.3 3.3	60.8 3.3	68.7 4.3	55.7 4.3	64.0 5.5	51.4 5.5	59.9 6.5	47.7 6.5
WU1010-4( )	138	122	127	111	119 1.3	102.3 1.3	111 1.7	95.0 1.7	99.4 2.3	83.5 2.3	90.2 3.1	74.7 3.1	82.7 3.7	67.7 3.7	76.5 4.8	62.0 4.8	71.2 6.0	57.2 6.0	66.7 7.1	53.1 7.1
4-P T.V.	1.2 ft./sec.		1.5		1.7		2.0		2.5		3.0		3.5		4.0		4.5		5.0	
2 PASS																				
WU102-2( )									13.1	11.6	12.1	10.6	11.3	9.8	10.6	9.1	10.0	8.5	9.5	8.0
WU103-2( )									20.3	18.0	18.8	16.5	17.5	15.2	16.5	14.1	15.5	13.2	14.7	12.4
WU104-2( )									27.1	24.0	25.0	21.9	23.4	20.2	21.9	18.8	20.7	17.6	19.6	16.6
WU105-2( )									34.3	30.4	31.8	27.8	29.6	25.7	27.8	23.9	26.3	22.3	24.9	21.0
WU106-2( )									41.6	36.9	38.5	33.7	35.9	31.1	33.7	28.9	31.8	27.1	30.2	25.5
WU107-2( )									48.8	43.3	45.2	39.6	42.2	36.5	39.6	34.0	37.4	31.8	35.4	29.9
WU108-2( )									56.1	49.7	51.9	45.4	48.4	41.9	45.5	39.0	42.9	36.5	40.7	34.3
WU109-2( )									63.3	56.2	58.6	51.3	54.7	47.4	51.3	44.0	48.5	41.2	46.0	38.8
WU1010-2( )									70.6	62.6	65.3	57.2	60.9	52.8	57.2	49.1	54.0	45.9	51.2 1.0	43.2 1.0
2-P T.V.									1.2 ft./sec.		1.4		1.6		1.9		2.1		2.3	



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

120		140		150		160		180		200		225		250		275		325	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
10.7 2.4	8.4 2.4	9.7 3.2	7.5 3.2	9.2 4.0	7.1 4.0														
16.8 3.4	13.2 3.4	15.1 4.4	11.7 4.4	14.4 5.0	11.1 5.0														
22.8 4.3	17.9 4.3	20.5 5.6	16.0 5.6	19.6 6.1	15.1 6.1														
29.2 5.2	23.0 5.2	26.3 6.8	20.5 6.8	25.1 7.4	19.4 7.4														
35.2 6.1	27.7 6.1	31.8 8.0	24.7 8.0	30.3 9.1	23.4 9.1														
41.2 7.1	32.4 7.1	37.2 9.3	28.9 9.3	35.5 10.1	27.4 10.1														
47.3 8.1	37.1 8.1	42.6 10.5	33.1 10.5	40.6 11.2	31.4 11.2														
53.3 9.0	41.9 9.0	48.0 11.7	37.3 11.7	45.8 12.4	35.4 12.4														
59.3 10.0	46.6 10.0	53.5 12.8	41.5 12.8	51.0 13.5	39.4 13.5														
6.0		7.0		7.4															
																		*	*
8.6	7.2	7.9	6.5	7.6	6.2	7.3	6.0	6.8	5.5	6.4	5.1	5.9	4.7	5.5	4.4	5.2 1.0	4.1 1.0	4.6 1.2	3.6 1.2
13.4	11.1	12.3	10.1	11.8	9.7	11.4	9.3	10.6	8.6	9.9	8.0	9.2 1.2	7.3 1.2	8.6 1.4	6.8 1.4	8.1 1.6	6.3 1.6	7.2 1.8	5.6 1.8
17.8	14.8	16.4	13.5	15.8	12.9	15.2	12.3	14.1 1.1	11.4 1.1	13.3 1.2	10.6 1.2	12.3 1.5	9.8 1.5	11.5 1.9	9.0 1.9	10.8 2.1	8.4 2.1	9.6 2.5	7.4 2.5
22.6	18.8	20.8	17.1	20.0	16.3	19.2 1.1	15.7 1.1	17.9 1.3	14.5 1.3	16.8 1.5	13.4 1.5	15.6 1.9	12.4 1.9	14.6 2.4	11.5 2.4	13.7 2.8	10.7 2.8	12.2 3.2	9.4 3.2
27.4	22.8	25.2 1.0	20.7 1.0	24.2 1.1	19.8 1.1	23.3 1.3	19.0 1.3	21.7 1.6	17.5 1.6	20.4 2.0	16.3 2.0	18.9 2.3	15.0 2.3	17.7 2.8	13.9 2.8	16.6 3.2	12.9 3.2	14.8 3.8	11.4 3.8
32.2	26.8	29.6 1.2	24.3 1.2	28.4 1.4	23.2 1.4	27.4 1.5	22.3 1.5	25.5 1.8	20.6 1.8	23.9 2.3	19.1 2.3	22.2 2.6	17.6 2.6	20.7 3.3	16.3 3.3	19.5 3.8	15.2 3.8	17.4 4.4	13.4 4.4
37.0 1.0	30.8 1.0	34.0 1.3	27.9 1.3	32.6 1.5	26.7 1.5	31.4 1.6	25.6 1.6	29.3 2.0	23.6 2.0	27.5 2.5	22.0 2.5	25.5 2.9	20.2 2.9	23.8 3.8	18.7 3.8	22.4 4.4	17.5 4.4	19.9 5.0	15.4 5.0
41.8 1.2	34.7 1.2	38.3 1.6	31.5 1.6	36.9 1.8	30.1 1.8	35.5 1.9	28.9 1.9	33.1 2.4	26.7 2.4	31.0 2.9	24.8 2.9	28.8 3.4	22.8 3.4	26.9 4.3	21.2 4.3	25.2 4.8	19.7 4.8	22.5 5.6	17.4 5.6
46.5 1.4	38.7 1.4	42.7 1.9	35.1 1.9	41.1 2.0	33.6 2.0	39.6 2.1	32.2 2.1	36.9 2.6	29.7 2.6	34.6 3.2	27.7 3.2	32.1 3.6	25.4 3.6	30.0 4.7	23.6 4.7	28.1 5.4	22.0 5.4	25.1 6.2	19.4 6.2
2.8		3.3		3.5		3.7		4.2		4.6		5.2		5.9		6.4		7.5	



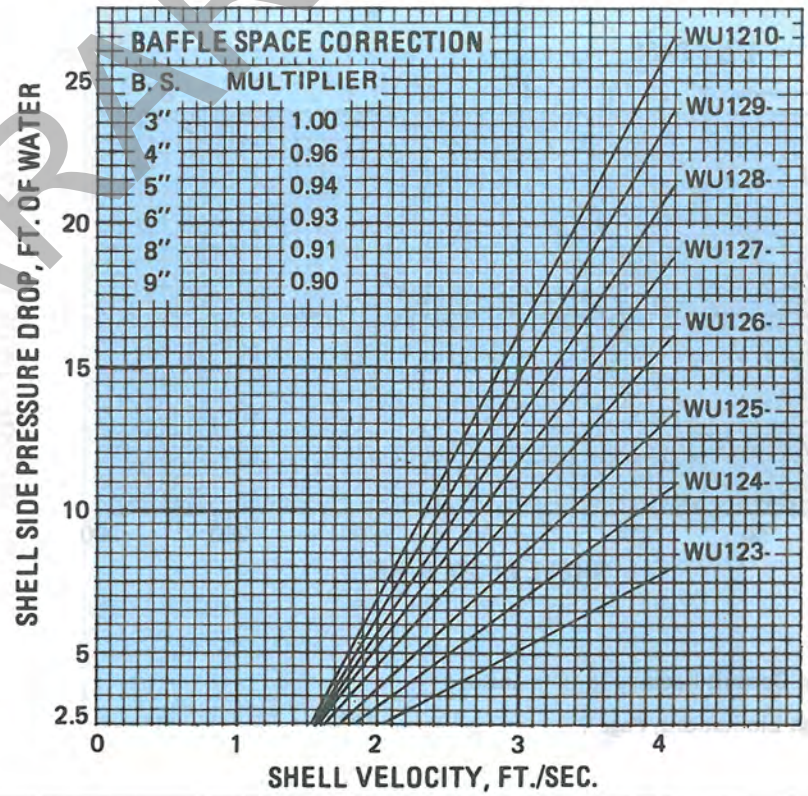
*Require Fabricated Steel heads. Consult Factory for Dimensions.

NOTE: Check Mechanical Design Limitations, Page 7.

12" WU HEAT EXCHANGERS

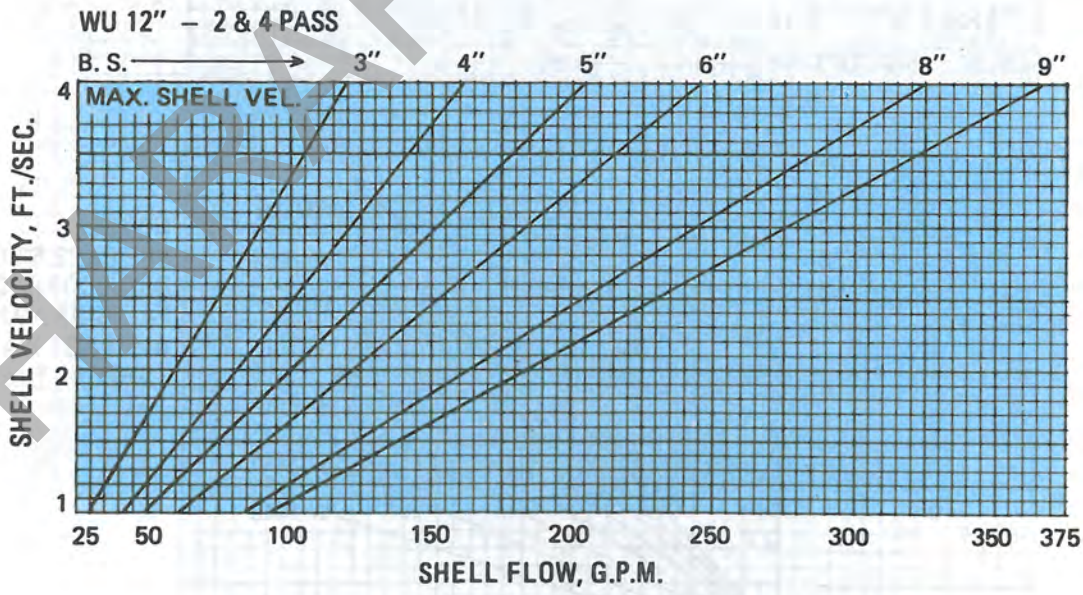
2 & 4 PASS	BAFFLE SPACE		3"	4"	5"	6" (Std.)	8"	9"
	Shell Flow in G. P. M.	A	91-121	122-160	161-205	206-245	246-325	326-365
		B	45-90	91-121	122-160	110-205	206-245	246-325

4 PASS	G. P. M. HEATED IN TUBES																					
	25		30		40		50		60		70		80		90		100		110		120	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU123-4( )	46.4	42.0	43.2	38.7	38.4	33.6	34.7	29.9	31.8	27.1	29.4	24.8	27.4	22.8	25.7 1.0	21.2 1.0	24.2 1.2	19.8 1.2	22.9 1.5	18.6 1.5	21.8 1.7	17.6 1.7
WU124-4( )	62.4	56.5	58.2	52.0	51.6	45.2	46.6	40.3	42.7	36.4	39.5	33.3	36.8	30.7	34.6 1.3	28.5 1.3	32.6 1.7	26.7 1.7	30.8 2.0	25.1 2.0	29.3 2.2	23.6 2.2
WU125-4( )	78.4	70.9	73.1	65.3	64.8	56.9	58.6	50.6	53.7	45.7	49.7 1.0	41.8 1.0	46.3 1.3	38.6 1.3	43.4 1.7	35.9 1.7	40.9 2.0	33.5 2.0	38.7 2.3	31.5 2.3	36.8 2.6	29.7 2.6
WU126-4( )	95.2	86.1	88.7	79.3	78.7	69.0	71.2	61.4	65.2 1.0	55.5 1.0	60.3 1.4	50.8 1.4	56.2 1.6	46.9 1.6	52.7 2.0	43.5 2.0	49.7 2.4	40.7 2.4	47.0 2.8	38.2 2.8	44.6 3.1	36.1 3.1
WU127-4( )	111	101	104	92.7	91.9	80.6	83.1	71.8	76.1 1.2	64.9 1.2	70.4 1.5	59.3 1.5	65.7 1.8	54.7 1.8	61.6 2.2	50.9 2.2	58.0 2.7	47.5 2.7	54.9 3.1	44.6 3.1	52.1 3.5	42.1 3.5
WU128-4( )	128	116	119	107	106	92.8	95.7 1.0	82.6 1.0	87.7 1.4	74.7 1.4	81.1 1.7	68.3 1.7	75.6 2.1	63.0 2.1	70.9 2.4	58.5 2.4	66.8 3.1	54.7 3.1	63.2 3.6	51.4 3.6	60.0 3.8	48.5 3.8
WU129-4( )			134	120	119	104	108 1.3	92.9 1.3	98.6 1.6	84.0 1.6	91.2 2.0	76.8 2.0	85.0 2.3	70.9 2.3	79.7 2.7	65.9 2.7	75.1 3.3	61.6 3.3	71.1 4.0	57.8 4.0	67.5 4.4	54.5 4.4
WU1210-4( )					133 1.0	117 1.0	120 1.5	104 1.5	110 1.8	93.8 1.8	102 2.3	85.8 2.3	95.0 2.6	79.1 2.6	89.0 3.0	73.5 3.0	83.9 3.7	68.7 3.7	79.4 4.5	64.6 4.5	75.4 4.9	60.9 4.9
4-P T.V.	1.1 ft./sec.		1.1		1.5		1.8		2.1		2.5		2.8		3.1		3.5		3.8		4.1	
2 PASS																						
WU123-2( )									22.0	19.7	20.7	18.4	19.5	17.2	18.6	16.2	17.7	15.3	16.9	14.6	16.2	13.9
WU124-2( )									29.9	26.8	28.1	25.0	26.6	23.4	25.2	22.1	24.1	20.9	23.0	19.8	22.1	18.9
WU125-2( )									37.5	33.6	35.2	31.3	33.3	29.3	31.6	27.6	30.2	26.2	28.9	24.8	27.7	23.7
WU126-2( )									45.4	40.7	42.7	37.9	40.4	35.5	38.3	33.5	36.5	31.7	35.0	30.1	33.5	28.7
WU127-2( )									53.3	47.9	50.1	44.5	47.4	41.7	45.0	39.3	42.9	37.2	41.1	35.4	39.4	33.7
WU128-2( )									60.9	54.7	57.2	50.9	54.1	47.7	51.4	44.9	49.0	42.5	46.9	40.4	45.0	38.5
WU129-2( )									68.8	61.8	64.7	57.5	61.2	53.9	58.1	50.8	55.4	48.0	53.0	45.6	50.8	43.5
WU1210-2( )									76.8	68.9	72.1	64.1	68.2	60.1	64.8	56.6	61.8	53.6	59.1	50.9	56.7	48.5
2-P T.V.									1.0 ft./sec.		1.2		1.3		1.5		1.7		1.8		1.9	



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

130		140		160		180		200		225		250		300		350		400		450	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20.7 2.0	16.6 2.0	19.8 2.3	15.8 2.3	18.2 2.9	14.4 2.9	16.8 3.5	13.2 3.5	15.7 4.4	12.2 4.4												
27.9 2.5	22.4 2.5	26.6 3.0	21.2 3.0	24.4 3.7	19.3 3.7	22.6 4.6	17.7 4.6	21.1 5.6	16.4 5.6												
35.0 3.1	28.1 3.1	33.4 3.7	26.7 3.7	30.7 4.5	24.3 4.5	28.4 5.3	22.3 5.3	26.5 6.8	20.6 6.8												
42.5 3.7	34.1 3.7	40.6 4.3	32.4 4.3	37.3 5.4	29.5 5.4	34.5 6.4	27.1 6.4	32.2 8.0	25.0 8.0												
49.7 4.3	39.9 4.3	47.4 4.9	37.9 4.9	43.6 6.1	34.4 6.1	40.3 7.2	31.6 7.2	37.6 9.3	29.2 9.3												
57.2 4.9	45.9 4.9	54.6 5.4	43.6 5.4	50.1 7.0	39.6 7.0	46.4 8.3	36.4 8.3	43.2 10.5	33.6 10.5												
64.3 5.4	51.6 5.4	61.4 6.3	49.0 6.3	56.4 7.7	44.6 7.7	52.2 9.2	40.9 9.2	48.6 11.7	37.8 11.7												
71.8 6.0	57.7 6.0	68.6 7.0	54.8 7.0	63.0 8.1	49.8 8.1	58.3 10.2	45.7 10.2	54.3 12.9	42.2 12.9												
4.3		4.8		5.5		6.1		7.0													
																*	*	*	*	*	*
15.6	13.3	15.0	12.7	14.0	11.7	13.2	10.9	12.4	10.2	11.6	9.5	10.9	8.8	9.8 1.0	7.8 1.0	8.8 1.3	7.0 1.3	8.1 1.6	6.3 1.6	7.5 2.0	5.8 2.0
21.2	18.1	20.5	17.3	19.1	16.0	17.9	14.9	16.9	13.9	15.8	12.9	14.9 1.0	12.0 1.0	13.3 1.3	10.6 1.3	12.0 1.7	9.5 1.7	11.0 2.1	8.6 2.1	10.2 2.6	7.9 2.6
26.6	22.6	25.6	21.7	23.9	20.0	22.5	18.6	21.2	17.4	19.8	16.1	18.6 1.2	15.0 1.2	16.6 1.6	13.3 1.6	15.1 2.2	11.9 2.2	13.8 2.7	10.8 2.7	12.7 3.3	9.9 3.3
32.2	27.4	31.1	26.3	29.0	24.3	27.2	22.6	25.7	21.1	24.0 1.1	19.6 1.1	22.5 1.5	18.2 1.5	20.2 2.0	16.1 2.0	18.3 2.6	14.4 2.6	16.7 3.2	13.1 3.2	15.4 3.9	11.9 3.9
37.9	32.2	36.5	30.9	34.1	28.5	32.0 1.0	26.5 1.0	30.1 1.2	24.8 1.2	28.2 1.4	23.0 1.4	26.5 1.6	21.4 1.6	23.7 2.3	18.9 2.3	21.5 3.1	16.9 3.1	19.6 3.8	15.3 3.8	18.1 4.7	14.0 4.7
43.3	36.8	41.7	35.2	38.9	32.6	36.5 1.1	30.3 1.1	34.4 1.3	28.3 1.3	32.2 1.5	26.2 1.5	30.2 1.9	24.5 1.9	27.0 2.6	21.6 2.6	24.5 3.6	19.3 3.6	22.4 4.3	17.5 4.3	20.7 5.3	16.0 5.3
48.9	41.6	47.1	39.8	43.9 1.0	36.8 1.0	41.3 1.2	34.2 1.2	38.9 1.4	32.0 1.4	36.4 1.6	29.7 1.6	34.2 2.2	27.6 2.2	30.6 3.0	24.4 3.0	27.7 4.1	21.8 4.1	25.3 4.9	19.8 4.9	23.4 6.0	18.1 6.0
54.5	46.4	52.5	44.4	49.0 1.2	41.0 1.2	46.0 1.5	38.2 1.5	43.4 1.8	35.7 1.8	40.6 2.1	33.1 2.1	38.1 2.4	30.8 2.4	34.1 3.2	27.2 3.2	30.9 4.4	24.3 4.4	28.3 5.4	22.1 5.4	26.1 6.7	20.2 6.7
2.1		2.3		2.6		3.0		3.3		3.7		4.2		5.0		5.8		6.7		7.5	



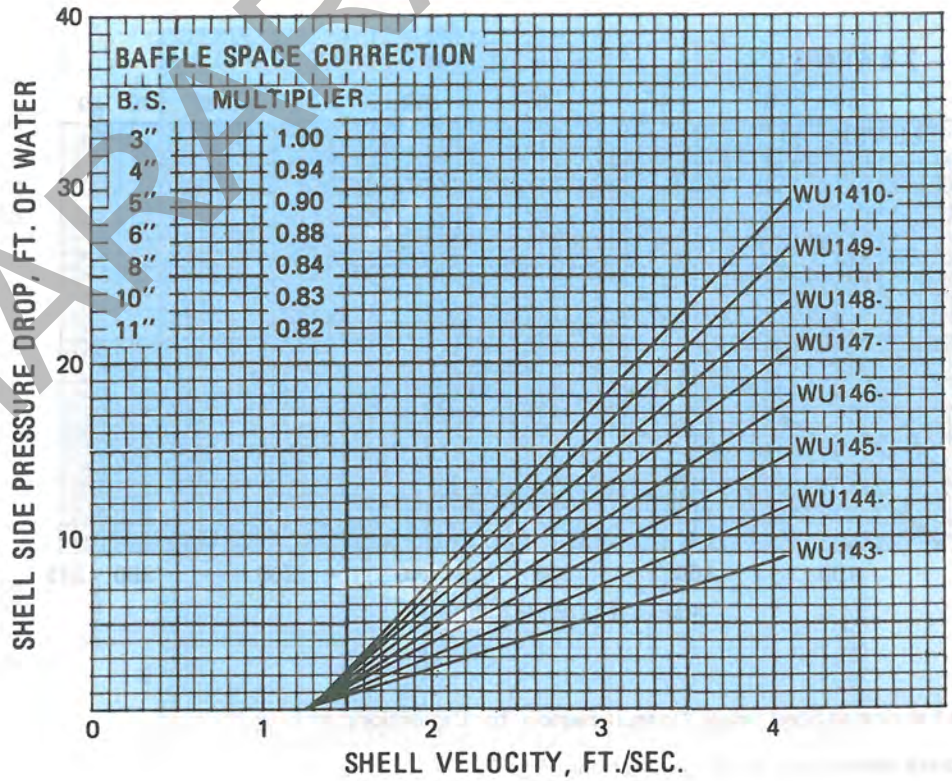
* Require Fabricated Steel heads. Consult Factory for Dimensions.

NOTE: Check Mechanical Design Limitations, Page 7.

14" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		3"	4"	5"	6"		8"	10"	11"
	Shell Flow	A	85-113	114-150	151-190	191-225		226-300	301-380	381-415
	in G. P. M.	B	42-84	85-113	114-150	151-190		191-225	226-300	301-380

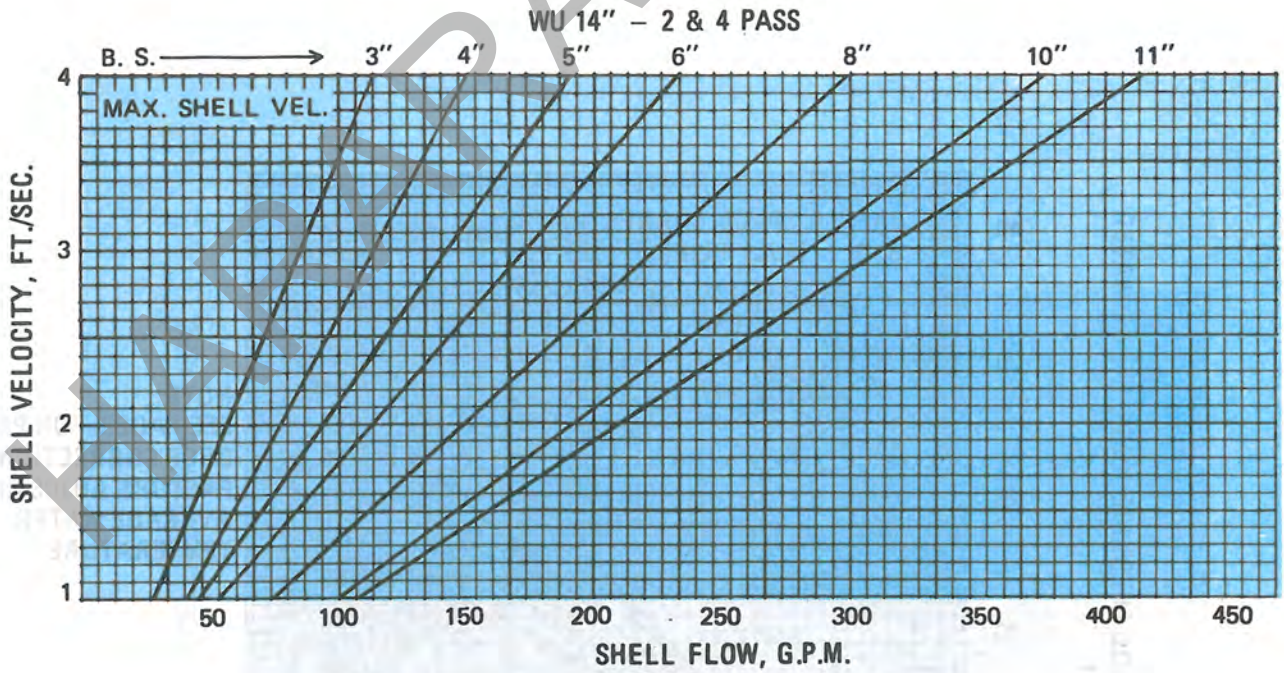
4 PASS	G. P. M. HEATED IN TUBES																							
	50		60		70		80		90		100		110		120		130		140		150		160	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU143-4( )	41.4	36.6	38.3	33.4	35.7	30.8	33.5	28.6	31.6	26.7	29.9	25.1	28.4	23.7	27.1 1.0	22.5 1.0	25.9 1.2	21.3 1.2	24.9 1.3	20.4 1.3	23.9 1.5	19.4 1.5	23.0 1.6	18.6 1.6
WU144-4( )	55.4	48.9	51.2	44.6	47.7	41.1	44.7	38.2	42.2	35.7	40.0	33.6	38.0	31.7	36.3 1.2	30.0 1.2	34.7 1.3	28.6 1.3	33.3 1.6	27.2 1.6	31.9 1.9	26.0 1.9	30.8 2.1	24.9 2.1
WU145-4( )	69.4	61.3	64.1	55.9	59.7	51.5	56.0	47.9	52.8	44.7	50.1	42.1	47.6 1.0	39.7 1.0	45.4 1.5	37.6 1.5	43.4 1.7	35.8 1.7	41.6 2.0	34.1 2.0	40.0 2.3	32.6 2.3	38.5 2.5	31.2 2.5
WU146-4( )	83.3	73.6	77.0	67.2	71.7	61.9	67.3	57.5	63.5	53.8	60.1 1.4	50.5 1.4	57.2 1.6	47.7 1.6	54.6 1.8	45.2 1.8	52.2 2.0	43.0 2.0	50.0 2.3	40.9 2.3	48.1 2.5	39.1 2.5	46.3 3.0	37.5 3.0
WU147-7( )	97.8	86.4	90.4	78.8	84.2	72.7	79.0	67.5	74.5 1.0	63.1 1.0	70.6 1.5	59.3 1.5	67.1 1.8	56.0 1.8	64.0 2.0	53.0 2.0	61.2 2.2	50.4 2.2	58.7 2.5	48.1 2.5	56.4 3.0	45.9 3.0	54.3 3.4	44.0 3.4
WU148-4( )	111.8	98.7	103.3	90.1	96.2	83.0	90.3 1.0	77.1 1.0	85.2 1.2	72.1 1.2	80.7 1.6	67.8 1.6	76.7 1.9	64.0 1.9	73.2 2.1	60.6 2.1	70.0 2.5	57.6 2.5	67.1 2.9	54.9 2.9	64.5 3.1	52.5 3.1	62.1 3.9	50.3 3.9
WU149-4( )	125.7	111.1	116.2	101.3	108.3	93.4	101.6 1.1	86.8 1.1	95.8 1.3	81.1 1.3	90.8 1.7	76.2 1.7	86.3 2.1	72.0 2.1	82.3 2.3	68.2 2.3	78.7 2.7	64.8 2.7	75.5 3.0	61.8 3.0	72.5 3.2	59.1 3.2	69.8 4.2	56.6 4.2
WU1410-4( )	139.7	123.4	129.1	112.6	120.3 1.0	103.8 1.0	112.9 1.2	96.4 1.2	106.4 1.5	90.1 1.5	100.8 1.9	84.7 1.9	95.9 2.3	80.0 2.3	91.5 2.6	75.8 2.6	87.5 2.9	72.0 2.9	83.9 3.2	68.7 3.2	80.6 3.6	65.6 3.6	77.6 4.7	62.8 4.7
4-P T.V.	1.3 ft./sec.		1.5		1.75		2.0		2.25		2.5		2.75		3.0		3.25		3.5		3.75		4.0	
2 PASS																								
WU143-2( )											21.2	18.8	20.4	17.9	19.6	17.2	18.9	16.5	18.3	15.8	17.7	15.2	17.2	14.7
WU144-2( )											28.3	25.0	27.1	23.9	26.1	22.9	25.2	21.9	24.4	21.1	23.6	20.3	22.9	19.6
WU145-2( )											35.6	31.5	34.2	30.1	32.9	28.8	31.7	27.6	30.7	26.6	29.7	25.6	28.8	24.7
WU146-2( )											42.6	37.8	41.0	36.0	39.4	34.5	38.0	33.1	36.8	31.8	35.6	30.7	34.5	29.6
WU147-2( )											49.7	44.0	47.7	42.0	46.0	40.2	44.4	38.6	42.9	37.1	41.5	35.7	40.3	34.5
WU148-2( )											57.0	50.5	54.8	48.2	52.7	46.1	50.9	44.3	49.2	42.6	47.6	41.0	46.2	39.6
WU149-2( )											64.1	56.8	61.5	54.2	59.3	51.8	57.2	49.7	55.3	47.8	53.5	46.1	51.9	44.5
WU1410-2( )											71.4	63.2	68.6	60.4	66.0	57.8	63.7	55.4	61.6	53.3	59.6	51.3	57.8	49.5
2-P T.V.											1.25 ft./sec.		1.4		1.5		1.6		1.8		1.9		2.0	



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

180		200		225		250		275		300		325		350		400		450		500		550		600	
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
21.4 2.0	17.2 2.0	20.1 2.4	16.0 2.4	18.6 2.9	14.7 2.9	17.4 3.4	13.6 3.4	16.3 4.0	12.7 4.0	15.3 4.9	11.9 4.9														
28.6 2.5	23.0 2.5	26.8 3.1	21.4 3.1	24.9 3.7	19.6 3.7	23.2 4.3	18.2 4.3	21.8 5.0	16.9 5.0	20.5 6.3	15.9 6.3														
35.9 3.1	28.8 3.1	33.6 3.8	26.8 3.8	31.1 4.0	24.6 4.0	29.1 5.3	22.8 5.3	27.3 6.3	21.2 6.3	25.7 7.7	19.9 7.7														
43.1 3.7	34.6 3.7	40.4 4.9	32.1 4.9	37.4 5.5	29.5 5.5	34.9 6.3	27.4 6.3	32.7 7.8	25.5 7.8	30.8 9.0	23.9 9.0														
50.6 4.2	40.6 4.2	47.4 5.2	37.7 5.2	43.9 6.0	34.7 6.0	41.0 7.2	32.1 7.2	38.4 9.2	29.9 9.2	36.2 10.4	28.0 10.4														
57.8 4.9	46.4 4.9	54.1 5.9	43.1 5.9	50.2 6.8	39.6 6.8	46.8 8.1	36.7 8.1	43.9 10.1	34.2 10.1	41.4 11.0	32.0 11.0														
65.0 5.3	52.2 5.3	60.9 6.5	48.5 6.5	56.5 8.0	44.6 8.0	52.7 9.2	41.3 9.2	49.4 11.0	38.5 11.0	46.5 13.2	36.0 13.2														
72.2 6.0	58.0 6.0	67.7 7.1	53.9 7.1	62.7 8.6	49.5 8.6	58.5 10.2	45.9 10.2	54.9 12.0	42.7 12.0	51.7 14.5	40.0 14.5														
4.5		5.0		5.6		6.2		6.9		7.5															

16.2	13.8	15.4	12.9	14.4	12.1	13.6	11.3	12.9	10.6	12.3	10.1	11.7	9.5	11.2	9.1	10.4	8.3	9.6 1.2	7.6 1.2	9.0 1.4	7.0 1.4	8.4 1.6	6.6 1.6	7.9 1.8	6.2 1.8
21.6	18.4	20.5	17.3	19.3	16.1	18.2	15.1	17.2	14.2	16.4	13.4	15.7	12.7	15.0	12.1	13.8 1.0	11.0 1.0	12.8 1.6	10.1 1.6	12.0 1.9	9.4 1.9	11.2 2.3	8.8 2.3	10.6 2.5	8.2 2.5
27.2	23.1	25.8	21.7	24.2	20.2	22.9	19.0	21.7	17.8	20.7	16.9	19.7	16.0	18.9 1.2	15.2 1.2	17.4 1.5	13.9 1.5	16.1 1.9	12.8 1.9	15.1 2.4	11.8 2.4	14.1 2.7	11.0 2.7	13.3 3.2	10.3 3.2
32.6	27.7	30.9	26.0	29.1	24.3	27.4	22.7	26.0	21.4	24.8 1.0	20.2 1.0	23.6 1.2	19.2 1.2	22.6 1.5	18.2 1.5	20.8 1.8	16.6 1.8	19.3 2.3	15.3 2.3	18.0 2.8	14.2 2.8	16.9 3.3	13.2 3.3	16.0 3.8	12.4 3.8
38.0	32.3	36.0	30.4	33.9	28.3	32.0 1.0	26.5 1.0	30.3 1.2	24.9 1.2	28.9 1.3	23.6 1.3	27.5 1.4	22.4 1.4	26.3 1.7	21.3 1.7	24.3 2.0	19.4 2.0	22.5 2.6	17.8 2.6	21.0 3.3	16.5 3.3	19.7 3.8	15.4 3.8	18.6 4.3	14.4 4.3
43.6	37.0	41.3	34.8	38.8	32.4	36.7 1.1	30.4 1.1	34.8 1.3	28.6 1.3	33.1 1.5	27.0 1.5	31.6 1.6	25.6 1.6	30.2 1.8	24.4 1.8	27.8 2.5	22.2 2.5	25.8 2.9	20.5 2.9	24.1 3.8	19.0 3.8	22.6 4.3	17.7 4.3	21.3 4.9	16.6 4.9
49.0	41.6	46.4	39.1	43.7 1.0	36.5 1.0	41.2 1.2	34.2 1.2	39.1 1.4	32.2 1.4	37.2 1.7	30.4 1.7	35.5 1.9	28.8 1.9	34.0 2.2	27.4 2.2	31.3 2.9	25.0 2.9	29.0 3.3	23.0 3.3	27.1 4.3	21.3 4.3	25.4 4.9	19.9 4.9	24.0 5.6	18.6 5.6
54.6	46.4	51.7	43.6	48.6 1.1	40.6 1.1	45.9 1.3	38.1 1.3	43.6 1.6	35.8 1.6	41.5 1.8	33.9 1.8	39.6 2.1	32.1 2.1	37.8 2.4	30.5 2.4	34.9 3.1	27.9 3.1	32.4 3.8	25.6 3.8	30.2 4.7	23.7 4.7	28.3 5.4	22.1 5.4	26.7 6.2	20.7 6.2
2.25		2.5		2.8		3.1		3.4		3.75		4.0		4.4		5.0		5.6		6.2		6.9		7.5	



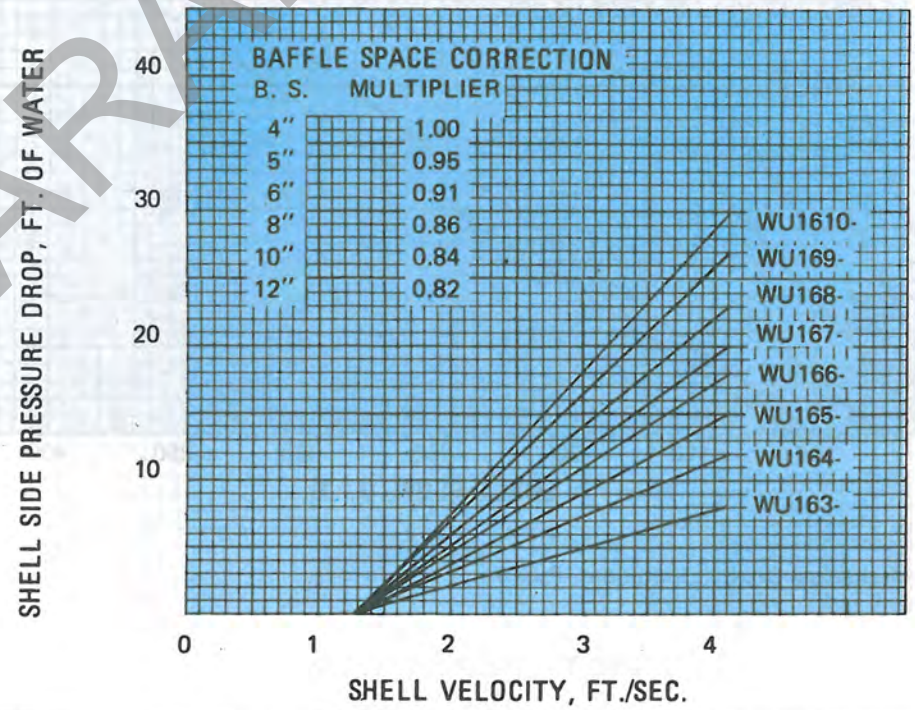
NOTE: Check Mechanical Design Limitations, Page 7.

16" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		4"	5"	6"	8"	10"	12"
	Shell Flow in G.P.M.	A	135-175	176-220	221-265	266-355	356-440	441-525
		B	65-134	135-175	176-220	221-265	266-355	356-440

4 PASS	G. P. M. HEATED IN TUBES																					
	60		70		80		90		100		110		120		130		140		150		160		180	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU163-4( )	45.1	40.6	39.3	34.6	37.1	32.3	35.1	30.3	33.4	28.6	31.9	27.1	30.5	25.8	29.3	24.6	28.2	23.6	27.2	22.6	26.2 1.0	21.7 1.0	24.5 1.3	20.1 1.3
WU164-4( )	60.9	54.7	53.0	46.6	50.0	43.6	47.4	40.9	45.1	38.6	43.0	36.6	41.2	34.8	39.5	33.2	38.0 1.0	31.8 1.0	36.6 1.1	30.5 1.1	35.4 1.2	29.2 1.2	33.1 1.6	27.1 1.6
WU165-4( )	76.7	68.9	66.8	58.7	63.0	54.8	59.7	51.5	56.8	48.6	54.2	46.1	51.9	43.8	49.8	41.8	47.9 1.0	40.0 1.0	46.1 1.3	38.3 1.3	44.5 1.5	36.8 1.5	41.7 1.9	34.1 1.9
WU166-4( )	92.4	83.1	80.5	70.8	75.9	66.1	71.9	62.1	68.4	58.6	65.3	55.6	62.5 1.2	52.9 1.2	60.0 1.3	50.4 1.3	57.7 1.4	48.2 1.4	55.6 1.6	46.2 1.6	53.7 1.8	44.4 1.8	50.2 2.3	41.2 2.3
WU167-4( )	108.2	97.2	94.2	82.9	88.8	77.4	84.2	72.7	80.1	68.6	76.4 1.0	65.1 1.0	73.2 1.3	61.9 1.3	70.2 1.5	59.0 1.5	67.5 1.7	56.4 1.7	65.1 1.9	54.1 1.9	62.8 2.1	52.0 2.1	58.8 2.7	48.2 2.7
WU168-4( )	123.9	111.4	108.0	94.9	101.8	88.7	96.4	83.3	91.7 1.0	78.6 1.0	87.6 1.1	74.5 1.1	83.8 1.4	70.9 1.4	80.5 1.6	67.6 1.6	77.4 1.9	64.7 1.9	74.6 2.0	62.0 2.0	72.0 2.2	59.5 2.2	67.4 2.8	55.2 2.8
WU169-4( )	139.3	125.2	121.3	106.7	114.4	99.6	108.4	93.6	103.1 1.2	88.4 1.2	98.4 1.3	83.8 1.3	94.2 1.6	79.6 1.6	90.4 1.8	76.0 1.8	86.9 2.0	72.7 2.0	83.8 2.2	69.6 2.2	80.9 2.4	66.9 2.4	75.7 3.0	62.0 3.0
WU1610-4( )			135.0	118.7	127.3	110.9	120.6 1.0	104.2 1.0	114.8 1.3	98.4 1.3	109.5 1.5	93.2 1.5	104.9 1.8	88.7 1.8	100.6 2.0	84.6 2.0	96.8 2.2	80.9 2.2	93.3 2.4	77.5 2.4	90.0 2.6	74.4 2.6	84.3 3.3	69.0 3.3
4-P T.V.	1.0 ft./sec.		1.4		1.6		1.8		1.9		2.1		2.3		2.5		2.7		2.8		3.0		3.4	

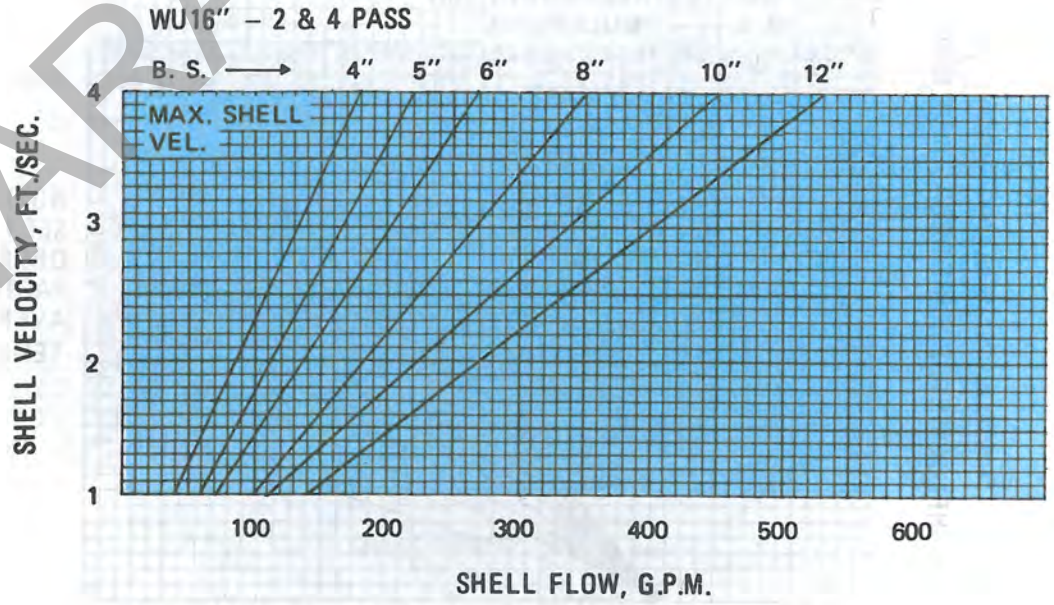
2 PASS	G. P. M. HEATED IN TUBES																					
	110		120		130		140		150		1160		180		200		225		250		275		300	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU163-2( )	22.4	20.1	21.6	19.3	20.9	18.5	20.3	17.9	19.7	17.3	19.1	16.7	18.1	15.7	17.3	14.9	16.3	13.9	15.5	13.1	14.7	12.4	14.1	11.7
WU164-2( )	30.0	26.9	29.0	25.8	28.0	24.8	27.2	24.0	26.4	23.1	25.6	22.4	24.3	21.1	23.1	19.9	21.9	18.6	20.7	17.5	19.7	16.6	18.9	15.7
WU165-2( )	37.6	33.7	36.3	32.3	35.1	31.1	34.1	30.0	33.1	29.0	32.1	28.1	30.5	26.4	29.0	24.9	27.4	23.3	26.0	22.0	24.7	20.8	23.6	19.7
WU166-2( )	45.4	40.7	43.8	39.1	42.4	37.6	41.1	36.3	39.9	35.0	38.8	33.9	36.8	31.9	35.0	30.1	33.1	28.2	31.4	26.5	29.9	25.1	28.5	23.8
WU167-2( )	53.0	47.5	51.2	45.6	49.5	43.9	48.0	42.3	46.6	40.9	45.3	39.6	42.9	37.2	40.9	35.1	38.6	32.9	36.6	31.0	34.9	29.3	33.3	27.8
WU168-2( )	60.8	54.5	58.7	52.3	56.8	50.3	55.1	48.6	53.4	46.9	52.0	45.4	49.3	42.7	46.9	40.3	44.3	37.8	42.0	35.5	40.0	33.6	38.2	31.9
WU169-2( )	68.2	61.1	65.9	58.7	63.7	56.5	61.8	54.5	60.0	52.6	58.3	50.9	55.3	47.9	52.6	45.2	49.7	42.3	47.1	39.9	44.9	37.7	42.9 1.0	35.7 1.0
WU1610-2( )	75.8	67.9	73.2	65.2	70.8	62.8	68.6	60.5	66.6	58.5	64.8	56.6	61.4	53.2	58.5	50.3	55.2	47.1	52.4	44.3	49.9	41.9	47.6 1.2	39.7 1.2
2-P T.V.	1.0 ft./sec.		1.1		1.2		1.3		1.4		1.5		1.7		1.8		2.0		2.3		2.5		2.7	



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

200		225		250		275		300		* 325		* 350		* 375		* 400	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
23.1 1.5	18.8 1.5	21.5 1.8	17.3 1.8	20.2 2.3	16.1 2.3	19.0 2.5	15.1 2.5	17.9 3.0	14.1 3.0	17.0 3.5	13.3 3.5	16.2 4.2	12.6 4.2	15.5 4.4	12.0 4.4	14.8 4.9	11.4 4.9
31.1 1.9	25.3 1.9	29.0 2.3	23.4 2.3	27.2 2.9	21.7 2.9	25.6 3.2	20.3 3.2	24.2 4.1	19.1 4.1	23.0 4.4	18.0 4.4	21.9 5.0	17.0 5.0	20.8 5.7	16.2 5.7	19.9 6.3	15.4 6.3
39.2 2.3	31.9 2.3	36.5 2.7	29.4 2.7	34.2 3.6	27.4 3.6	32.2 3.9	25.6 3.9	30.5 4.6	24.0 4.6	28.9 5.3	22.7 5.3	27.5 6.5	21.4 6.5	26.2 6.9	20.4 6.9	25.1 7.7	19.4 7.7
47.3 2.8	38.4 2.8	44.0 3.3	35.5 3.3	41.3 4.2	33.0 4.2	38.9 4.6	30.8 4.6	36.7 5.8	29.0 5.8	34.8 6.3	27.3 6.3	33.2 7.2	25.8 7.2	31.6 8.1	24.5 8.1	30.3 9.0	23.4 9.0
55.3 3.1	45.0 3.1	51.5 3.7	41.5 3.7	48.3 4.6	38.6 4.6	45.5 5.4	36.1 5.4	43.0 6.7	33.9 6.7	40.8 7.3	32.0 7.3	38.8 8.8	30.3 8.8	37.0 9.4	28.7 9.4	35.4 10.1	27.3 10.1
63.4 3.7	51.5 3.7	59.1 4.4	47.6 4.4	55.3 5.4	44.2 5.4	52.1 6.3	41.3 6.3	49.3 7.7	38.8 7.7	46.7 8.2	36.6 8.2	44.5 9.8	34.7 9.8	42.4 10.6	32.9 10.6	40.6 11.8	31.3 11.8
71.2 3.9	57.9 3.9	66.4 5.0	53.5 5.0	62.2 6.0	49.7 6.0	58.6 6.9	46.5 6.9	55.4 8.4	43.6 8.4	52.5 9.2	41.2 9.2	50.0 10.7	39.0 10.7	47.7 12.0	37.0 12.0	45.6 13.2	35.2 13.2
79.3 4.2	64.4 4.2	73.9 5.6	59.5 5.6	69.2 6.6	55.3 6.6	65.2 7.8	51.7 7.8	61.6 9.3	48.6 9.3	58.5 10.2	45.8 10.2	55.6 12.0	43.4 12.0	53.1 13.2	41.2 13.2	50.7 14.5	39.2 14.5
3.8		4.3		4.8		5.3		5.7		6.2		6.7		7.1		7.5	

325		350		375		400		450		500		550		600		* 650		* 700		* 750		* 800	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
13.5	11.2	12.9	10.7	12.4	10.2	12.0	9.8	11.2	9.0	10.5	8.4	9.9 1.0	7.9 1.0	9.3 1.2	7.4 1.2	8.9 1.3	7.0 1.3	8.4 1.5	6.6 1.5	8.1 1.7	6.3 1.7	7.7 1.9	6.0 1.9
18.1	15.0	17.3	14.3	16.7	13.7	16.1	13.1	15.0 1.0	12.1 1.0	14.0 1.2	11.3 1.2	13.2 1.4	10.5 1.4	12.5 1.6	9.9 1.6	11.9 1.8	9.3 1.8	11.3 2.1	8.8 2.1	10.8 2.3	8.4 2.3	10.3 2.5	8.0 2.5
22.6	18.7	21.7	17.9	20.9	17.1	20.1	16.4	18.8 1.2	15.2 1.2	17.6 1.4	14.1 1.4	16.6 1.7	13.2 1.7	15.7 2.0	12.4 2.0	14.9 2.3	11.7 2.3	14.2 2.7	11.1 2.7	13.5 2.9	10.5 2.9	12.9 3.2	10.0 3.2
27.3	22.6	26.2	21.6	25.2	20.7	24.3 1.0	19.8 1.0	22.7 1.5	18.3 1.5	21.2 1.8	17.0 1.8	20.0 2.1	15.9 2.1	18.9 2.4	15.0 2.4	18.0 2.7	14.1 2.7	17.1 3.0	13.4 3.0	16.3 3.5	12.7 3.5	15.6 3.9	12.1 3.9
31.9 1.0	26.4 1.0	30.6 1.1	25.2 1.1	29.4 1.3	24.1 1.3	28.4 1.4	23.1 1.4	26.5 1.7	21.4 1.7	24.8 2.0	19.9 2.0	23.4 2.4	18.6 2.4	22.1 2.8	17.5 2.8	21.0 3.2	16.5 3.2	20.0 3.7	15.6 3.7	19.1 4.0	14.8 4.0	18.2 4.5	14.1 4.5
36.6 1.1	30.3 1.1	35.1 1.3	28.9 1.3	33.8 1.4	27.7 1.4	32.5 1.5	26.5 1.5	30.3 1.9	24.5 1.9	28.5 2.3	22.8 2.3	26.8 2.7	21.3 2.7	25.4 3.2	20.1 3.2	24.1 3.7	18.9 3.7	22.9 4.3	17.9 4.3	21.9 4.7	17.0 4.7	20.9 5.1	16.2 5.1
41.0 1.3	34.0 1.3	39.4 1.5	32.4 1.5	37.9 1.6	31.0 1.6	36.5 1.7	29.8 1.7	34.0 2.2	27.5 2.2	31.9 2.6	25.6 2.6	30.1 3.1	23.9 3.1	28.4 3.6	22.5 3.6	27.0 4.2	21.2 4.2	25.7 4.7	20.1 4.7	24.5 5.3	19.1 5.3	23.5 5.7	18.2 5.7
45.6 1.5	37.8 1.5	43.8 1.7	36.1 1.7	42.1 1.8	34.5 1.8	40.6 1.9	33.1 1.9	37.8 2.4	30.6 2.4	35.5 2.9	28.4 2.9	33.4 3.4	26.6 3.4	31.6 3.9	25.0 3.9	30.0 4.6	23.6 4.6	28.6 5.2	22.3 5.2	27.3 5.8	21.2 5.8	26.1 6.3	20.2 6.3
3.0		3.2		3.5		3.7		4.2		4.6		5.0		5.4		5.9		6.4		6.8		7.2	



* Require Fabricated Steel heads. Consult Factory for Dimensions.

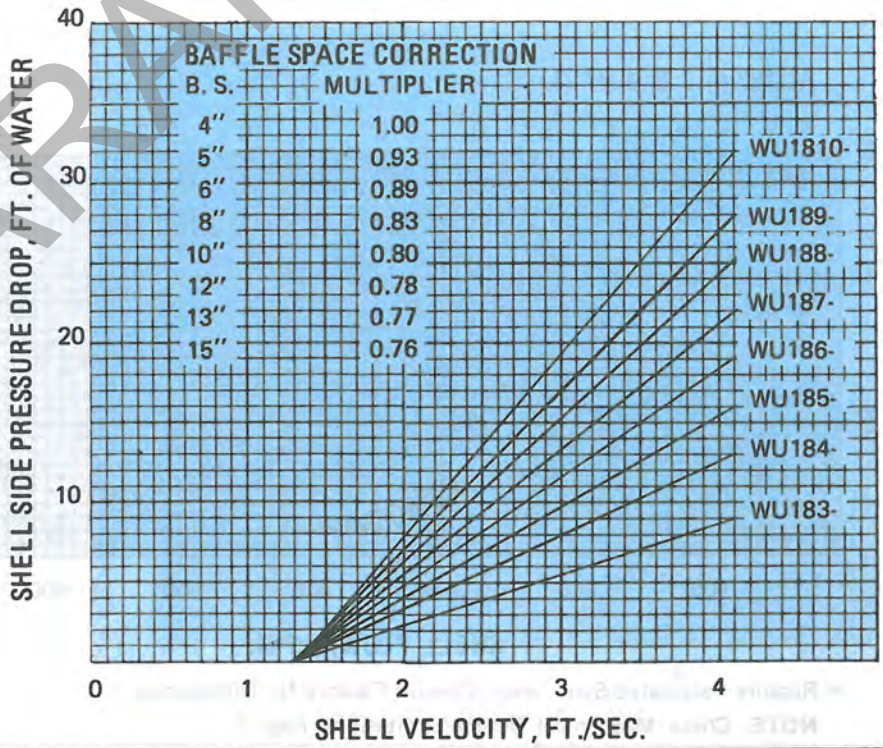
NOTE: Check Mechanical Design Limitations, Page 7.

18" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		4"	5"	6"	8"	10"	12"	13"	15"
	Shell Flow	A	140-200	201-250	251-300	301-400	401-500	501-600	601-650	651-750
	in G. P. M.	B	75-139	140-200	201-250	251-300	301-400	401-500	501-600	601-650

4 PASS	G. P. M. HEATED IN TUBES																			
	100		120		140		160		180		200		225		250		275		300	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU183-4( )	40.3	35.2	37.1	32.0	34.4	29.3	32.2	27.2	30.3	25.3	28.6	23.7	26.8 1.0	22.0 1.0	25.2 1.5	20.6 1.5	23.8 1.7	19.3 1.7	22.6 2.0	18.2 2.0
WU184-4( )	53.4	46.7	49.2	42.4	45.7	38.9	42.7	36.0	40.2 1.0	33.6 1.0	37.9 1.2	31.5 1.2	35.5 1.6	29.2 1.6	33.4 1.8	27.3 1.8	31.6 2.0	25.6 2.0	30.0 2.6	24.1 2.6
WU185-4( )	66.3	57.9	61.0	52.6	56.7 1.0	48.3 1.0	53.0 1.1	44.7 1.1	49.8 1.3	41.7 1.3	47.1 1.5	39.0 1.5	44.1 1.9	36.2 1.9	41.5 2.3	33.8 2.3	39.2 2.6	31.8 2.6	37.2 3.1	29.9 3.1
WU186-4( )	79.5	69.4	73.1	63.0	67.9 1.1	57.9 1.1	63.5 1.2	53.6 1.2	59.7 1.5	49.9 1.5	56.4 1.8	46.8 1.8	52.8 2.3	43.4 2.3	49.7 2.7	40.5 2.7	47.0 3.0	38.0 3.0	44.6 3.7	35.9 3.7
WU187-4( )	92.9	81.1	85.5 1.0	73.7 1.0	79.4 1.3	67.6 1.3	74.2 1.4	62.6 1.4	69.8 1.7	58.4 1.7	65.9 2.1	54.7 2.1	61.8 2.6	50.8 2.6	58.1 3.1	47.4 3.1	55.0 3.6	44.5 3.6	52.1 4.3	41.9 4.3
WU188-4( )	106.1 1.0	92.6 1.0	97.6 1.2	84.1 1.2	90.6 1.4	77.2 1.4	84.7 1.6	71.5 1.6	79.7 1.8	66.6 1.8	75.3 2.3	62.4 2.3	70.5 3.0	58.0 3.0	66.4 3.6	54.1 3.6	62.7 3.9	50.8 3.9	59.5 4.8	47.9 4.8
WU189-4( )	119.2 1.2	104.1 1.2	109.7 1.4	94.6 1.4	101.8 1.6	86.8 1.6	95.2 1.9	80.4 1.9	89.6 2.1	74.9 2.1	84.6 2.6	70.2 2.6	79.3 3.3	65.1 3.3	74.6 3.8	60.8 3.8	70.5 4.5	57.1 4.5	66.9 5.4	53.8 5.4
WU1810-4( )	132.4 1.4	115.6 1.4	121.8 1.6	105.0 1.6	113.1 1.8	96.4 1.8	105.7 22.2	89.2 2.2	99.5 2.5	83.2 2.5	94.0 3.0	77.9 3.0	88.0 3.7	72.3 3.7	82.8 4.3	67.5 4.3	78.3 5.3	63.4 5.3	74.3 5.8	59.7 5.8
4-P T.V.	1.5 ft./sec.		1.8		2.1		2.4		2.8		3.0		3.3		3.7		4.2		4.5	

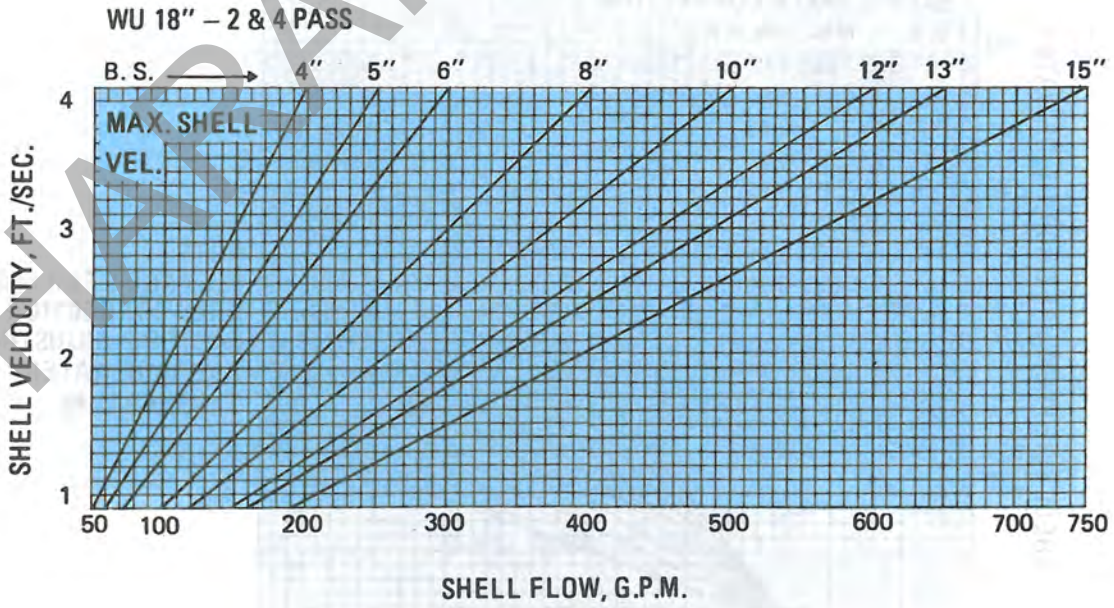
2 PASS	G. P. M. HEATED IN TUBES																			
	200		225		250		275		300		325		350		375		400		450	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU183-2( )	20.1	17.6	19.1	16.5	18.2	15.6	17.4	14.8	16.6	14.1	16.0	13.5	15.4	12.9	14.8	12.3	14.3	11.9	13.4	11.0
WU184-2( )	26.7	23.3	25.3	21.9	24.1	20.7	23.0	19.7	22.1	18.7	21.2	17.8	20.4	17.1	19.6	16.4	19.0	15.7	17.8	14.6
WU185-2( )	33.2	29.0	31.4	27.2	29.9	25.7	28.6	24.4	27.4	23.2	26.3	22.1	25.3	21.2	24.4	20.3	23.5	19.5	22.0	18.1
WU186-2( )	39.7	34.7	37.7	32.6	35.9	30.8	34.3	29.2	32.8	27.8	31.5	26.5	30.3	25.4	29.2	24.3	28.2	23.4	26.4 1.0	21.7 1.0
WU187-2( )	46.5	40.6	44.0	38.1	41.9	36.0	40.0	34.2	38.3	32.5	36.8	31.0	35.4	29.7	34.1	28.5	33.0	27.3	30.9 1.1	25.4 1.1
WU188-2( )	53.0	46.3	50.3	43.5	47.9	41.1	45.7	39.0	43.8	37.1	42.0	35.4	40.4	33.9	39.0	32.5	37.6 1.0	31.2 1.0	35.3 1.3	29.0 1.3
WU189-2( )	59.6	52.1	56.5	48.9	53.8	46.2	51.4	43.8	49.2	41.7	47.2	39.8	45.5	38.1	43.8 1.0	36.5 1.0	42.3 1.2	35.1 1.2	39.6 1.5	32.6 1.5
WU1810-2( )	66.2	57.8	62.8	54.4	59.7	51.3	57.0	48.7	54.6	46.3	52.5	44.2	50.5	42.3	48.7 1.2	40.6 1.2	47.0 1.4	39.0 1.4	44.0 1.7	36.2 1.7
2-P T.V.	1.5 ft./sec.		1.7		1.9		2.1		2.3		2.5		2.6		2.8		3.0		3.3	



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

*		*		*		*		*		*	
325		350		375		400		450		500	
A	B	A	B	A	B	A	B	A	B	A	B
21.5 2.3	17.2 2.3	20.5 2.8	16.3 2.8	19.6 3.0	15.5 3.0	18.8 3.3	14.8 3.3	17.4 4.3	13.6 4.3	16.2 4.9	12.5 4.9
28.5 3.1	22.8 3.1	27.2 3.3	21.6 3.3	26.1 3.6	20.6 3.6	25.0 4.2	19.7 4.2	23.1 5.1	18.0 5.1	21.5 6.2	16.6 6.2
35.4 3.7	28.3 3.7	33.8 4.0	26.9 4.0	32.3 4.9	25.6 4.9	31.0 5.2	24.4 5.2	28.7 6.6	22.4 6.6	26.7 7.6	20.7 7.6
42.5 4.4	33.9 4.4	40.5 4.7	32.2 4.7	38.8 5.4	30.6 5.4	37.2 6.1	29.2 6.1	34.4 7.6	26.8 7.6	32.0 8.9	24.8 8.9
49.6 5.0	39.7 5.0	47.4 5.4	37.6 5.4	45.3 6.4	35.8 6.4	43.4 7.0	34.2 7.0	40.2 8.5	31.3 8.5	37.4 10.3	28.9 10.3
56.7 5.8	45.3 5.8	54.1 6.5	43.0 6.5	51.7 7.2	40.9 7.2	49.6 7.9	39.0 7.9	45.9 9.7	35.8 9.7	42.7 11.6	33.0 11.6
63.7 6.1	50.9 6.1	60.8 7.2	48.3 7.2	58.1 8.3	46.0 8.3	55.8 8.9	43.9 8.9	51.5 10.8	40.2 10.8	48.0 12.9	37.1 12.9
70.7 7.0	56.5 7.0	67.5 8.0	53.6 8.0	64.6 8.9	51.0 8.9	61.9 9.8	48.7 9.8	57.2 12.1	44.6 12.1	53.3 14.3	41.2 14.3
5.0		5.3		5.7		6.0		6.7		7.5	

										*		*		*		*		*	
500		550		600		650		700		750		800		850		900		950		1000	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
12.6	10.3	11.9	9.6	11.3	9.1	10.8	8.6	10.3 1.1	8.2 1.1	9.8 1.2	7.8 1.2	9.4 1.4	7.4 1.4	9.0 1.5	7.1 1.5	8.7 1.7	6.8 1.7	8.4 1.8	6.5 1.8	8.1 2.0	6.3 2.0
16.7	13.6	15.8 1.0	12.8 1.0	15.0 1.1	12.1 1.1	14.3 1.2	11.4 1.2	13.6 1.5	10.8 1.5	13.0 1.7	10.3 1.7	12.5 1.9	9.8 1.9	12.0 2.0	9.4 2.0	11.6 2.2	9.0 2.2	11.1 2.5	8.7 2.5	10.7 2.7	8.3 2.7
20.8 1.0	16.9 1.0	19.6 1.2	15.9 1.2	18.6 1.4	15.0 1.4	17.7 1.6	14.2 1.6	16.9 1.8	13.4 1.8	16.2 1.9	12.8 1.9	15.5 2.3	12.2 2.3	14.9 2.5	11.7 2.5	14.3 2.8	11.2 2.8	13.8 3.1	10.7 3.1	13.3 3.4	10.3 3.4
24.9 1.2	20.3 1.2	23.5 1.5	19.0 1.5	22.3 1.7	17.9 1.7	21.2 1.8	17.0 1.8	20.3 2.2	16.1 2.2	19.4 2.5	15.3 2.5	18.6 2.8	14.6 2.8	17.9 3.0	14.0 3.0	17.2 3.4	13.4 3.4	16.6 3.7	12.9 3.7	16.0 4.0	12.4 4.0
29.1 1.4	23.7 1.4	27.5 1.7	22.2 1.7	26.1 2.0	21.0 2.0	24.8 2.2	19.8 2.2	23.7 2.6	18.8 2.6	22.7 2.9	17.9 2.9	21.7 3.3	17.1 3.3	20.9 3.5	16.3 3.5	20.1 4.0	15.7 4.0	19.4 4.4	15.0 4.4	18.7 4.7	14.5 4.7
33.2 1.5	27.1 1.5	31.4 1.8	25.4 1.8	29.8 2.2	23.9 2.2	28.3 2.5	22.6 2.5	27.0 2.9	21.5 2.9	25.9 3.2	20.4 3.2	24.8 3.7	19.5 3.7	23.8 3.9	18.7 3.9	22.9 4.6	17.9 4.6	22.1 4.9	17.2 4.9	21.3 5.4	16.5 5.4
37.3 1.7	30.4 1.7	35.3 2.1	28.5 2.1	33.5 2.3	26.9 2.3	31.8 2.8	25.4 2.8	30.4 3.2	24.1 3.2	29.1 3.6	23.0 3.6	27.9 4.2	21.9 4.2	26.8 4.4	21.0 4.4	25.8 5.1	20.1 5.1	24.8 5.5	19.3 5.5	24.0 6.1	18.6 6.1
41.4 1.8	33.8 1.8	39.2 2.3	31.7 2.3	37.1 2.7	29.9 2.7	35.4 3.2	28.2 3.2	33.7 3.6	26.8 3.6	32.3 4.0	25.5 4.0	31.0 4.6	24.4 4.6	29.7 4.9	23.3 4.9	28.6 5.7	22.3 5.7	27.6 6.1	21.4 6.1	26.6 6.7	20.6 6.7
3.7		4.1		4.4		4.8		5.2		5.6		6.0		6.3		6.7		7.1		7.4	



* Require Fabricated Steel heads. Consult Factory for Dimensions.

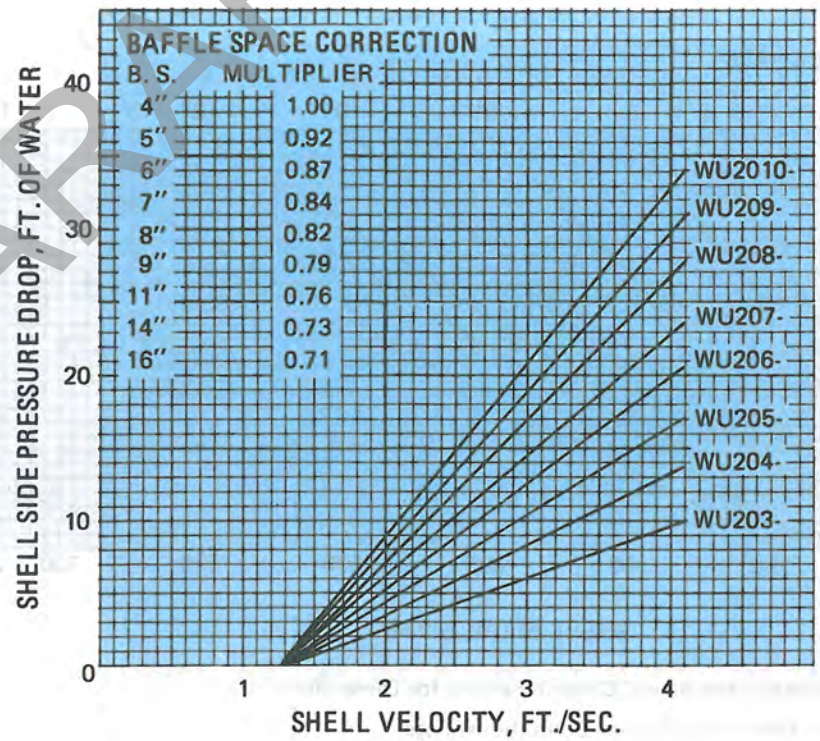
NOTE: Check Mechanical Design Limitations, Page 7.

20" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		4"	5"	6"	7"	8"	9"	11"	14"	16"
	Shell Flow in G.P.M.	A	170-220	221-280	281-335	336-390	391-450	451-500	501-620	621-780	781-900
		B	85-169	170-220	221-280	281-335	336-390	391-450	451-500	501-620	621-780

4 PASS	G. P. M. HEATED IN TUBES																							
	100		120		140		160		180		200		225		250		275		300		325		350		375	
	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
WU203-4( )	44.3	39.4	41.1	36.1	38.4	33.3	36.1	31.0	34.1	29.1	32.3	27.4	30.4	25.5	28.8	24.0	27.3	22.6	26.0 1.1	21.4 1.1	24.8 1.3	20.3 1.3	23.8 1.5	19.3 1.5	22.8 1.7	18.4 1.7
WU204-4( )	59.1	52.6	54.8	48.1	51.1	44.5	48.1	41.4	45.4	38.8	43.1	36.5	40.6	34.1	38.4 1.0	31.9 1.0	36.4 1.2	30.1 1.2	34.7 1.5	28.5 1.5	33.1 1.8	27.0 1.8	31.7 1.9	25.7 1.9	30.4 2.2	24.6 2.2
WU205-4( )	73.9	65.7	68.4	60.1	63.9	55.6	60.1	51.7	56.8	48.5	53.9	45.6	50.7 1.2	42.6 1.2	48.0 1.3	39.9 1.3	45.5 1.5	37.6 1.5	43.4 1.8	35.6 1.8	41.4 2.2	33.8 2.2	39.6 2.4	32.2 2.4	38.0 2.6	30.7 2.6
WU206-4( )	88.7	78.9	82.1	72.2	76.7	66.7	72.1	62.1	68.1	58.2	64.7	54.8	60.9 1.4	51.1 1.4	57.6 1.6	47.9 1.6	54.6 1.9	45.1 1.9	52.0 2.1	42.7 2.1	49.7 2.6	40.5 2.6	47.6 2.8	38.6 2.8	45.6 3.1	36.8 3.1
WU207-4( )	103.2	91.8	95.6	84.0	89.3	77.6	83.9	72.3	79.3	67.7	75.3 1.1	63.7 1.1	70.8 1.5	59.5 1.5	67.0 1.8	55.8 1.8	63.6 2.0	52.5 2.0	60.6 2.5	49.7 2.5	57.8 3.0	47.2 3.0	55.4 3.2	44.9 3.2	53.1 3.5	42.9 3.5
WU208-4( )	118.0	105.0	109.3	96.0	102.1	88.7	96.0	82.6	90.7 1.0	77.4 1.0	86.0 1.2	72.9 1.2	81.0 1.6	68.0 1.6	76.6 1.9	63.8 1.9	72.7 2.3	60.1 2.3	69.2 2.8	56.8 2.8	66.1 3.3	53.9 3.3	63.3 3.6	51.3 3.6	60.7 4.0	49.0 4.0
WU209-4( )	132.8	118.1	123.0	108.1	114.9	99.9	108.0	93.0	102.0 1.2	87.1 1.2	96.8 1.4	82.0 1.4	91.1 1.8	76.5 1.8	86.2 2.0	71.7 2.0	81.8 2.6	67.6 2.6	77.9 3.0	63.9 3.0	74.4 3.5	60.7 3.5	71.2 4.1	57.8 4.1	68.4 4.6	55.1 4.6
WU2010-4( )	147.6	131.3	136.7	120.1	127.6	111.0	120.0 1.2	103.3 1.2	113.4 1.4	96.8 1.4	107.6 1.6	91.1 1.6	101.3 2.0	85.0 2.0	95.8 2.3	79.7 2.3	90.9 3.0	75.1 3.0	86.6 3.4	71.1 3.4	82.7 3.7	67.4 3.7	79.2 4.5	64.2 4.5	76.0 4.9	61.3 4.9
4-P T.V.	1.1 ft./sec.		1.3		1.5		1.8		2.0		2.2		2.5		2.8		3.1		3.4		3.7		4.0		4.2	

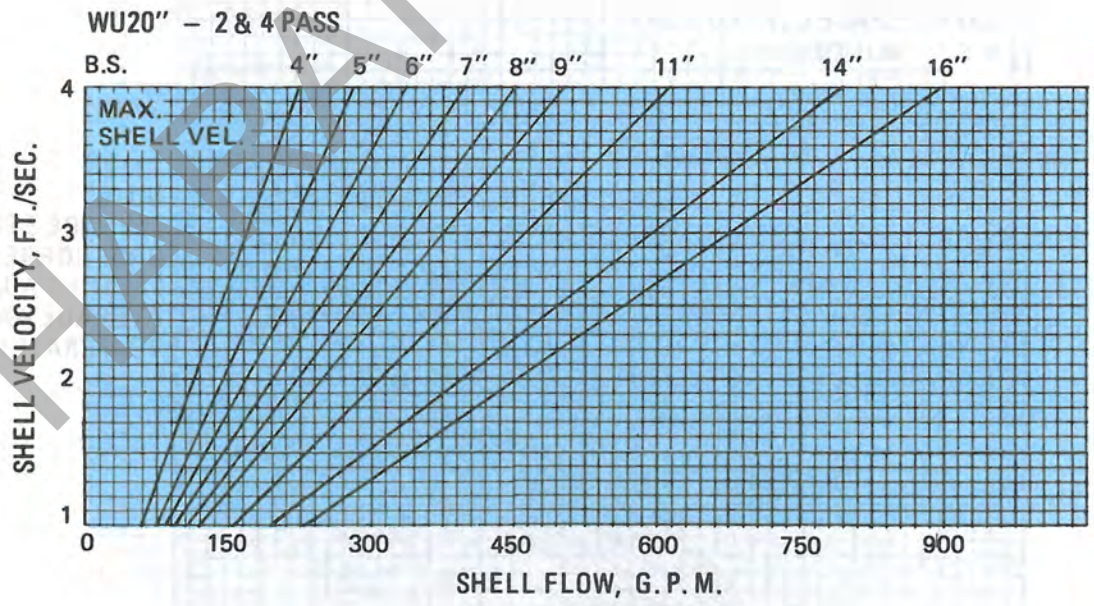
2 PASS	G. P. M. HEATED IN TUBES																							
	200		225		250		275		300		325		350		375		400		450		500		550		600	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU203-2( )	22.3	19.9	21.3	18.8	20.3	17.9	19.5	17.0	18.8	16.3	18.1	15.6	17.4	15.0	16.9	14.4	16.3	13.9	15.4	12.9	14.6	12.1	13.8	11.5	13.2	10.8
WU204-2( )	29.8	26.6	28.4	25.1	27.2	23.9	26.0	22.7	25.0	21.7	24.1	20.8	23.3	20.0	22.5	19.2	21.8	18.5	20.5	17.3	19.4	16.2	18.5	15.3	17.6	14.5
WU205-2( )	37.3	33.3	35.5	31.4	34.0	29.8	32.6	28.4	31.3	27.2	30.2	26.0	29.1	25.0	28.2	24.0	27.3	23.2	25.7	21.6	24.3	20.3	23.1	19.1	22.0	18.1
WU206-2( )	44.7	39.8	42.6	37.7	40.7	35.7	39.0	34.0	37.5	32.5	36.1	31.2	34.9	29.9	33.7	28.8	32.7	27.7	30.8	25.9	29.1	24.3	27.7	22.9	26.3	21.7
WU207-2( )	52.2	46.5	49.7	44.0	47.5	41.7	45.6	39.7	43.8	38.0	42.2	36.4	40.7	34.9	39.4	33.6	38.2	32.4	35.9	30.2	34.0	28.4	32.3	26.7	30.8 1.2	25.3 1.2
WU208-2( )	59.5	53.1	56.7	50.2	54.2	47.6	52.0	45.4	50.0	43.3	48.2	41.5	46.5	39.9	45.0	38.4	43.6	37.0	41.0	34.5	38.8	32.4	36.8 1.1	30.5 1.1	35.1 1.3	28.9 1.3
WU209-2( )	67.0	59.8	63.9	56.5	61.0	53.6	58.5	51.1	56.3	48.8	54.2	46.7	52.3	44.9	50.6	43.2	49.0	41.6	46.2	38.8	43.7 1.0	36.4 1.0	41.5 1.2	34.4 1.2	39.5 1.5	32.5 1.5
WU2010-2( )	74.5	66.4	71.0	62.8	67.9	59.6	65.1	56.8	62.6	54.2	60.3	52.0	58.2	49.9	56.3	48.0	54.5	46.3	51.3	43.2	48.6 1.3	40.5 1.3	46.1 1.4	38.2 1.4	43.9 1.6	36.1 1.6
2-P T.V.	1.1 ft./sec.		1.2		1.4		1.6		1.7		1.8		1.9		2.1		2.2		2.4		2.7		3.0		3.3	



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

400		450		500		550		600		650	
A	B	A	B	A	B	A	B	A	B	A	B
21.9	17.6	20.4	16.2	19.1	15.0	17.9	14.0	16.9	13.2	16.0	12.4
2.0	2.0	2.4	2.4	3.0	3.0	3.4	3.4	3.8	3.8	4.5	4.5
29.3	23.5	27.2	21.6	25.4	20.1	23.9	18.7	22.5	17.5	21.3	16.5
2.5	2.5	3.1	3.1	3.7	3.7	4.3	4.3	5.0	5.0	5.7	5.7
36.6	29.4	34.0	27.0	31.8	25.1	29.8	23.4	28.1	21.9	26.6	20.6
3.0	3.0	3.7	3.7	5.0	5.0	5.3	5.3	6.0	6.0	7.0	7.0
43.9	35.2	40.8	32.5	38.1	30.1	35.8	28.1	33.8	26.3	32.0	24.8
3.6	3.6	4.4	4.4	5.2	5.2	6.2	6.2	7.4	7.4	8.0	8.0
51.1	41.0	47.5	37.8	44.4	35.0	41.7	32.7	39.3	30.6	37.2	28.8
3.7	3.7	5.1	5.1	6.0	6.0	7.1	7.1	7.7	7.7	9.7	9.7
58.4	46.9	54.3	43.2	50.7	40.0	47.6	37.4	44.9	35.0	42.5	33.0
4.6	4.6	5.8	5.8	7.0	7.0	8.2	8.2	9.6	9.6	10.6	10.6
65.7	52.8	61.1	48.6	57.1	45.1	53.6	42.0	50.6	39.4	47.9	37.1
5.0	5.0	6.4	6.4	7.8	7.8	9.0	9.0	10.6	10.6	12.0	12.0
73.0	58.6	67.9	54.0	63.4	50.1	59.6	46.7	56.2	43.8	53.2	41.2
5.7	5.7	7.1	7.1	8.5	8.5	10.0	10.0	11.8	11.8	13.6	13.6
4.5		5.0		5.6		6.1		6.6		7.1	

650		700		750		800		850		900		950		1000		1050		1100		1150		1200		1300 *		1400 *	
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
12.6	10.3	12.1	9.8	11.6	9.4	11.1	9.0	10.7	8.6	10.3	8.3	10.0	7.9	9.7	7.7	9.4	7.4	9.1	7.1	8.8	6.9	8.6	6.7	8.1	6.3	7.7	6.0
												1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.5	1.5	1.6	1.6	1.8	1.8	2.0	2.0
16.8	13.7	16.1	13.1	15.4	12.5	14.9	12.0	14.3	11.5	13.8	11.0	13.3	10.6	12.9	10.2	12.5	9.9	12.1	9.5	11.8	9.2	11.5	8.9	10.8	8.4	10.3	8.0
				1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	2.0	2.0	2.1	2.1	2.4	2.4	2.7	2.7
21.0	17.2	20.1	16.4	19.3	15.6	18.6	15.0	17.9	14.3	17.3	13.8	16.7	13.3	16.2	12.8	15.7	12.3	15.2	11.9	14.7	11.5	14.3	11.2	13.6	10.5	12.9	10.0
		1.0	1.0	1.1	1.1	1.3	1.3	1.4	1.4	1.6	1.6	1.8	1.8	1.9	1.9	2.0	2.0	2.2	2.2	2.4	2.4	2.5	2.5	3.0	3.0	3.4	3.4
25.2	20.6	24.1	19.6	23.1	18.7	22.3	17.9	21.4	17.2	20.7	16.5	20.0	15.9	19.4	15.3	18.7	14.8	18.2	14.3	17.7	13.8	17.2	13.4	16.3	12.6	15.4	11.9
		1.2	1.2	1.5	1.5	1.6	1.6	1.8	1.8	1.9	1.9	2.1	2.1	2.2	2.2	2.6	2.6	2.7	2.7	2.9	2.9	3.0	3.0	3.6	3.6	4.0	4.0
29.4	24.0	28.1	22.9	27.0	21.9	26.0	20.9	25.0	20.1	24.2	19.3	23.3	18.5	22.6	17.9	21.9	17.3	21.2	16.7	20.6	16.1	20.0	15.6	19.0	14.7	18.0	13.9
1.3	1.3	1.4	1.4	1.7	1.7	1.8	1.8	2.1	2.1	2.3	2.3	2.5	2.5	2.6	2.6	2.8	2.8	3.2	3.2	3.4	3.4	3.5	3.5	4.2	4.2	4.7	4.7
33.5	27.4	32.1	26.1	30.8	24.9	29.7	23.9	28.6	22.9	27.6	22.0	26.6	21.2	25.8	20.4	25.0	19.7	24.2	19.0	23.5	18.4	22.9	17.9	21.7	16.8	20.6	15.9
1.5	1.5	1.6	1.6	1.9	1.9	2.1	2.1	2.4	2.4	2.6	2.6	2.8	2.8	3.0	3.0	3.2	3.2	3.6	3.6	3.8	3.8	3.9	3.9	4.8	4.8	5.4	5.4
37.8	30.9	36.2	29.4	34.7	28.1	33.4	26.9	32.2	25.8	31.0	24.8	30.0	23.8	29.0	23.0	28.1	22.2	27.3	21.4	26.5	20.7	25.7	20.1	24.4	18.9	23.2	17.9
1.6	1.6	1.8	1.8	2.1	2.1	2.3	2.3	2.6	2.6	2.9	2.9	3.1	3.1	3.5	3.5	3.9	3.9	4.1	4.1	4.3	4.3	4.4	4.4	5.4	5.4	6.1	6.1
42.0	34.3	40.2	32.7	38.6	31.2	37.1	29.9	35.8	28.6	34.5	27.5	33.3	26.5	32.3	25.5	31.3	24.7	30.3	23.8	29.4	23.1	28.6	22.3	27.1	21.0	25.7	19.9
1.7	1.7	2.0	2.0	2.3	2.3	2.6	2.6	3.0	3.0	3.3	3.3	3.5	3.5	3.8	3.8	4.2	4.2	4.5	4.5	4.8	4.8	5.0	5.0	6.0	6.0	6.7	6.7
3.6		3.8		4.1		4.4		4.6		4.9		5.2		5.5		5.7		5.9		6.2		6.5		7.0		7.5	



* Require Fabricated Steel heads. Consult Factory for Dimensions.

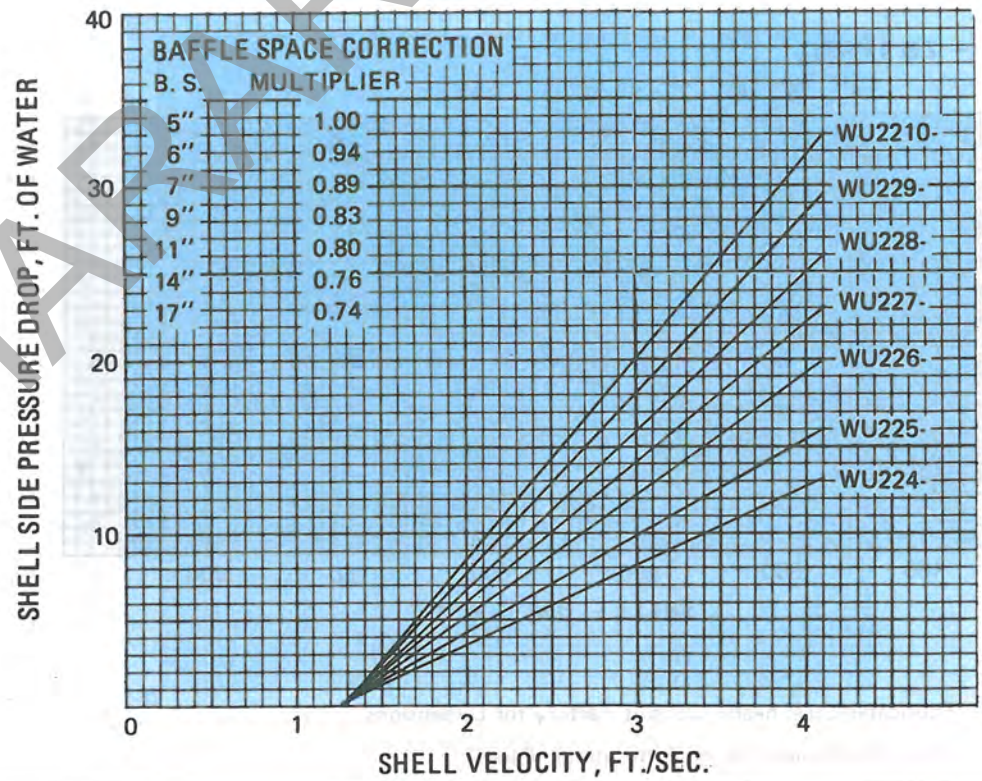
NOTE: Check Mechanical Design Limitations, Page 7.

22" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		5"	6"	7"	9"	11"	14"	17"
	Shell Flow	A	235-315	316-370	371-435	436-560	561-690	691-880	881-1070
	in G. P. M.	B	115-234	235-315	316-370	371-435	436-560	561-690	691-880

4 PASS	G. P. M. HEATED IN TUBES																					
	150		200		250		300		350		400		450		500		550		600		650	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU224-4( )	57.5	50.4	50.4	43.3	45.2	38.1	41.0	34.2	37.7 1.2	31.0 1.2	34.9 1.5	28.5 1.5	32.6 1.9	26.3 1.9	30.5 2.3	24.5 2.3	28.8 2.7	22.9 2.7	27.2 3.2	21.5 3.2	25.8 3.6	20.3 3.6
WU225-4( )	70.9	62.2	62.2	53.4	55.7	47.1	50.6 1.2	42.2 1.2	46.5 1.5	38.3 1.5	43.1 1.9	35.1 1.9	40.2 2.4	32.5 2.4	37.7 2.9	30.2 2.9	35.5 3.4	28.2 3.4	33.6 4.0	26.5 4.0	31.9 4.6	25.0 4.6
WU226-4( )	84.4	74.0	74.0	63.6	66.3 1.0	56.0 1.0	60.2 1.4	50.2 1.4	55.3 1.9	45.6 1.9	51.3 2.4	41.8 2.4	47.8 2.9	38.6 2.9	44.8 3.5	35.9 3.5	42.2 4.1	33.6 4.1	39.9 4.8	31.6 4.8	37.9 5.6	29.8 5.6
WU227-4( )	98.0	85.9	85.9	73.8	77.0 1.2	65.0 1.2	70.0 1.7	58.3 1.7	64.3 2.2	52.9 2.2	59.5 2.8	48.5 2.8	55.5 3.4	44.8 3.4	52.1 4.1	41.7 4.1	49.0 4.9	39.0 4.9	46.4 5.7	36.7 5.7	44.0 6.5	34.6 6.5
WU228-4( )	111.4	97.7	97.7 1.1	83.9 1.1	87.5 1.5	73.9 1.5	79.6 1.9	66.3 1.9	73.1 2.5	60.2 2.5	67.7 3.2	55.2 3.2	63.1 3.9	51.0 3.9	59.2 4.7	47.4 4.7	55.8 5.6	44.4 5.6	52.7 6.5	41.7 6.5	50.1 7.5	39.3 7.5
WU229-4( )	124.8	109.5	109.5 1.4	94.1 1.4	98.1 1.8	82.9 1.8	89.1 2.1	74.3 2.1	81.9 2.8	67.4 2.8	75.9 3.6	61.8 3.6	70.8 4.4	57.1 4.4	66.3 5.3	53.1 5.3	62.5 6.3	49.7 6.3	59.1 7.3	46.7 7.3	56.1 8.5	44.1 8.5
WU2210-4( )	138.3 1.1	121.3 1.1	121.3 1.7	104.2 1.7	108.6 2.1	91.8 2.1	98.7 2.4	82.3 2.4	90.7 3.1	74.7 3.1	84.0 4.0	68.5 4.0	78.4 4.9	63.3 4.9	73.5 5.9	58.9 5.9	69.2 7.0	55.1 7.0	65.5 8.2	51.7 8.2	62.1 9.4	48.8 9.4
4-P T.V.	1.4 ft./sec.		1.8		2.3		2.7		3.2		3.6		4.1		4.5		5.0		5.5		5.9	

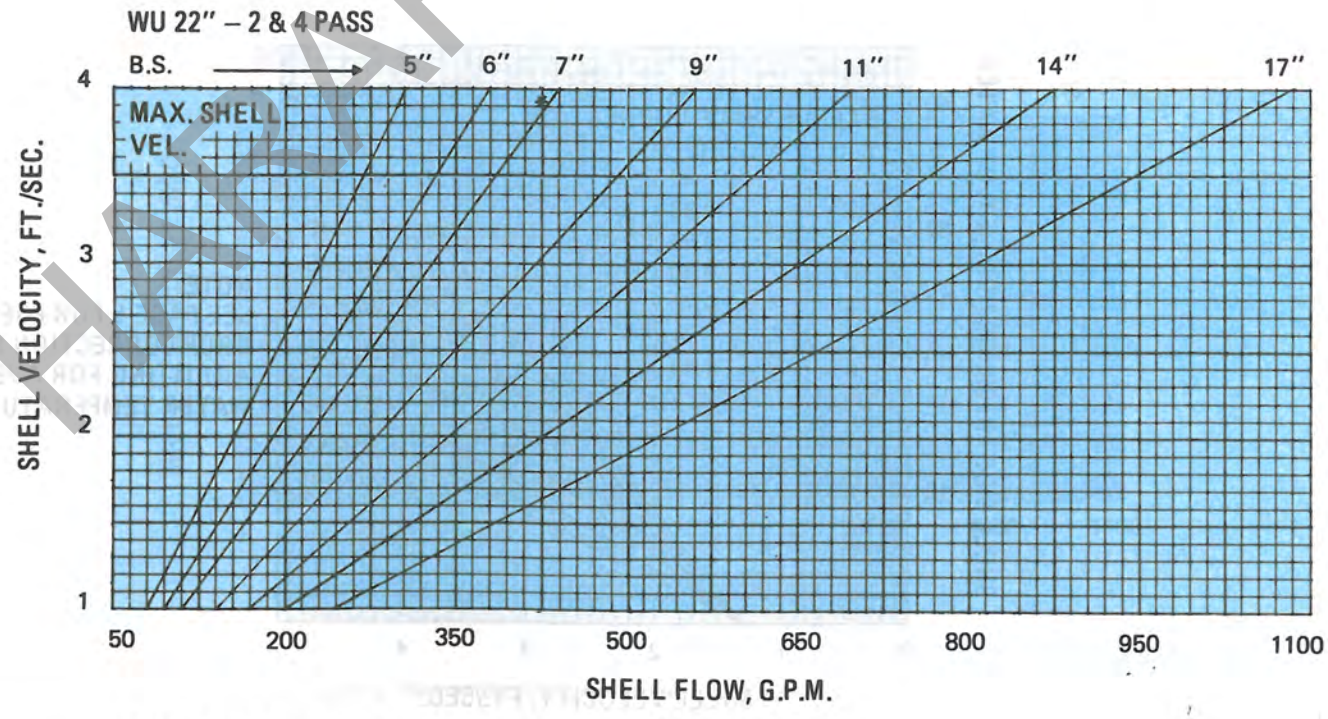
2 PASS	G. P. M. HEATED IN TUBES																					
	300		350		400		450		500		550		600		650		700		750		800	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU224-2( )	29.0	25.5	27.1	23.6	25.5	21.9	24.1	20.5	22.8	19.3	21.8	18.3	20.8	17.3	19.9	16.5	19.1	15.8	18.4	15.1	17.7	14.5
WU225-2( )	35.8	31.5	33.5	29.1	31.4	27.1	29.7	25.4	28.2	23.9	26.8	22.6	25.6	21.4	24.6	20.4	23.6	19.4	22.7	18.6	21.9	17.8
WU226-2( )	42.6	37.4	39.8	34.6	37.4	32.2	35.4	30.2	33.5	28.4	31.9	26.8	30.5	25.5	29.2	24.2	28.0	23.1	27.0 1.0	22.1 1.0	26.0 1.1	21.2 1.1
WU227-2( )	49.5	43.5	46.2	40.2	43.5	37.4	41.1	35.0	39.0	33.0	37.1	31.2	35.4	29.6	33.9	28.2	32.6 1.0	26.9 1.0	31.3 1.2	25.7 1.2	30.2 1.3	24.7 1.3
WU228-2( )	56.2	49.4	52.5	45.6	49.4	42.5	46.6	39.8	44.2	37.5	42.1	35.4	40.2	33.6	38.5 1.0	32.0 1.0	37.0 1.2	30.5 1.2	35.6 1.3	29.2 1.3	34.3 1.5	28.0 1.5
WU229-2( )	63.1	55.4	58.9	51.2	55.4	47.7	52.3	44.7	49.7	42.0	47.3	39.7	45.2 1.0	37.7 1.0	43.3 1.2	35.9 1.2	41.5 1.3	34.3 1.3	39.9 1.5	32.8 1.5	38.5 1.7	31.4 1.7
WU2210-2( )	70.0	61.5	65.4	56.8	61.4	52.9	58.1	49.5	55.1	46.6	52.5 1.0	44.1 1.0	50.1 1.1	41.8 1.1	48.0 1.3	39.8 1.3	46.1 1.5	38.0 1.5	44.3 1.7	36.4 1.7	42.7 1.9	34.9 1.9
2-P T.V.	1.4 ft./sec.		1.6		1.8		2.0		2.2		2.4		2.6		2.9		3.1		3.3		3.5	



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

700		750		800	
A	B	A	B	A	B
24.6 4.1	19.2 4.1	23.5 4.7	18.2 4.7	22.4 5.3	17.4 5.3
30.3 5.3	23.7 5.3	28.9 5.9	22.5 5.9	27.7 6.7	21.4 6.7
36.1 6.4	28.2 6.4	34.4 7.2	26.8 7.2	32.9 8.0	25.5 8.0
41.9 7.5	32.7 7.5	40.0 8.4	31.1 8.4	38.2 9.4	29.6 9.4
47.6 8.6	37.2 8.6	45.5 4.7	35.4 4.7	43.5 10.8	33.7 10.8
53.4 9.7	41.7 9.7	51.0 10.9	39.6 10.9	48.7 12.2	37.7 12.2
59.1 10.7	46.2 10.7	56.4 12.1	43.9 12.1	54.0 13.6	41.8 13.6
6.4		6.8		7.3	

850		900		950		1000		1050		1100		1150		1200		1300		1400		1500		1600		1700	
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
17.1	13.9	16.5	13.4	16.0 1.0	12.9 1.0	15.5 1.1	12.4 1.1	15.0 1.2	12.0 1.2	14.6 1.3	11.6 1.3	14.2 1.4	11.3 1.4	13.8 1.5	10.9 1.5	13.1 1.7	10.3 1.7	12.5 2.0	9.8 2.0	11.9 2.2	9.3 2.2	11.4 2.5	8.8 2.5	10.9 2.8	8.4 2.8
21.1 1.0	17.1 1.0	20.4 1.1	16.5 1.1	19.7 1.2	15.9 1.2	19.1 1.4	15.3 1.4	18.6 1.6	14.8 1.6	18.0 1.6	14.4 1.6	17.5 1.8	13.9 1.8	17.1 1.9	13.5 1.9	16.2 2.2	12.7 2.2	15.4 2.5	12.1 2.5	14.7 2.8	11.5 2.8	14.1 3.1	10.9 3.1	13.5 3.5	10.4 3.5
25.1 1.2	20.4 1.2	24.3 1.4	19.6 1.4	23.5 1.5	18.9 1.5	22.8 1.6	18.3 1.6	22.1 1.8	17.7 1.8	21.4 2.0	17.1 2.0	20.8 2.1	16.6 2.1	20.3 2.3	16.1 2.3	19.3 2.6	15.2 2.6	18.3 3.0	14.4 3.0	17.5 3.4	13.6 3.4	16.7 3.8	13.0 3.8	16.1 4.2	12.4 4.2
29.1 1.5	23.7 1.5	28.2 1.6	22.8 1.6	27.3 1.8	22.0 1.8	26.4 1.9	21.2 1.9	25.6 2.0	20.5 2.0	24.9 2.3	19.8 2.3	24.2 2.5	19.2 2.5	23.6 2.7	18.7 2.7	22.4 3.1	17.6 3.1	21.3 3.5	16.7 3.5	20.3 4.0	15.8 4.0	19.5 4.4	15.1 4.4	18.7 5.0	14.4 5.0
33.1 1.7	26.9 1.7	32.0 1.8	25.9 1.8	31.0 2.0	25.0 2.0	30.0 2.2	24.1 2.2	29.1 2.4	23.3 2.4	28.3 2.6	22.5 2.6	27.5 2.8	21.8 2.8	26.8 3.1	21.2 3.1	25.4 3.5	20.0 3.5	24.2 4.0	18.9 4.0	23.1 4.6	18.0 4.6	22.1 5.1	17.1 5.1	21.2 5.7	16.4 5.7
37.2 1.9	30.2 1.9	35.9 2.1	29.1 2.1	34.8 2.3	28.0 2.3	33.7 2.5	27.0 2.5	32.7 2.8	26.1 2.8	31.7 3.0	25.3 3.0	30.9 3.2	24.5 3.2	30.0 3.5	23.8 3.5	28.5 4.0	22.4 4.0	27.1 4.5	21.2 4.5	25.9 5.1	20.2 5.1	24.8 5.8	19.2 5.8	23.8 6.4	18.4 6.4
41.2 2.1	33.5 2.1	39.8 2.3	32.2 2.3	38.6 2.5	31.1 2.5	37.4 2.8	30.0 2.8	36.3 3.0	29.0 3.0	35.2 3.3	28.1 3.3	34.2 3.6	27.2 3.6	33.3 3.9	26.4 3.9	31.6 4.4	24.9 4.4	30.1 5.1	23.6 5.1	28.7 5.7	22.4 5.7	27.5 6.4	21.3 6.4	26.4 7.2	20.4 7.2
3.7		4.0		4.2		4.4		4.6		4.8		5.1		5.3		5.7		6.2		6.6		7.0		7.5	



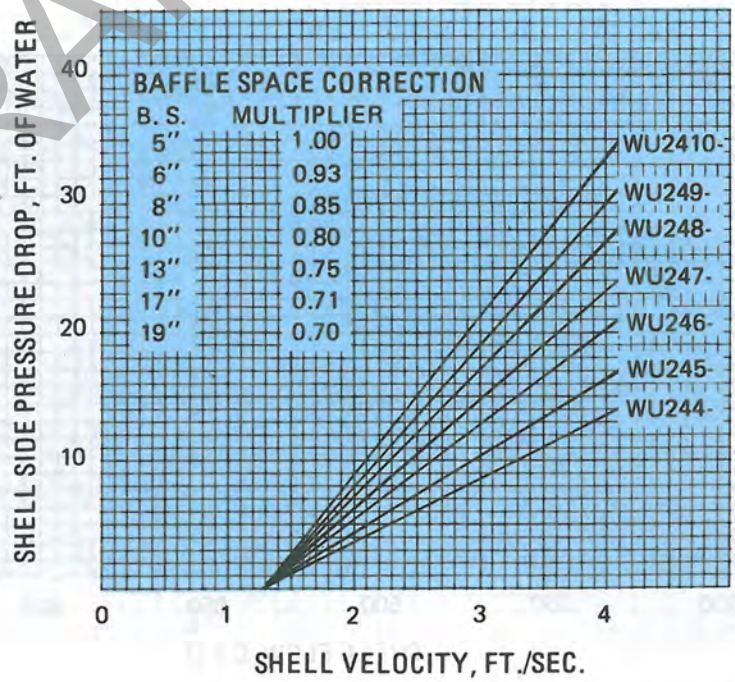
NOTE: Check Mechanical Design Limitations, Page 7.

24" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		5"	6"	8"	10"	13"	17"	19"
	Shell Flow	A	259-345	346-415	416-553	554-691	692-899	900-1175	1176-1315
	in G. P. M.	B	130-258	259-345	346-415	416-553	554-691	692-899	900-1175

4 PASS	G. P. M. HEATED IN TUBES																					
	150		200		250		300		350		400		450		500		550		600		650	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU244-4( )	60.5	53.6	53.5	46.6	48.2	41.4	44.1	37.3	40.7	34.0	37.9 1.0	31.4 1.0	35.5 1.3	29.1 1.3	33.4 1.5	27.1 1.5	31.5 1.8	25.5 1.8	29.9 2.1	24.0 2.1	28.4 2.4	22.7 2.4
WU245-4( )	75.3	66.9	66.5	58.0	60.0	51.5	54.9	46.4	50.6 1.0	42.4 1.0	47.1 1.3	39.0 1.3	44.1 1.6	36.2 1.6	41.5 1.9	33.8 1.9	39.2 2.3	31.7 2.3	37.2 2.7	29.8 2.7	35.4 3.1	28.2 3.1
WU246-4( )	89.9	79.9	79.5	69.3	71.7	61.5	65.6 1.1	55.4 1.1	60.5 1.2	50.6 1.2	56.3 1.6	46.6 1.6	52.7 1.9	43.2 1.9	49.6 2.3	40.3 2.3	46.8 2.8	37.8 2.8	44.4 3.2	35.6 3.2	42.3 3.7	33.7 3.7
WU247-4( )	104.7	93.1	92.5 1.0	80.7 1.0	83.4 1.1	71.6 1.1	76.3 1.3	64.5 1.3	70.4 1.5	58.9 1.5	65.5 1.9	54.2 1.9	61.3 2.3	50.3 2.3	57.7 2.8	47.0 2.8	54.5 3.3	44.0 3.3	51.7 3.8	41.5 3.8	49.2 4.4	39.2 4.4
WU248-4( )	119.3 1.0	106.1 1.0	105.5 1.2	91.9 1.2	95.1 1.3	81.6 1.3	86.9 1.5	73.6 1.5	80.2 1.7	67.1 1.7	74.7 2.1	61.8 2.1	69.9 2.6	57.3 2.6	65.8 3.2	53.5 3.2	62.1 3.8	50.2 3.8	58.9 4.4	47.3 4.4	56.1 5.1	44.7 5.1
WU249-4( )	134.1 1.2	119.2 1.2	118.5 1.3	103.3 1.3	106.9 1.5	91.7 1.5	97.7 1.7	82.7 1.7	90.2 1.9	75.4 1.9	83.9 2.4	69.5 2.4	78.6 3.0	64.4 3.0	73.9 3.6	60.1 3.6	69.8 4.3	56.4 4.3	66.2 5.0	53.1 5.0	63.0 5.7	50.3 5.7
WU2410-4( )	148.7 1.4	132.2 1.4	131.4 1.6	114.6 1.6	118.5 1.7	101.7 1.7	108.3 1.9	91.7 1.9	100.0 2.3	83.7 2.3	93.1 2.6	77.0 2.6	87.1 3.3	71.5 3.3	82.0 4.0	66.7 4.0	77.5 4.8	62.6 4.8	73.5 5.6	58.9 5.6	69.9 6.4	55.7 6.4
4-P T.V.	1.1 ft./sec.		1.7		1.9		2.2		2.6		3.0		3.3		3.7		4.1		4.5		4.8	

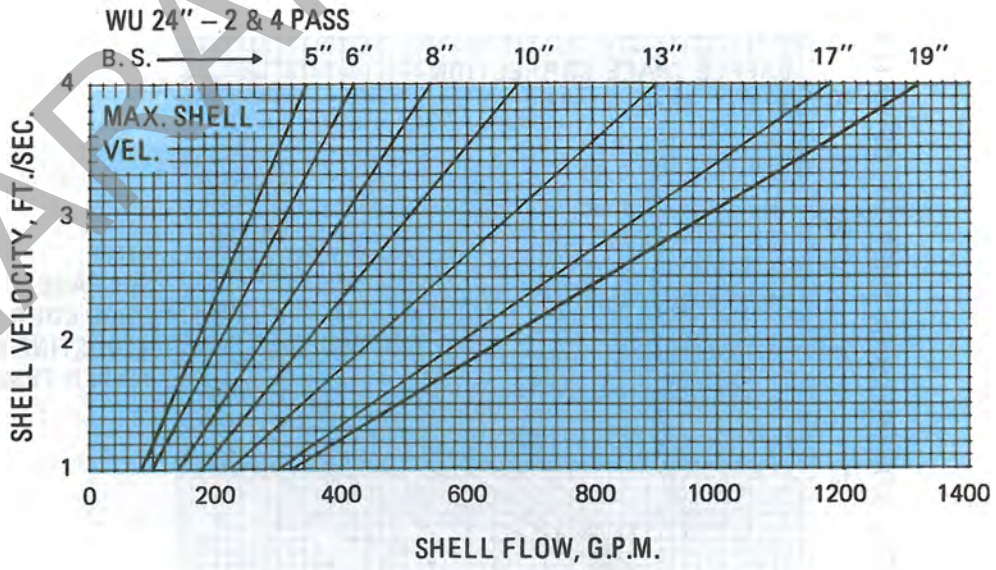
2 PASS	G. P. M. HEATED IN TUBES																					
	400		450		500		550		600		650		700		750		800		850		900	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU244-2( )	27.0	23.6	25.6	22.2	24.4	20.9	23.3	19.9	22.3	18.9	21.4	18.0	20.6	17.2	19.8	16.5	19.2	15.9	18.5	15.3	17.9	14.8
WU245-2( )	33.6	29.3	31.8	27.6	30.3	26.0	28.9	24.7	27.7	23.5	26.6	22.4	25.6	21.5	24.7	20.6	23.8	19.8	23.0	19.0	22.3	18.3
WU246-2( )	40.2	35.1	38.1	33.0	36.2	31.1	34.6	29.5	33.1	28.1	31.8	26.8	30.6	25.7	29.5	24.6	28.5	23.6	27.6	22.8	26.7	21.9
WU247-2( )	46.7	40.8	44.2	38.3	42.1	36.2	40.2	34.3	38.5	32.7	37.0	31.2	35.6	29.8	34.3	28.6	33.1	27.5	32.0 1.0	26.4 1.0	31.0 1.1	25.5 1.1
WU248-2( )	53.2	46.5	50.5	43.7	48.0	41.3	45.9	39.2	43.9	37.3	42.2	35.6	40.6	34.0	39.1	32.6	37.8 1.0	31.3 1.0	36.5 1.1	30.2 1.1	35.4 1.3	29.1 1.3
WU249-2( )	59.8	52.2	56.7	49.1	54.0	46.4	51.6	44.0	49.4	41.9	47.4	40.0	45.6	38.2	44.0 1.0	36.7 1.0	42.5 1.2	35.2 1.2	41.1 1.3	33.9 1.3	39.8 1.4	32.7 1.4
WU2410-2( )	66.4	58.0	62.9	54.5	59.9	51.5	57.2	48.8	54.8	46.5	52.6	44.3	50.6 1.0	42.4 1.0	48.8 1.2	40.7 1.2	47.1 1.3	39.1 1.3	45.6 1.4	37.6 1.4	44.1 1.6	36.3 1.6
2-P T.V.	1.5 ft./sec.		1.7		1.8		2.0		2.2		2.4		2.6		2.8		2.9		3.1		3.3	



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

700		750		800		850		900		950		1000	
A	B	A	B	A	B	A	B	A	B	A	B	A	B
27.1 2.7	21.5 2.7	26.0 3.1	20.5 3.1	24.9 3.5	19.5 3.5	23.9 3.9	18.7 3.9	23.0 4.3	17.9 4.3	22.2 4.7	17.2 4.7	21.4 5.2	16.5 5.2
33.8 3.5	26.8 3.5	32.3 4.0	25.5 4.0	31.0 4.4	24.3 4.4	29.7 4.9	23.2 4.9	28.6 5.5	22.3 5.5	27.6 6.0	21.4 6.0	26.6 6.5	20.6 6.5
40.3 4.3	32.0 4.3	38.6 4.8	30.4 4.8	37.0 5.4	29.0 5.4	35.5 6.0	27.8 6.0	34.2 6.7	26.6 6.7	32.9 7.3	25.5 7.3	31.8 8.0	24.6 8.0
46.9 5.0	37.2 5.0	44.9 5.7	35.4 5.7	43.0 6.4	33.8 6.4	41.3 7.1	32.3 7.1	39.8 7.8	31.0 7.8	38.3 8.6	29.7 8.6	37.0 9.4	28.6 9.4
53.5 5.8	42.4 5.8	51.2 6.5	40.4 6.5	49.1 7.3	38.5 7.3	47.1 8.2	36.8 8.2	45.3 9.0	35.3 9.0	43.7 9.9	33.9 9.9	42.2 10.4	32.6 10.4
60.1 6.5	47.7 6.5	57.5 7.4	45.4 7.4	55.1 8.3	43.3 8.3	52.9 9.2	41.4 9.2	50.9 10.2	39.7 10.2	49.1 11.2	38.1 11.2	47.4 12.2	36.6 12.2
66.7 7.3	52.9 7.3	63.8 8.2	50.3 8.2	61.1 9.2	48.0 9.2	58.7 10.3	45.9 10.3	56.5 11.4	44.0 11.4	54.4 12.5	42.2 12.5	52.5 13.6	40.6 13.6
5.2		5.6		5.9		6.3		6.8		7.1		7.4	

950		1000		1100		1200		1300		1400		1500		1600		1700		1800		1900		2000	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
17.4	14.2	16.9	13.8	16.0	12.9	15.2 1.0	12.2 1.0	14.4 1.1	11.5 1.1	13.8 1.3	10.9 1.3	13.2 1.5	10.4 1.5	12.6 1.7	9.9 1.7	12.1 1.8	9.5 1.8	11.7 2.0	9.1 2.0	11.2 2.3	8.7 2.3	10.9 2.5	8.4 2.5
21.6	17.7	21.0	17.1	19.9 1.1	16.1 1.1	18.8 1.3	15.1 1.3	17.9 1.5	14.3 1.5	17.1 1.7	13.6 1.7	16.4 1.9	12.9 1.9	15.7 2.1	12.4 2.1	15.1 2.4	11.8 2.4	14.5 2.6	11.3 2.6	14.0 2.9	10.9 2.9	13.5 3.2	10.5 3.2
25.9 1.0	21.2 1.0	25.1 1.1	20.5 1.1	23.8 1.3	19.2 1.3	22.5 1.6	18.1 1.6	21.4 1.8	17.1 1.8	20.5 2.0	16.3 2.0	19.6 2.3	15.5 2.3	18.8 2.6	14.8 2.6	18.0 2.9	14.1 2.9	17.4 3.2	13.5 3.2	16.7 3.5	13.0 3.5	16.2 3.8	12.5 3.8
30.1 1.2	24.6 1.2	29.2 1.3	23.8 1.3	27.6 1.6	22.3 1.6	26.2 1.8	21.1 1.8	24.9 2.1	19.9 2.1	23.8 2.4	18.9 2.4	22.8 2.7	18.0 2.7	21.8 3.0	17.2 3.0	21.0 3.4	16.4 3.4	20.2 3.7	15.7 3.7	19.4 4.1	15.1 4.1	18.8 4.5	14.5 4.5
34.3 1.4	28.1 1.4	33.3 1.5	27.2 1.5	31.5 1.8	25.5 1.8	29.9 2.1	24.0 2.1	28.4 2.4	22.7 2.4	27.1 2.8	21.6 2.8	26.0 3.1	20.5 3.1	24.9 3.5	19.6 3.5	23.9 3.9	18.7 3.9	23.0 4.3	18.0 4.3	22.2 4.7	17.2 4.7	21.4 5.2	16.6 5.2
38.6 1.6	31.6 1.6	37.4 1.7	30.5 1.7	35.4 2.0	28.6 2.0	33.6 2.4	27.0 2.4	32.0 2.7	25.5 2.7	30.5 3.1	24.2 3.1	29.2 3.5	23.1 3.5	28.0 4.0	22.0 4.0	26.9 4.4	21.0 4.4	25.9 4.9	20.2 4.9	24.9 5.4	19.4 5.4	24.1 5.9	18.6 5.9
42.8 1.8	35.0 1.8	41.5 1.9	33.9 1.9	39.3 2.3	31.8 2.3	37.3 2.7	30.0 2.7	35.5 3.1	28.3 3.1	33.8 3.5	26.9 3.5	32.4 3.9	25.6 3.9	31.0 4.4	24.4 4.4	29.8 4.9	23.4 4.9	28.7 5.4	22.4 5.4	27.7 6.0	21.5 6.0	26.7 6.6	20.7 6.6
3.5		3.7		4.0		4.3		4.7		5.1		5.4		5.8		6.2		6.5		6.8		7.3	



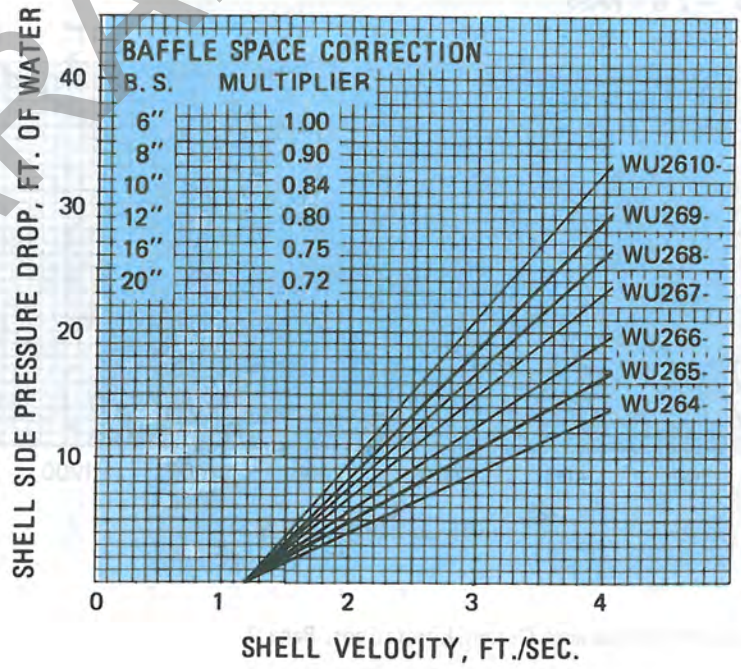
NOTE: Check Mechanical Design Limitations, Page 7.

26" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		6"	8"	10"	12"	16"	20"
	Shell Flow in G. P. M.	A	339-451	452-602	603-753	754-903	904-1205	1206-1500
		B	170-338	339-451	452-602	603-753	754-903	904-1205

4 PASS	G. P. M. HEATED IN TUBES																			
	200		250		300		350		400		450		500		550		600		650	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU264-4( )	60.5	53.3	54.8	47.5	50.3	43.1	46.6	39.4	43.5	36.4	40.8 1.0	33.9 1.0	38.5 1.2	31.7 1.2	36.5 1.4	29.8 1.4	34.7 1.6	28.2 1.6	33.1 1.9	26.7 1.9
WU265-4( )	74.5	65.6	67.5	58.6	61.9	53.0	57.4	48.6	53.6 1.0	44.9 1.0	50.3 1.2	41.8 1.2	47.4 1.5	39.1 1.5	44.9 1.8	36.7 1.8	42.7 2.1	34.7 2.1	40.7 2.4	32.9 2.4
WU266-4( )	88.4	77.9	80.1	69.5	73.5	62.9	68.1 1.0	57.6 1.0	63.5 1.2	53.2 1.2	59.7 1.5	49.5 1.5	56.3 1.8	46.3 1.8	53.3 2.2	43.6 2.2	50.7 2.5	41.1 2.5	48.3 2.9	39.0 2.9
WU267-4( )	102.2	90.1	92.6	80.4	85.0 1.0	72.8 1.0	78.8 1.1	66.7 1.1	73.5 1.4	61.6 1.4	69.0 1.8	57.3 1.8	65.1 2.1	53.6 2.1	61.7 2.5	50.4 2.5	58.6 3.0	47.6 3.0	55.9 3.4	45.1 3.4
WU268-4( )	116.1	102.3	105.2 1.0	91.3 1.0	96.6 1.1	82.7 1.1	89.5 1.3	75.7 1.3	83.5 1.7	70.0 1.7	78.4 2.0	65.1 2.0	74.0 2.5	60.9 2.5	70.1 2.9	57.3 2.9	66.6 3.4	54.1 3.4	63.5 3.9	51.2 3.9
WU269-4( )	130.0 1.0	114.6 1.0	117.8 1.1	102.2 1.1	108.1 1.3	92.6 1.3	100.2 1.5	84.8 1.5	93.5 2.0	78.3 2.0	87.8 2.3	72.9 2.3	82.8 2.8	68.2 2.8	78.4 3.3	64.1 3.3	74.5 3.8	60.5 3.8	71.1 4.4	57.3 4.4
WU2610-4( )	143.9 1.2	126.8 1.2	130.3 1.3	113.1 1.3	119.6 1.6	102.4 1.6	110.9 1.8	93.8 1.8	103.5 2.3	86.7 2.3	97.1 2.5	80.6 2.5	91.6 3.1	75.5 3.1	86.8 3.7	71.0 3.7	82.5 4.3	67.0 4.3	78.7 4.9	63.5 4.9
4-P T.V.	1.3 ft./sec.		1.6		1.9		2.3		2.6		2.9		3.2		3.6		3.9		4.2	

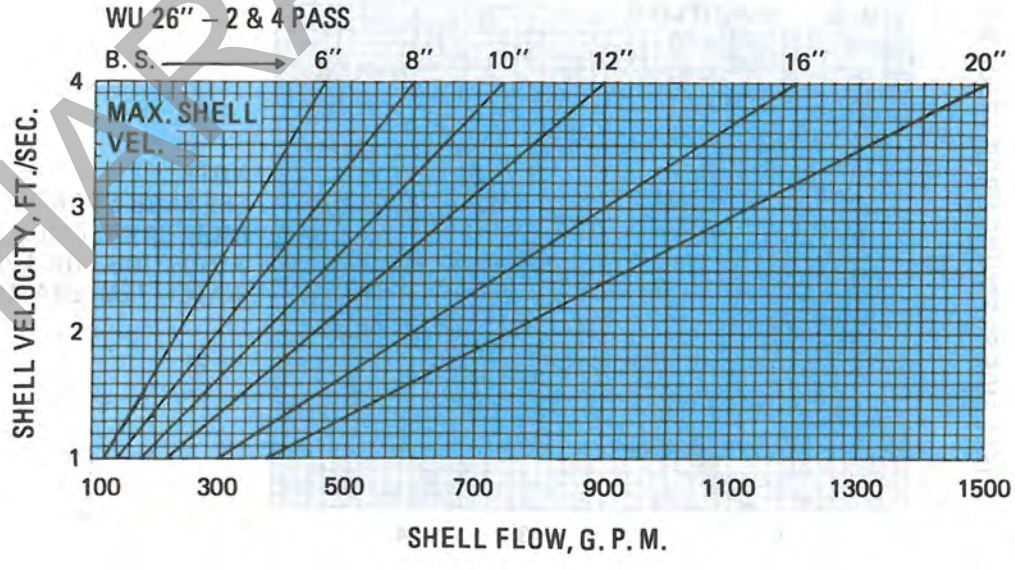
2 PASS	G. P. M. HEATED IN TUBES																			
	400		500		600		700		800		900		1000		1100		1200		1300	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU264-2( )	30.6	27.0	27.8	24.1	25.5	21.9	23.6	20.0	22.1	18.5	20.7	17.3	19.6	16.1	18.5	15.2	17.6	14.3	16.8	13.6
WU265-2( )	37.6	33.2	34.1	29.7	31.4	26.9	29.1	24.7	27.1	22.8	25.5	21.2	24.1	19.9	22.8	18.7	21.7 1.0	17.6 1.0	20.7 1.1	16.7 1.1
WU266-2( )	44.7	39.4	40.5	35.2	37.2	31.9	34.5	29.3	32.2	27.0	30.3	25.2	28.6	23.6	27.1 1.0	22.2 1.0	25.7 1.2	20.9 1.2	24.5 1.4	19.8 1.4
WU267-2( )	51.6	45.6	46.8	40.7	43.0	36.9	39.9	33.8	37.2	31.3	35.0	29.1	33.0 1.0	27.2 1.0	31.3 1.2	25.6 1.2	29.7 1.4	24.2 1.4	28.4 1.6	22.9 1.6
WU268-2( )	58.7	51.8	53.2	46.2	48.9	41.9	45.3	38.4	42.3	35.5	39.7 1.0	33.1 1.0	37.5 1.2	30.9 1.2	35.5 1.4	29.1 1.4	33.8 1.6	27.5 1.6	32.2 1.9	26.0 1.9
WU269-2( )	65.7	58.0	59.6	51.8	54.7	46.9	50.7	43.0	47.4	39.8	44.5 1.1	37.0 1.1	42.0 1.3	34.6 1.3	39.8 1.6	32.6 1.6	37.8 1.8	30.8 1.8	36.1 2.1	29.2 2.1
WU2610-2( )	72.7	64.2	65.9	57.3	60.6	52.0	56.2	47.6	52.4 1.0	44.0 1.0	49.3 1.2	41.0 1.2	46.5 1.5	38.4 1.5	44.0 1.7	36.1 1.7	41.9 2.0	34.1 2.0	39.9 2.4	32.3 2.4
2-P T.V.	1.3 ft./sec.		1.6		1.9		2.2		2.5		2.8		3.1		3.5		3.8		4.1	



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

700		750		800		850		900		950		1000		1100	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
31.6 2.1	25.4 2.1	30.3 2.4	24.2 2.4	29.1 2.7	23.1 2.7	28.0 3.0	22.1 3.0	26.9 3.4	21.2 3.4	26.0 3.7	20.4 3.7	25.1 4.0	19.6 4.0	23.5 4.8	18.3 4.8
38.9 2.7	31.2 2.7	37.3 3.1	29.8 3.1	35.8 3.5	28.4 3.5	34.4 3.8	27.2 3.8	33.2 4.3	26.1 4.3	32.0 4.7	25.1 4.7	30.9 5.1	24.2 5.1	29.0 6.1	22.5 6.1
46.2 3.3	37.1 3.3	44.2 3.7	35.3 3.7	42.5 4.2	33.7 4.2	40.9 4.7	32.3 4.7	39.4 5.2	31.0 5.2	38.0 5.7	29.8 5.7	36.7 6.2	28.7 6.2	34.4 7.4	26.7 7.4
53.4 3.9	42.9 3.9	51.2 4.4	40.9 4.4	49.1 4.9	39.0 4.9	47.3 5.5	37.4 5.5	45.5 6.1	35.9 6.1	43.9 6.7	34.5 6.7	42.5 7.3	33.2 7.3	39.8 8.6	30.9 8.6
60.7 4.5	48.7 4.5	58.1 5.0	46.4 5.0	55.8 5.6	44.3 5.6	53.7 6.3	42.5 6.3	51.7 7.0	40.7 7.0	49.9 7.7	39.1 7.7	48.2 8.4	37.7 8.4	45.2 9.9	35.1 9.9
67.9 5.0	54.5 5.0	65.1 5.7	51.9 5.7	62.5 6.4	49.6 6.4	60.1 7.1	47.5 7.1	57.9 7.9	45.6 7.9	55.9 8.6	43.8 8.6	54.0 9.5	42.2 9.5	50.6 11.2	39.3 11.2
75.2 5.6	60.3 5.6	72.0 6.3	57.5 6.3	69.2 7.1	54.9 7.1	66.5 7.9	52.6 7.9	64.1 8.7	50.5 8.7	61.8 9.6	48.5 9.6	59.8 10.5	46.7 10.5	56.0 12.5	43.5 12.5
4.5		4.9		5.2		5.5		5.8		6.1		6.4		7.0	

1400		1500		1600		1700		1800		1900		2000		2100		2200		2300	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
16.1 1.0	12.9 1.0	15.4 1.2	12.3 1.2	14.8 1.3	11.8 1.3	14.2 1.5	11.3 1.5	13.7 1.6	10.8 1.6	13.2 1.8	10.4 1.8	12.8 1.9	10.0 1.9	12.4 2.1	9.7 2.1	12.0 2.3	9.3 2.3	11.6 2.5	9.0 2.5
19.8 1.3	15.9 1.3	18.9 1.5	15.2 1.5	18.2 1.7	14.5 1.7	17.5 1.8	13.9 1.8	16.9 2.0	13.3 2.0	16.3 2.2	12.8 2.2	15.7 2.5	12.3 2.5	15.2 2.7	11.9 2.7	14.8 2.9	11.5 2.9	14.3 3.1	11.1 3.1
23.5 1.6	18.9 1.6	22.5 1.8	18.0 1.8	21.6 2.0	17.2 2.0	20.8 2.2	16.5 2.2	20.0 2.5	15.8 2.5	19.3 2.7	15.2 2.7	18.7 3.0	14.6 3.0	18.1 3.2	14.1 3.2	17.5 3.5	13.6 3.5	17.0 3.8	13.2 3.8
27.1 1.9	21.8 1.9	26.0 2.1	20.8 2.1	25.0 2.3	19.9 2.3	24.0 2.6	19.0 2.6	23.1 2.9	18.3 2.9	22.3 3.2	17.5 3.2	21.6 3.5	16.9 3.5	20.9 3.8	16.3 3.8	20.2 4.1	15.7 4.1	19.6 4.5	15.2 4.5
30.8 2.1	24.8 2.1	29.5 2.4	23.6 2.4	28.4 2.7	22.6 2.7	27.3 3.0	21.6 3.0	26.3 3.3	20.7 3.3	25.4 3.7	19.9 3.7	24.5 4.0	19.2 4.0	23.7 4.4	18.5 4.4	23.0 4.7	17.9 4.7	22.3 5.1	17.3 5.1
34.5 2.4	27.7 2.4	33.1 2.7	26.4 2.7	31.7 3.0	25.3 3.0	30.5 3.4	24.2 3.4	29.4 3.8	23.2 3.8	28.4 4.1	22.3 4.1	27.5 4.5	21.5 4.5	26.6 4.9	20.7 4.9	25.7 5.4	20.0 5.4	25.0 5.8	19.4 5.8
38.2 2.7	30.7 2.7	36.6 3.0	29.3 3.0	35.1 3.4	28.0 3.4	33.8 3.8	26.8 3.8	32.6 4.2	25.7 4.2	31.4 4.6	24.7 4.6	30.4 5.0	23.8 5.0	29.4 5.5	22.9 5.5	28.5 6.0	22.2 6.0	27.6 6.5	21.4 6.5
4.4		4.7		5.0		5.4		5.7		6.0		6.3		6.6		6.9		7.2	



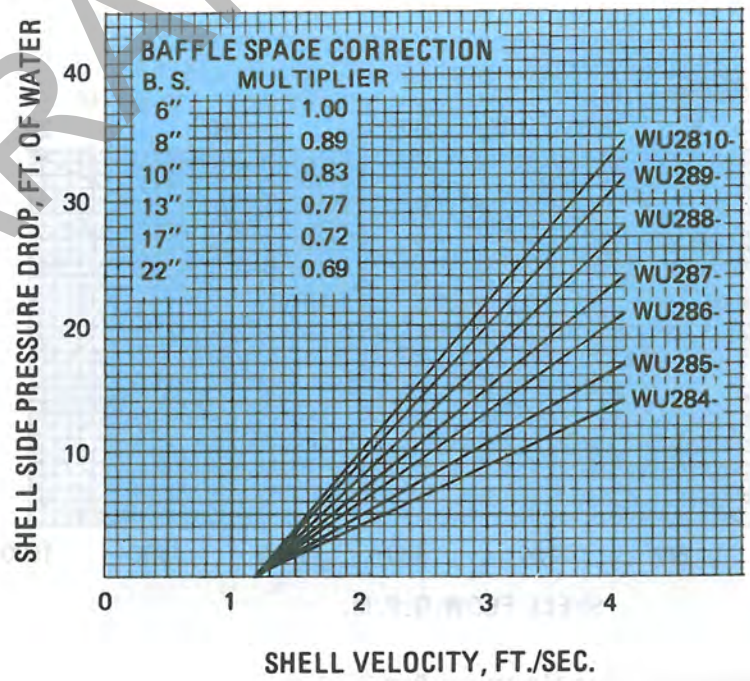
NOTE: Check Mechanical Design Limitations, Page 7.

28" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		6"	8"	10"	13"	17"	22"
	Shell Flow	A	367-488	489-651	652-814	815-1058	1059-1383	1384-1790
	in G. P. M.	B	183-366	367-488	489-651	652-814	815-1058	1059-1383

4 PASS	G. P. M. HEATED IN TUBES																			
	250		300		350		400		450		500		550		600		650		700	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU284-4( )	47.2	41.4	43.5	37.7	40.5	34.7	37.9	32.1	35.7	30.0	33.7	28.1	32.0 1.0	26.5 1.0	30.5 1.2	25.1 1.2	29.1 1.4	23.8 1.4	27.9 1.6	22.7 1.6
WU285-4( )	60.7	53.3	56.0	48.5	52.0	44.6	48.7	41.3	45.9	38.6	43.4 1.1	36.2 1.1	41.2 1.3	34.1 1.3	39.3 1.5	32.3 1.5	37.5 1.7	30.6 1.7	35.9 2.0	29.2 2.0
WU286-4( )	74.2	65.2	68.4	59.3	63.6	54.5	59.6	50.5	56.1 1.1	47.1 1.1	53.1 1.3	44.2 1.3	50.4 1.6	41.7 1.6	48.0 1.8	39.4 1.8	45.8 2.1	37.5 2.1	43.9 2.4	35.7 2.4
WU287-4( )	87.8	77.0	80.9	70.1	75.2	64.4	70.4 1.1	59.7 1.1	66.3 1.3	55.7 1.3	62.7 1.6	52.3 1.6	59.6 1.8	49.3 1.8	56.7 2.2	46.6 2.2	54.2 2.5	44.3 2.5	51.9 2.8	42.2 2.8
WU288-4( )	101.3	88.9	93.3	80.9	86.8 1.1	74.3 1.1	81.3 1.2	68.9 1.2	76.5 1.5	64.3 1.5	72.4 1.8	60.3 1.8	68.7 2.1	56.9 2.1	65.5 2.5	53.8 2.5	62.5 2.9	51.1 2.9	59.9 3.3	48.6 3.3
WU289-4( )	114.9	100.8	105.9 1.0	91.7 1.0	98.5 1.2	84.3 1.2	92.2 1.4	78.2 1.4	86.8 1.7	73.0 1.7	82.1 2.0	68.5 2.0	78.0 2.4	64.5 2.4	74.3 2.8	61.1 2.8	71.0 3.2	58.0 3.2	67.9 3.7	55.2 3.7
WU2810-4( )	128.4	112.7	118.4 1.2	102.5 1.2	110.1 1.4	94.3 1.4	103.1 1.6	87.4 1.6	97.0 2.0	81.6 2.0	91.8 2.2	76.5 2.2	87.1 2.7	72.1 2.7	83.0 3.1	68.2 3.1	79.3 3.6	64.8 3.6	75.9 4.1	61.7 4.1
4-P T.V.	1.4 ft./sec.		1.6		1.9		2.2		2.4		2.7		3.0		3.2		3.5		3.8	

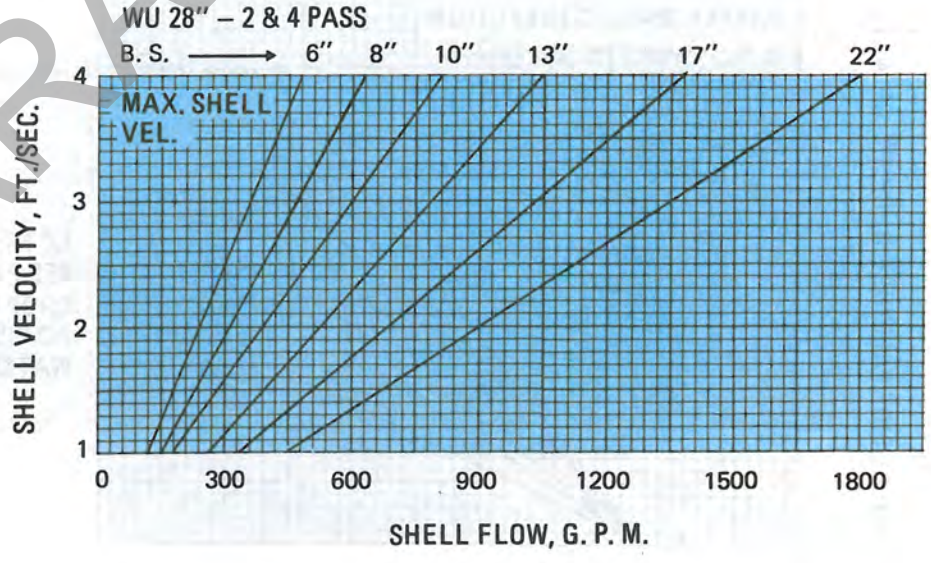
2 PASS	G. P. M. HEATED IN TUBES																			
	500		600		700		800		900		1000		1100		1200		1300		1400	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU284-2( )	23.8	20.9	21.9	19.0	20.4	17.5	19.1	16.2	18.0	15.2	17.0	14.2	16.2	13.4	15.4	12.7	14.7	12.1	14.1	11.5
WU285-2( )	30.6	26.9	28.2	24.5	26.3	22.5	24.6	20.9	23.2	19.5	21.9	18.3	20.8	17.3	19.9	16.3	19.0	15.5	18.2 1.0	14.8 1.0
WU286-2( )	37.4	32.9	34.5	29.9	32.1	27.5	30.1	25.5	28.3	23.8	26.8	22.4	25.4	21.1	24.2	20.0	23.2 1.0	19.0 1.0	22.2 1.2	18.1 1.2
WU287-2( )	44.2	38.9	40.8	35.4	38.0	32.6	35.6	30.2	33.5	28.2	31.7	26.5	30.1	24.9	28.7 1.0	23.6 1.0	27.4 1.2	22.4 1.2	26.2 1.4	21.4 1.4
WU288-2( )	51.0	44.8	47.1	40.8	43.8	37.6	41.0	34.8	38.6	32.5	36.5	30.5	34.7 1.0	28.8 1.0	33.1 1.2	27.2 1.2	31.6 1.4	25.9 1.4	30.3 1.6	24.6 1.6
WU289-2( )	57.9	50.9	53.4	46.3	49.7	42.6	46.5	39.5	43.8	36.9	41.5 1.0	34.6 1.0	39.4 1.2	32.7 1.2	37.5 1.3	30.9 1.3	35.9 1.6	29.3 1.6	34.4 1.8	28.0 1.8
WU2810-2( )	64.7	56.9	59.7	51.8	55.5	47.6	52.0	44.2	49.0	41.2	46.3 1.1	38.7 1.1	44.0 1.3	36.5 1.3	41.9 1.5	34.5 1.5	40.1 1.7	32.8 1.7	38.4 2.0	31.2 2.0
2-P T.V.	1.3 ft./sec.		1.6		1.8		2.1		2.3		2.6		2.9		3.1		3.4		3.6	



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

750		800		850		900		950		1000		1100		1200		1300		1400	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
26.8 1.8	21.6 1.8	25.8 2.0	20.7 2.0	24.8 2.2	19.9 2.2	23.9 2.5	19.1 2.5	23.1 2.7	18.4 2.7	22.4 3.0	17.7 3.0	21.0 3.5	16.5 3.5	19.8 4.1	15.5 4.1	18.8 4.7	14.6 4.7	17.9 5.4	13.8 5.4
34.5 2.2	27.8 2.2	33.1 2.5	26.6 2.5	31.9 2.8	25.6 2.8	30.8 3.1	24.5 3.1	29.8 3.4	23.6 3.4	28.8 3.7	22.8 3.7	27.1 4.4	21.2 4.4	25.5 5.2	19.9 5.2	24.2 6.0	18.8 6.0	23.0 6.8	17.7 6.8
42.1 2.7	34.0 2.7	40.5 3.1	32.6 3.1	39.0 3.4	31.2 3.4	37.7 3.8	30.0 3.8	36.4 4.1	28.9 4.1	35.2 4.5	27.8 4.5	33.1 5.4	26.0 5.4	31.2 6.3	24.4 6.3	29.6 7.2	22.9 7.2	28.1 8.2	21.7 8.2
49.8 3.2	40.2 3.2	47.9 3.6	38.5 3.6	46.1 4.0	36.9 4.0	44.5 4.4	35.5 4.4	43.0 4.9	34.1 4.9	41.6 5.3	32.9 5.3	39.1 6.3	30.7 6.3	36.9 7.4	28.8 7.4	34.9 8.5	27.1 8.5	33.2 9.7	25.6 9.7
57.5 3.7	46.4 3.7	55.3 4.1	44.4 4.1	53.2 4.6	42.6 4.6	51.4 5.1	40.9 5.1	49.6 5.6	39.4 5.6	48.0 6.1	38.0 6.1	45.1 7.2	35.4 7.2	42.6 8.5	33.2 8.5	40.3 9.7	31.3 9.7	38.3 11.1	29.6 11.1
65.2 4.1	52.7 4.1	62.7 4.7	50.4 4.7	60.4 5.2	48.3 5.2	58.3 5.7	46.4 5.7	56.3 6.3	44.7 6.3	54.5 6.9	43.1 6.9	51.2 8.2	40.2 8.2	48.3 9.5	37.7 9.5	45.7 11.0	35.5 11.0	43.5 12.5	33.5 12.5
72.9 4.6	58.9 4.6	70.1 5.2	56.4 5.2	67.5 5.8	54.0 5.8	65.1 6.4	51.9 6.4	63.0 7.0	50.0 7.0	60.9 7.7	48.2 7.7	57.2 9.1	44.9 9.1	54.0 10.6	42.1 10.6	51.1 12.3	39.7 12.3	48.6 14.0	37.5 14.0
4.0		4.3		4.6		4.9		5.1		5.4		5.9		6.5		7.0		7.5	

1500		1600		1700		1800		1900		2000		2200		2400		2600		2800	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
13.5	11.0	13.0 1.0	10.5 1.0	12.6 1.1	10.1 1.1	12.1 1.2	9.7 1.2	11.7 1.3	9.3 1.3	11.3 1.4	9.0 1.4	10.7 1.8	8.4 1.8	10.1 2.0	7.9 2.0	9.5 2.3	7.4 2.3	9.0 2.6	7.0 2.6
17.4 1.1	14.1 1.1	16.8 1.2	13.5 1.2	16.2 1.4	13.0 1.4	15.6 1.5	12.5 1.5	15.1 1.6	12.0 1.6	14.6 1.8	11.6 1.8	13.7 2.1	10.8 2.1	12.9 2.5	10.1 2.5	12.3 2.9	9.5 2.9	11.6 3.3	9.0 3.3
21.3 1.3	17.2 1.3	20.5 1.5	16.5 1.5	19.7 1.6	15.8 1.6	19.1 1.8	15.2 1.8	18.4 2.0	14.6 2.0	17.8 2.2	14.1 2.2	16.8 2.6	13.2 2.6	15.8 3.0	12.4 3.0	15.0 3.5	11.6 3.5	14.2 4.0	11.0 4.0
25.2 1.5	20.4 1.5	24.2 1.7	19.5 1.7	23.4 1.9	18.7 1.9	22.5 2.1	18.0 2.1	21.8 2.3	17.3 2.3	21.1 2.6	16.7 2.6	19.8 3.0	15.6 3.0	18.7 3.5	14.6 3.5	17.7 4.1	13.8 4.1	16.8 4.7	13.0 4.7
29.1 1.8	23.5 1.8	28.0 2.0	22.5 2.0	26.9 2.2	21.6 2.2	26.0 2.4	20.7 2.4	25.1 2.7	20.0 2.7	24.3 2.9	19.3 2.9	22.8 3.5	18.0 3.5	21.6 4.1	16.8 4.1	20.4 4.7	15.9 4.7	19.4 5.4	15.0 5.4
33.0 2.0	26.7 2.0	31.7 2.2	25.5 2.2	30.6 2.5	24.5 2.5	29.5 2.8	23.5 2.8	28.5 3.0	22.7 3.0	27.6 3.3	21.8 3.3	25.9 3.9	20.4 3.9	24.5 4.6	19.1 4.6	23.2 5.3	18.0 5.3	22.0 6.0	17.0 6.0
36.8 2.2	29.8 2.2	35.4 2.5	28.5 2.5	34.1 2.8	27.4 2.8	33.0 3.1	26.3 3.1	31.9 3.4	25.3 3.4	30.8 3.7	24.4 3.7	29.0 4.4	22.8 4.4	27.3 5.1	21.4 5.1	25.9 5.9	20.1 5.9	24.6 6.7	19.0 6.7
3.9		4.1		4.4		4.7		5.0		5.3		5.8		6.3		6.8		7.4	



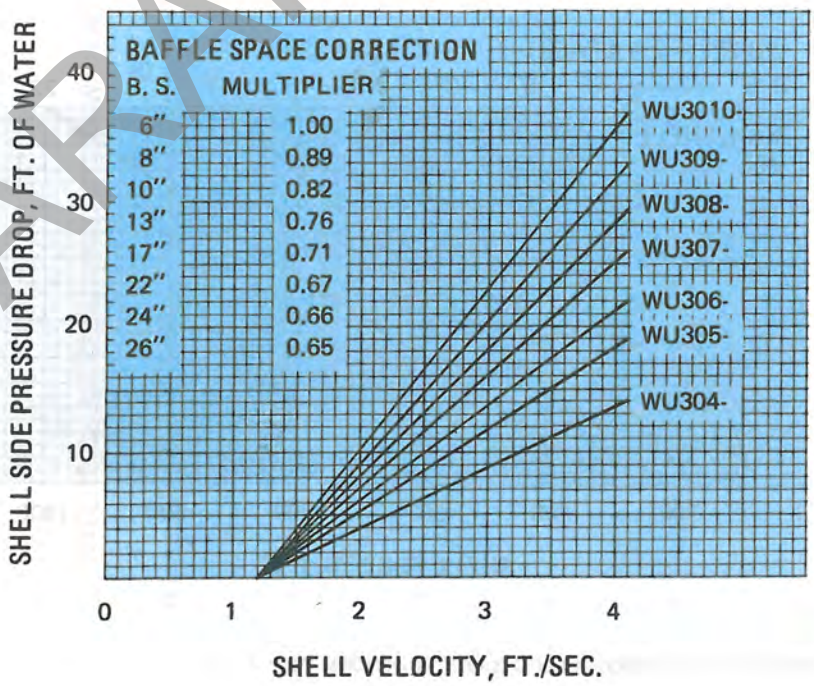
NOTE: Check Mechanical Design Limitations, Page 7.

30" WU HEAT EXCHANGERS

2 & 4 PASS	BAFFLE SPACE		6"	8"	10"	13"	17"	22"	24"	26"
	Shell Flow	A	390-520	521-700	701-870	871-1140	1141-1480	1481-1930	1931-2100	2101-2280
	in G. P. M.	B	200-389	390-520	521-700	701-870	871-1140	1141-1480	1481-1930	1931-2100

4 PASS	G. P. M. HEATED IN TUBES																					
	250		300		350		400		450		500		550		600		650		700		750	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU304-4( )	51.6	45.7	47.7	41.8	44.5	38.5	41.8	35.8	39.5	33.5	37.4	31.5	35.6	29.8	34.0 1.0	28.2 1.0	32.5 1.1	26.8 1.1	31.2 1.3	25.6 1.3	30.0 1.4	24.5 1.4
WU305-4( )	66.0	58.4	61.0	53.4	56.9	49.2	53.4	45.8	50.4	42.8	47.8	40.3	45.5 1.0	38.0 1.0	43.4 1.2	36.1 1.2	41.5 1.4	34.3 1.4	39.8 1.6	32.7 1.6	38.3 1.8	31.3 1.8
WU306-4( )	80.2	71.1	74.2	64.9	69.2	59.9	65.0	55.7	61.3	52.1	58.1 1.1	49.0 1.1	55.3 1.3	46.3 1.3	52.8 1.5	43.9 1.5	50.5 1.7	41.7 1.7	48.4 1.9	39.8 1.9	46.6 2.2	38.0 2.2
WU307-4( )	94.7	83.9	87.6	76.6	81.7	70.7	76.7	65.7	72.4 1.0	61.5 1.0	68.6 1.3	57.8 1.3	65.3 1.5	54.6 1.5	62.3 1.7	51.7 1.7	59.6 2.0	49.2 2.0	57.2 2.3	46.9 2.3	55.0 2.6	44.9 2.6
WU308-4( )		96.5		88.1	94.0	81.3	88.2 1.0	75.6 1.0	83.3 1.2	70.7 1.2	78.9 1.4	66.5 1.4	75.1 1.7	62.8 1.7	71.7 2.0	59.5 2.0	68.6 2.3	56.6 2.3	65.8 2.6	54.0 2.6	63.2 2.9	51.6 2.9
WU309-4( )						92.1		85.6 1.2	94.3 1.4	80.1 1.4	89.4 1.6	75.3 1.6	85.0 1.9	71.1 1.9	81.2 2.2	67.4 2.2	77.7 2.6	64.1 2.6	74.5 2.9	61.2 2.9	71.6 3.3	58.5 3.3
WU3010-4( )								95.5		89.3 1.6		84.0 1.8	94.9 2.2	79.3 2.2	90.5 2.5	75.2 2.5	86.6 3.0	71.5 3.0	83.1 3.3	68.2 3.3	79.9 3.7	65.2 3.7
4-P T.V.	1.2 ft./sec.		1.4		1.6		1.9		2.1		2.4		2.6		2.8		3.0		3.3		3.5	

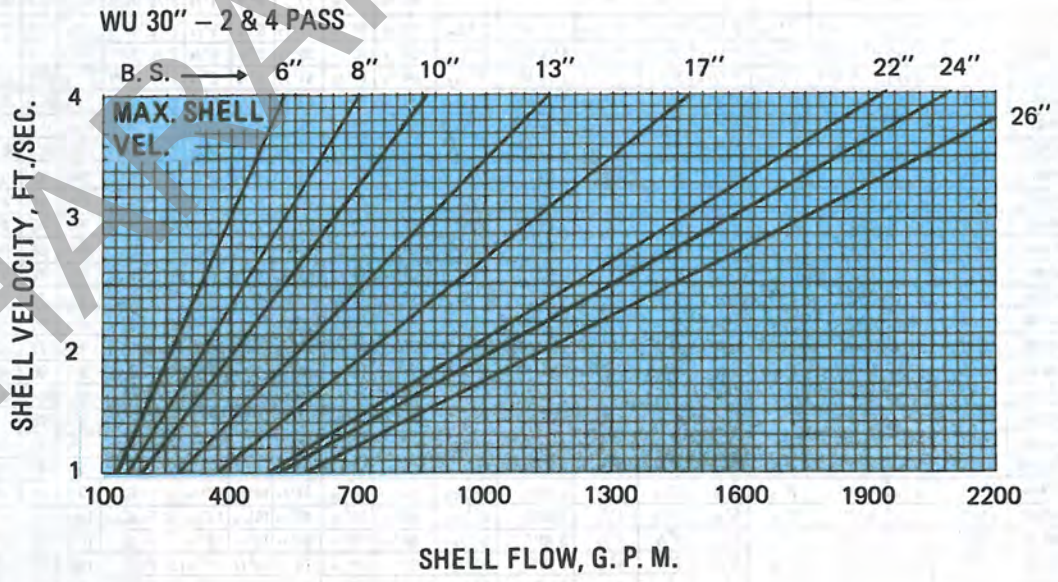
2 PASS	G. P. M. HEATED IN TUBES																					
	500		600		700		800		900		1000		1100		1200		1300		1400		1500	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU304-2( )	26.0	23.0	24.0	21.1	22.4	19.4	21.1	18.1	19.9	16.9	18.9	15.9	18.0	15.0	17.1	14.3	16.4	13.6	15.7	12.9	15.1	12.4
WU305-2( )	33.3	29.5	30.8	27.0	28.7	24.9	27.0	23.1	25.5	21.7	24.1	20.4	23.0	19.3	21.9	18.3	21.0	17.4	20.1	16.6	19.4	15.8
WU306-2( )	40.5	35.9	37.5	32.8	35.0	30.3	32.8	28.2	31.0	26.4	29.4	24.8	28.0	23.4	26.7	22.2	25.6	21.1	24.5	20.2	23.6 1.1	19.3 1.1
WU307-2( )	47.8	42.4	44.2	38.7	41.2	35.7	38.7	33.2	36.6	31.1	34.7	29.3	33.0	27.7	31.5	26.2	30.2 1.0	24.9 1.0	28.9 1.1	23.8 1.1	27.8 1.2	22.8 1.2
WU308-2( )	54.9	48.7	50.8	44.5	47.4	41.1	44.5	38.2	42.0	35.8	39.9	33.6	37.9	31.8	36.2 1.0	30.1 1.0	34.7 1.1	28.7 1.1	33.3 1.3	27.3 1.3	32.0 1.4	26.2 1.4
WU309-2( )	62.1	55.1	57.5	50.4	53.6	46.5	50.4	43.2	47.6	40.5	45.1	38.1	42.9	36.0	41.0 1.1	34.1 1.1	39.2 1.2	32.4 1.2	37.6 1.4	31.0 1.4	36.2 1.6	29.6 1.6
WU3010-2( )	69.4	61.5	64.2	56.2	59.9	51.9	56.2	48.3	53.1	45.2	50.4	42.5	47.9 1.0	40.2 1.0	45.8 1.2	38.1 1.2	43.8 1.4	36.2 1.4	42.0 1.6	34.6 1.6	40.4 1.8	33.0 1.8
2-P T.V.	1.1 ft./sec.		1.4		1.6		1.8		2.1		2.3		2.5		2.7		3.0		3.2		3.4	



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

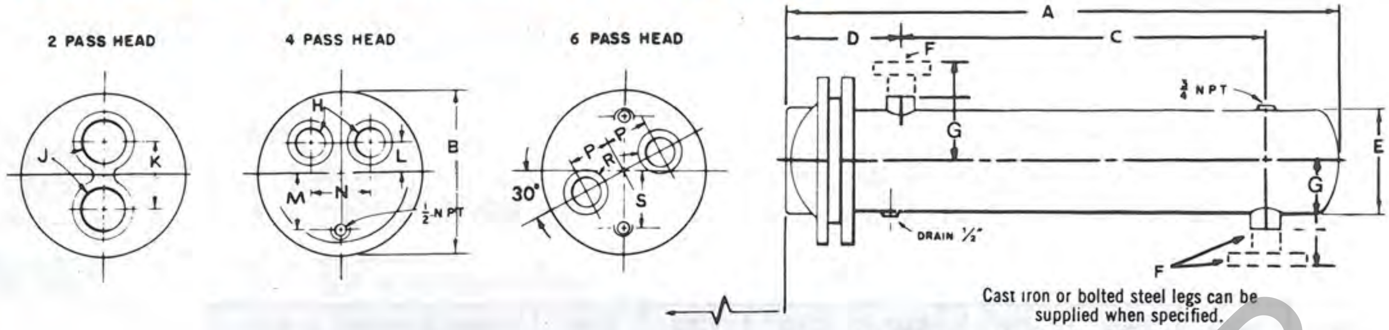
800		850		900		950		1000		1100		1200		1300		1400		1500		1600	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
28.9 1.6	23.5 1.6	27.8 1.8	22.5 1.8	26.9 2.0	21.7 2.0	26.0 2.2	20.9 2.2	25.2 2.4	20.1 2.4	23.7 2.8	18.8 2.8	22.4 3.3	17.7 3.3	21.3 3.8	16.7 3.8	20.2 4.3	15.8 4.3	19.3 4.9	15.0 4.9	18.5 5.4	14.3 5.4
36.9 2.0	30.0 2.0	35.6 2.2	28.8 2.2	34.4 2.5	27.7 2.5	33.3 2.7	26.7 2.7	32.2 3.0	25.7 3.0	30.3 3.5	24.1 3.5	28.7 4.1	22.6 4.1	27.2 4.8	21.3 4.8	25.9 5.4	20.2 5.4	24.7 6.1	19.1 6.1	23.6 6.9	18.2 6.9
44.8 2.4	36.4 2.4	43.3 2.7	35.0 2.7	41.8 3.0	33.7 3.0	40.4 3.3	32.4 3.3	39.2 3.6	31.3 3.6	36.9 4.3	29.2 4.3	34.9 5.0	27.5 5.0	33.1 5.8	25.9 5.8	31.5 6.6	24.5 6.6	30.0 7.5	23.3 7.5	28.7 8.4	22.2 8.4
52.9 2.9	43.0 2.9	51.0 3.2	41.3 3.2	49.3 3.5	39.7 3.5	47.7 3.9	38.3 3.9	46.2 4.3	36.9 4.3	43.5 5.1	34.5 5.1	41.1 5.9	32.4 5.9	39.0 6.8	30.6 6.8	37.1 7.7	28.9 7.7	35.4 8.8	27.5 8.8	33.9 9.8	26.1 9.8
60.9 3.3	49.5 3.3	58.7 3.7	47.5 3.7	56.7 4.1	45.7 4.1	54.9 4.5	44.0 4.5	53.2 4.9	42.5 4.9	50.1 5.8	39.7 5.8	47.3 6.8	37.3 6.8	44.9 7.8	35.2 7.8	42.7 8.9	33.3 8.9	40.7 10.1	31.6 10.1	39.0 11.3	30.1 11.3
69.0 3.7	56.0 3.7	66.5 4.2	53.8 4.2	64.3 4.6	51.7 4.6	62.2 5.1	49.9 5.1	60.2 5.5	48.1 5.5	56.7 6.6	45.0 6.6	53.6 7.6	42.2 7.6	50.8 8.8	39.8 8.8	48.4 10.1	37.7 10.1	46.1 11.4	35.8 11.4	44.1 12.7	34.1 12.7
76.9 4.2	62.5 4.2	74.2 4.6	60.0 4.6	71.7 5.1	57.7 5.1	69.4 5.6	55.6 5.6	67.2 6.2	53.7 6.2	63.3 7.3	50.2 7.3	59.8 8.5	47.1 8.5	56.7 9.8	44.4 9.8	54.0 11.2	42.0 11.2	51.5 12.7	39.9 12.7	49.2 14.2	38.0 14.2
3.7		4.0		4.2		4.4		4.7		5.2		5.6		6.1		6.5		7.0		7.5	

1600		1700		1800		1900		2000		2200		2400		2600		2800		3000		3200	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
14.6	11.9	14.1	11.4	13.6	11.0	13.1	10.6	12.7	10.2	12.0 1.3	9.5 1.3	11.3 1.6	9.0 1.6	10.8 1.8	8.4 1.8	10.2 2.1	8.0 2.1	9.8 2.3	7.6 2.3	9.3 2.6	7.2 2.6
18.7 1.0	15.2 1.0	18.0 1.1	14.6 1.1	17.4 1.2	14.0 1.2	16.8 1.3	13.5 1.3	16.3 1.5	13.0 1.5	15.4 1.7	12.2 1.7	14.5 2.0	11.5 2.0	13.8 2.3	10.8 2.3	13.1 2.6	10.2 2.6	12.5 3.0	9.7 3.0	12.0 3.4	9.3 3.4
22.7 1.2	18.5 1.2	21.9 1.3	17.8 1.3	21.2 1.5	17.1 1.5	20.5 1.6	16.5 1.6	19.9 1.9	15.9 1.9	18.7 2.1	14.9 2.1	17.7 2.4	14.0 2.4	16.8 2.8	13.2 2.8	16.0 3.2	12.5 3.2	15.2 3.6	11.8 3.6	14.6 4.1	11.3 4.1
26.8 1.4	21.8 1.4	25.9 1.5	20.9 1.5	25.0 1.7	20.1 1.7	24.2 1.9	19.4 1.9	23.4 2.1	18.7 2.1	22.1 2.4	17.5 2.4	20.9 2.8	16.5 2.8	19.8 3.3	15.5 3.3	18.8 3.7	14.7 3.7	18.0 4.2	14.0 4.2	17.2 4.8	13.3 4.8
30.8 1.6	25.1 1.6	29.7 1.8	24.1 1.8	28.7 2.0	23.2 2.0	27.8 2.2	22.3 2.2	26.9 2.5	21.5 2.5	25.4 2.8	20.1 2.8	24.0 3.3	18.9 3.3	22.7 3.8	17.8 3.8	21.6 4.3	16.9 4.3	20.7 4.8	16.0 4.8	19.8 5.5	15.3 5.5
34.9 1.8	28.4 1.8	33.6 2.0	27.2 2.0	32.5 2.2	26.2 2.2	31.4 2.4	25.3 2.4	30.5 2.8	24.4 2.8	28.7 3.2	22.8 3.2	27.1 3.7	21.4 3.7	25.7 4.2	20.2 4.2	24.5 4.8	19.1 4.8	23.4 5.5	18.2 5.5	22.4 6.3	17.3 6.3
38.9 2.0	31.7 2.0	37.5 2.2	30.4 2.2	36.3 2.5	29.3 2.5	35.1 2.7	28.2 2.7	34.0 3.1	27.2 3.1	32.0 3.5	25.4 3.5	30.3 4.1	23.9 4.1	28.7 4.7	22.5 4.7	27.3 5.4	21.3 5.4	26.1 6.1	20.3 6.1	25.0 7.0	19.3 7.0
3.7		3.9		4.1		4.4		4.6		5.0		5.5		6.0		6.4		6.9		7.3	



NOTE: Check Mechanical Design Limitations, Page 7.

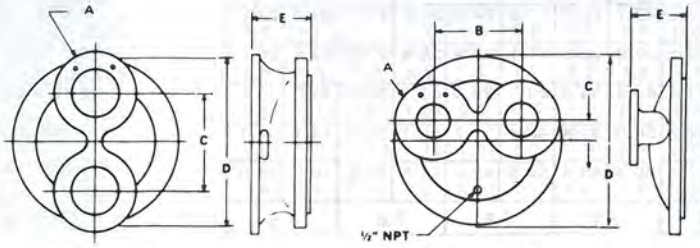
TYPE "WU" HEAT EXCHANGERS ("U" Tube Design)



Cast iron or bolted steel legs can be supplied when specified.

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

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



2 PASS HEAD

4 PASS HEAD

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

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

DIMENSIONS 4" THRU 20" DIAMETER

"WU" type "U" tube
Shell diameter in inches
Tube bundle length in feet
Number of tube passes
Baffle spacing in inches
Complete sales number consists of example: WU86-44

UNIT NUMBER			DIMENSIONS IN INCHES																HEATING SURFACE (SQ. FT.)			APPROX. SHIPPING WT.(LBS.)
			2 PASS		4 PASS				6 PASS			2, 4, AND 6 PASS										
2 PASS	4 PASS	6 PASS	J	K	H	L	M	N	P	R	S	A	B	C	D	E	F	G	2 Pass	4 Pass	6 Pass	
WU43-24	WU43-44	–	1 1/4 NPT	2 5/8	1 NPT	1	1 3/4	2 1/4	–	–	–	40 7/8	7 1/4	29	6 3/8	4 1/2	2 1/2" NPT	3 7/8	4.1	4.1	–	78
WU44-24	WU44-44	–	1 1/4 NPT	2 5/8	1 NPT	1	1 3/4	2 1/4	–	–	–	52 7/8	7 1/4	41	6 3/8	4 1/2	2 1/2" NPT	3 7/8	5.7	5.7	–	92
WU45-24	WU45-44	–	1 1/4 NPT	2 5/8	1 NPT	1	1 3/4	2 1/4	–	–	–	64 7/8	7 1/4	53	6 3/8	4 1/2	2 1/2" NPT	3 7/8	7.2	7.2	–	106
WU46-24	WU46-44	–	1 1/4 NPT	2 5/8	1 NPT	1	1 3/4	2 1/4	–	–	–	76 7/8	7 1/4	65	6 3/8	4 1/2	2 1/2" NPT	3 7/8	8.8	8.8	–	120
WU47-24	WU47-44	–	1 1/4 NPT	2 5/8	1 NPT	1	1 3/4	2 1/4	–	–	–	88 7/8	7 1/4	77	6 3/8	4 1/2	2 1/2" NPT	3 7/8	10.4	10.4	–	134
WU63-23	WU63-43	WU63-63	2 NPT	3 3/4	1 1/2 NPT	1 19/32	2 13/16	3 3/16	2 11/32	1 1/4 NPT	2 13/16	40 1/8	10 1/2	27 1/2	6 7/8	6 5/8	2 1/2" NPT	5 1/16	12.7	12.7	9.6	125
WU64-23	WU64-43	WU64-63	2 NPT	3 3/4	1 1/2 NPT	1 19/32	2 13/16	3 3/16	2 11/32	1 1/4 NPT	2 13/16	52 1/8	10 1/2	39 1/2	6 7/8	6 5/8	2 1/2" NPT	5 1/16	17.4	17.4	13.1	150
WU65-23	WU65-43	WU65-63	2 NPT	3 3/4	1 1/2 NPT	1 19/32	2 13/16	3 3/16	2 11/32	1 1/4 NPT	2 13/16	64 1/8	10 1/2	51 1/2	6 7/8	6 5/8	2 1/2" NPT	5 1/16	22.1	22.1	16.7	175
WU66-23	WU66-43	WU66-63	2 NPT	3 3/4	1 1/2 NPT	1 19/32	2 13/16	3 3/16	2 11/32	1 1/4 NPT	2 13/16	76 1/8	10 1/2	63 1/2	6 7/8	6 5/8	2 1/2" NPT	5 1/16	26.8	26.8	20.2	200
WU67-23	WU67-43	WU67-63	2 NPT	3 3/4	1 1/2 NPT	1 19/32	2 13/16	3 3/16	2 11/32	1 1/4 NPT	2 13/16	88 1/8	10 1/2	75 1/2	6 7/8	6 5/8	2 1/2" NPT	5 1/16	31.5	31.5	23.8	225
WU68-23	WU68-43	WU68-63	2 NPT	3 3/4	1 1/2 NPT	1 19/32	2 13/16	3 3/16	2 11/32	1 1/4 NPT	2 13/16	100 1/8	10 1/2	87 1/2	6 7/8	6 5/8	2 1/2" NPT	5 1/16	36.2	36.2	27.3	250
WU84-24	WU84-44	WU84-64	3 NPT	5	2 NPT	2	3 1/2	4	3	2 NPT	3 3/4	53	12 1/2	37	8 1/2	8 5/8	4" FLG	8 3/4	32	32	26	222
WU85-24	WU85-44	WU85-64	3 NPT	5	2 NPT	2	3 1/2	4	3	2 NPT	3 3/4	65	12 1/2	49	8 1/2	8 5/8	4" FLG	8 3/4	41	41	33	258
WU86-24	WU86-44	WU86-64	3 NPT	5	2 NPT	2	3 1/2	4	3	2 NPT	3 3/4	77	12 1/2	61	8 1/2	8 5/8	4" FLG	8 3/4	49	49	41	294
WU87-24	WU87-44	WU87-64	3 NPT	5	2 NPT	2	3 1/2	4	3	2 NPT	3 3/4	89	12 1/2	73	8 1/2	8 5/8	4" FLG	8 3/4	58	58	48	330
WU88-24	WU88-44	WU88-64	3 NPT	5	2 NPT	2	3 1/2	4	3	2 NPT	3 3/4	101	12 1/2	85	8 1/2	8 5/8	4" FLG	8 3/4	67	67	55	366
WU89-24	WU89-44	WU89-64	3 NPT	5	2 NPT	2	3 1/2	4	3	2 NPT	3 3/4	113	12 1/2	97	8 1/2	8 5/8	4" FLG	8 3/4	75	75	62	402
WU104-25	WU104-45	WU104-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	53	14 5/8	36 1/4	9	10 3/4	4" FLG	9 7/8	56	53	45	331
WU105-25	WU105-45	WU105-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	65	14 5/8	48 1/4	9	10 3/4	4" FLG	9 7/8	71	68	56	384
WU106-25	WU106-45	WU106-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	77	14 5/8	60 1/4	9	10 3/4	4" FLG	9 7/8	86	82	68	437
WU107-25	WU107-45	WU107-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	89	14 5/8	72 1/4	9	10 3/4	4" FLG	9 7/8	101	96	80	490
WU108-25	WU108-45	WU108-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	101	14 5/8	84 1/4	9	10 3/4	4" FLG	9 7/8	116	110	92	543
WU109-25	WU109-45	WU109-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	113	14 5/8	96 1/4	9	10 3/4	4" FLG	9 7/8	131	124	104	596
WU1010-25	WU1010-45	WU1010-65	4 NPT	5 7/8	3 NPT	2 3/8	4 7/8	4 3/4	3 13/16	2 1/2 NPT	4 7/8	125	14 5/8	108 1/4	9	10 3/4	4" FLG	9 7/8	146	138	116	650
WU124-26	WU124-46	WU124-66	4 NPT	7 3/4	4 NPT	2 5/8	5 7/8	5 7/8	4 1/2	3 NPT	5 13/16	56 1/2	16 5/8	37 1/4	10 1/4	12 3/4	5" FLG	10 7/8	83	78	68	456
WU125-26	WU125-46	WU125-66	4 NPT	7 3/4	4 NPT	2 5/8	5 7/8	5 7/8	4 1/2	3 NPT	5 13/16	68 1/2	16 5/8	49 1/4	10 1/4	12 3/4	5" FLG	10 7/8	104	98	85	525
WU126-26	WU126-46	WU126-66	4 NPT	7 3/4	4 NPT	2 5/8	5 7/8	5 7/8	4 1/2	3 NPT	5 13/16	80 1/2	16 5/8	61 1/4	10 1/4	12 3/4	5" FLG	10 7/8	126	119	103	594
WU127-26	WU127-46	WU127-66	4 NPT	7 3/4	4 NPT	2 5/8	5 7/8	5 7/8	4 1/2	3 NPT	5 13/16	92 1/2	16 5/8	73 1/4	10 1/4	12 3/4	5" FLG	10 7/8	148	139	121	663
WU128-26	WU128-46	WU128-66	4 NPT	7 3/4	4 NPT	2 5/8	5 7/8	5 7/8	4 1/2	3 NPT	5 13/16	104 1/2	16 5/8	85 1/4	10 1/4	12 3/4	5" FLG	10 7/8	169	160	139	732
WU129-26	WU129-46	WU129-66	4 NPT	7 3/4	4 NPT	2 5/8	5 7/8	5 7/8	4 1/2	3 NPT	5 13/16	116 1/2	16 5/8	97 1/4	10 1/4	12 3/4	5" FLG	10 7/8	191	180	156	801

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

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

"WU" type "U" tube
Shell diameter in inches
Tube bundle length in feet
Number of tube passes
Baffle spacing in inches

DIMENSIONS (Continued)

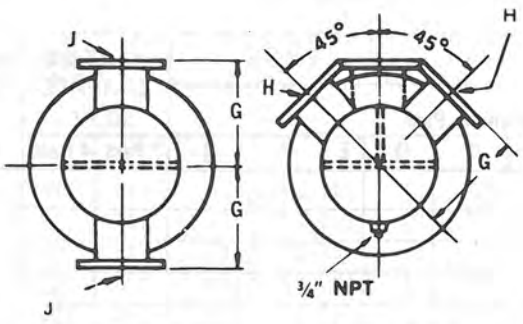
Complete sales number consists of example: WU86-44

UNIT NUMBER		DIMENSIONS IN INCHES													HEATING SURFACE SQ.FT.		Approx. Shpg. Wt.
		2 Pass		4 Pass				2, 4 and 6 Pass									
2 Pass	4 Pass	J	K	H	L	M	N	A	B	C	D	E	F	G	2 Pass	4 Pass	(Lbs.)
WU144-24	WU144-44	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	57 1/8	17 7/8	36 7/8	12	14	4 FLG	11 1/2	116	111	625
WU145-24	WU145-44	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	69 1/8	17 7/8	48 7/8	12	14	4 FLG	11 1/2	146	139	710
WU146-24	WU146-44	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	81 1/8	17 7/8	60 7/8	12	14	4 FLG	11 1/2	175	167	795
WU147-24	WU147-44	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	93 1/8	17 7/8	72 7/8	12	14	4 FLG	11 1/2	204	196	880
WU148-24	WU148-44	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	105 1/8	17 7/8	84 7/8	12	14	4 FLG	11 1/2	234	224	965
WU149-24	WU149-44	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	117 1/8	17 7/8	96 7/8	12	14	4 FLG	11 1/2	263	252	1050
WU144-28	WU144-48	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	57 1/8	17 7/8	34 7/8	13	14	6 FLG	11 1/2	116	111	625
WU145-28	WU145-48	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	69 1/8	17 7/8	46 7/8	13	14	6 FLG	11 1/2	146	139	710
WU146-28	WU146-48	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	81 1/8	17 7/8	58 7/8	13	14	6 FLG	11 1/2	175	167	795
WU147-28	WU147-48	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	93 1/8	17 7/8	70 7/8	13	14	6 FLG	11 1/2	204	196	880
WU148-28	WU148-48	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	105 1/8	17 7/8	82 7/8	13	14	6 FLG	11 1/2	234	224	965
WU149-28	WU149-48	6 NPT	8	4 NPT	3 5/16	6 9/16	5 7/8	117 1/8	17 7/8	94 7/8	13	14	6 FLG	11 1/2	263	252	1050
WU164-25	WU164-45	6 NPT	9 1/8	4 NPT	4	7 9/16	8	57 3/4	19 7/8	34	14	16	6 FLG	12 1/2	150	143	775
WU165-25	WU165-45	6 NPT	9 1/8	4 NPT	4	7 9/16	8	69 3/4	19 7/8	46	14	16	6 FLG	12 1/2	188	180	880
WU166-25	WU166-45	6 NPT	9 1/8	4 NPT	4	7 9/16	8	81 3/4	19 7/8	58	14	16	6 FLG	12 1/2	227	217	985
WU167-25	WU167-45	6 NPT	9 1/8	4 NPT	4	7 9/16	8	93 3/4	19 7/8	70	14	16	6 FLG	12 1/2	265	254	1090
WU168-25	WU168-45	6 NPT	9 1/8	4 NPT	4	7 9/16	8	105 3/4	19 7/8	82	14	16	6 FLG	12 1/2	304	291	1195
WU169-25	WU169-45	6 NPT	9 1/8	4 NPT	4	7 9/16	8	117 3/4	19 7/8	94	14	16	6 FLG	12 1/2	342	327	1300
WU164-210	WU164-410	6 NPT	9 1/8	4 NPT	4	7 9/16	8	57 3/4	19 7/8	31 3/4	16	16	8 FLG	12 1/2	150	143	775
WU165-210	WU165-410	6 NPT	9 1/8	4 NPT	4	7 9/16	8	69 3/4	19 7/8	43 3/4	16	16	8 FLG	12 1/2	188	180	880
WU166-210	WU166-410	6 NPT	9 1/8	4 NPT	4	7 9/16	8	81 3/4	19 7/8	55 3/4	16	16	8 FLG	12 1/2	227	217	985
WU167-210	WU167-410	6 NPT	9 1/8	4 NPT	4	7 9/16	8	93 3/4	19 7/8	67 3/4	16	16	8 FLG	12 1/2	265	254	1090
WU168-210	WU168-410	6 NPT	9 1/8	4 NPT	4	7 9/16	8	105 3/4	19 7/8	79 3/4	16	16	8 FLG	12 1/2	304	291	1195
WU169-210	WU169-410	6 NPT	9 1/8	4 NPT	4	7 9/16	8	117 3/4	19 7/8	91 3/4	16	16	8 FLG	12 1/2	342	327	1300
WU184-26	WU184-46	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	63 1/2	22	39 1/2	13 3/4	18	6 FLG	13 1/2	195	195	960
WU185-26	WU185-46	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	75 1/2	22	51 1/2	13 3/4	18	6 FLG	13 1/2	242	242	1084
WU186-26	WU186-46	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	87 1/2	22	63 1/2	13 3/4	18	6 FLG	13 1/2	290	290	1268
WU187-26	WU187-46	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	99 1/2	22	75 1/2	13 3/4	18	6 FLG	13 1/2	339	339	1332
WU188-26	WU188-46	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	111 1/2	22	87 1/2	13 3/4	18	6 FLG	13 1/2	387	387	1456
WU189-26	WU189-46	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	123 1/2	22	99 1/2	13 3/4	18	6 FLG	13 1/2	435	435	1580
WU184-212	WU184-412	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	65 1/2	22	39 1/4	15	18	8 FLG	13 1/2	195	195	960
WU185-212	WU185-412	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	77 1/2	22	51 1/4	15	18	8 FLG	13 1/2	242	242	1084
WU186-212	WU186-412	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	89 1/2	22	63 1/4	15	18	8 FLG	13 1/2	290	290	1208
WU187-212	WU187-412	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	101 1/2	22	75 1/4	15	18	8 FLG	13 1/2	339	339	1332
WU188-212	WU188-412	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	113 1/2	22	87 1/4	15	18	8 FLG	13 1/2	387	387	1456
WU189-212	WU189-412	6 NPT	11	4 NPT	4 5/8	8 3/8	9 1/4	125 1/2	22	99 1/4	15	18	8 FLG	13 1/2	435	435	1580
WU204-28	WU204-48	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	65 1/8	24	39 1/2	15	20	6 FLG	14 1/2	259	251	1332
WU205-28	WU205-48	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	77 1/8	24	51 1/2	15	20	6 FLG	14 1/2	324	314	1489
WU206-28	WU206-48	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	89 1/8	24	63 1/2	15	20	6 FLG	14 1/2	388	377	1646
WU207-28	WU207-48	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	101 1/8	24	75 1/2	15	20	6 FLG	14 1/2	453	439	1803
WU208-28	WU208-48	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	113 1/8	24	77 1/2	15	20	6 FLG	14 1/2	517	502	1960
WU209-28	WU209-48	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	125 1/8	24	99 1/2	15	20	6 FLG	14 1/2	582	565	2117
WU204-210	WU204-410	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	69 1/8	24	41 1/4	16 1/4	20	8 FLG	14 1/2	259	251	1332
WU205-213	WU205-413	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	81 1/8	24	51	17 1/2	20	10 FLG	14 1/2	324	314	1489
WU206-216	WU206-416	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	93 1/8	24	63	17 1/2	20	10 FLG	14 1/2	388	377	1646
WU207-216	WU207-416	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	105 1/8	24	75	17 1/2	20	10 FLG	14 1/2	453	439	1803
WU208-216	WU208-416	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	117 1/8	24	87	17 1/2	20	10 FLG	14 1/2	517	502	1960
WU209-216	WU209-416	8 NPT	10 5/8	6 NPT	4 3/8	9 1/2	8 3/4	129 1/8	24	99	17 1/2	20	10 FLG	14 1/2	582	565	2117

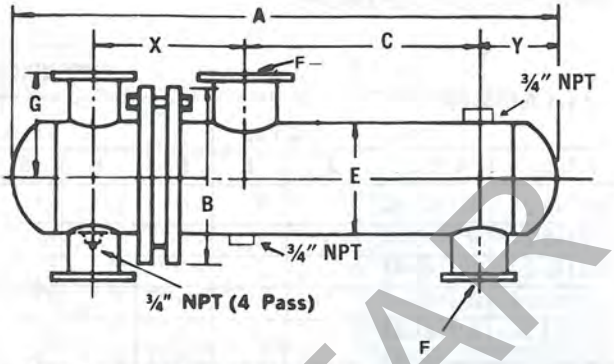
Dimensions are subject to change. If exact dimensions are needed for layout, write for certified prints.

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

DIMENSIONS (Continued) 22" THRU 30" DIAMETER



2 PASS HEAD 4 PASS HEAD



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

UNIT NUMBER		DIMENSIONS IN INCHES												HEATING SURFACE SQ.FT.		Approx. Shpg. Wt. (lbs.)
		2 Pass			4 Pass			2 and 4 Pass								
2 Pass	4 Pass	A	X	J FLG	A	X	H FLG	C	E	G	B	F FLG	Y	2 Pass	4 Pass	
WU224-2	WU224-4	91 1/8	21 3/8	10	86 5/8	20 7/8	6	38 1/2	22	17	26 1/8	12	15 1/8	333	325	1535
WU225-2	WU225-4	103 1/8	21 3/8	10	98 5/8	20 7/8	6	50 1/2	22	17	26 1/8	12	15 1/8	411	401	1720
WU226-2	WU226-4	115 1/8	21 3/8	10	110 5/8	20 7/8	6	62 1/2	22	17	26 1/8	12	15 1/8	489	477	1905
WU227-2	WU227-4	127 1/8	21 3/8	10	122 5/8	20 7/8	6	74 1/2	22	17	26 1/8	12	15 1/8	568	554	2090
WU228-2	WU228-4	139 1/8	21 3/8	10	134 5/8	20 7/8	6	86 1/2	22	17	26 1/8	12	15 1/8	645	630	2275
WU229-2	WU229-4	151 1/8	21 3/8	10	146 5/8	20 7/8	6	98 1/2	22	17	26 1/8	12	15 1/8	724	706	2460
WU2210-2	WU2210-4	163 1/8	21 3/8	10	158 5/8	20 7/8	6	110 1/2	22	17	26 1/8	12	15 1/8	803	782	2645
WU244-2	WU244-4	90 3/4	23 3/8	10	88 5/8	22 1/4	8	38 1/2	24	18	28 1/8	12	14 3/4	394	385	1880
WU245-2	WU245-4	102 3/4	23 3/8	10	100 5/8	22 1/4	8	50 1/2	24	18	28 1/8	12	14 3/4	490	479	2098
WU246-2	WU246-4	114 3/4	23 3/8	10	112 5/8	22 1/4	8	62 1/2	24	18	28 1/8	12	14 3/4	586	572	2316
WU247-2	WU247-4	126 3/4	23 3/8	10	124 5/8	22 1/4	8	74 1/2	24	18	28 1/8	12	14 3/4	681	666	2534
WU248-2	WU248-4	138 3/4	23 3/8	10	136 5/8	22 1/4	8	86 1/2	24	18	28 1/8	12	14 3/4	777	759	2752
WU249-2	WU249-4	150 3/4	23 3/8	10	148 5/8	22 1/4	8	98 1/2	24	18	28 1/8	12	14 3/4	873	853	2970
WU2410-2	WU2410-4	162 3/4	23 3/8	10	160 5/8	22 1/4	8	110 1/2	24	18	28 1/8	12	14 3/4	969	946	3188
WU264-2	WU264-4	98	27	12	93 3/8	24 3/8	8	38 1/8	26	21	30 5/8	14	16 3/4	488	475	2240
WU265-2	WU265-4	110	27	12	105 3/8	24 3/8	8	50 1/8	26	21	30 5/8	14	16 3/4	600	585	2485
WU266-2	WU266-4	122	27	12	117 3/8	24 3/8	8	62 1/8	26	21	30 5/8	14	16 3/4	712	694	2730
WU267-2	WU267-4	134	27	12	129 3/8	24 3/8	8	74 1/8	26	21	30 5/8	14	16 3/4	823	803	2975
WU268-2	WU268-4	146	27	12	141 3/8	24 3/8	8	86 1/8	26	21	30 5/8	14	16 3/4	935	912	3220
WU269-2	WU269-4	158	27	12	153 3/8	24 3/8	8	98 1/8	26	21	30 5/8	14	16 3/4	1047	1021	3465
WU2610-2	WU2610-4	170	27	12	165 3/8	24 3/8	8	110 1/8	26	21	30 5/8	14	16 3/4	1159	1130	3710
WU284-2	WU284-4	90 1/8	29	12	87 5/8	27 1/2	10	26 1/4	28	22	32 5/8	16	18 1/4	456	447	2754
WU285-2	WU285-4	102 1/8	29	12	99 5/8	27 1/2	10	38 1/4	28	22	32 5/8	16	18 1/4	587	575	3037
WU286-2	WU286-4	116 1/8	29	12	111 5/8	27 1/2	10	50 1/4	28	22	32 5/8	16	18 1/4	717	703	3320
WU287-2	WU287-4	126 1/8	29	12	123 5/8	27 1/2	10	62 1/4	28	22	32 5/8	16	18 1/4	848	831	3603
WU288-2	WU288-4	138 1/8	29	12	135 5/8	27 1/2	10	74 1/4	28	22	32 5/8	16	18 1/4	978	959	3886
WU289-2	WU289-4	150 1/8	29	12	147 5/8	27 1/2	10	86 1/4	28	22	32 5/8	16	18 1/4	1110	1088	4169
WU2810-2	WU2810-4	162 1/8	29	12	159 5/8	27 1/2	10	93 1/4	28	22	32 5/8	16	18 1/4	1240	1216	4452
WU304-2	WU304-4	90 1/4	30	14	86 1/8	27 1/2	10	24 7/8	30	23	34 5/8	16	18 3/4	539	529	3170
WU305-2	WU305-4	102 1/4	30	14	98 1/8	27 1/2	10	36 7/8	30	23	34 5/8	16	18 3/4	690	676	3489
WU306-2	WU306-4	114 1/4	30	14	110 1/8	27 1/2	10	48 7/8	30	23	34 5/8	16	18 3/4	840	822	3808
WU307-2	WU307-4	126 1/4	30	14	122 1/8	27 1/2	10	60 7/8	30	23	34 5/8	16	18 3/4	991	970	4127
WU308-2	WU308-4	138 1/4	30	14	134 1/8	27 1/2	10	74 7/8	30	23	34 5/8	16	18 3/4	1139	1116	4446
WU309-2	WU309-4	150 1/4	30	14	146 1/8	27 1/2	10	84 7/8	30	23	34 5/8	16	18 3/4	1289	1264	4756
WU3010-2	WU3010-4	162 1/4	30	14	158 1/8	27 1/2	10	96 7/8	30	23	34 5/8	16	18 3/4	1439	1410	5084

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

PROPERTIES OF SATURATED WATER

Temperature t °F	Density ρ lb_m/ft^3	Dynamic Viscosity $lb_m/hr\ ft$	Kinematic Viscosity ν ft^2/hr	Specific Heat c_p $B/lb_m F$	Thermal Conductivity k B/hr ft F	Thermal Diffusivity a ft^2/hr	Prandtl Number N_{Pr}
32	62.4	4.33	0.0694	1.005	0.320	0.00510	13.61
40	4	3.73	598	1.005	26	520	11.50
50	4	3.16	506	1.00	32	532	9.51
60	62.4	2.71	0.0434	1.00	0.337	0.00540	8.04
70	3	36	379	1.00	43	551	6.88
80	2	08	334	1.00	49	561	5.95
90	1	1.85	298	1.00	54	570	5.23
100	0	66	268	1.00	59	579	4.63
110	61.9	1.49	0.0241	1.00	0.363	0.00586	4.11
120	7	36	220	1.00	67	595	3.70
130	6	24	201	1.00	72	604	3.33
140	4	14	186	1.00	76	612	3.04
150	2	05	172	1.00	80	621	2.77
160	61.0	0.970	0.0159	1.00	0.383	0.00628	2.53
170	60.8	0.900	148	1.005	86	632	2.34
180	6	0.840	139	1.005	88	637	2.18
190	4	0.786	130	1.005	90	642	2.02
200	1	0.738	123	1.01	92	646	1.90
210	59.9	0.693	0.0116	1.015	0.393	0.00646	1.80
220	7	54	110	1.015	4	650	1.69
230	4	18	104	1.01	5	658	1.58
240	1	0.585	0990	1.01	6	663	1.49
250	58.8	55	0944	1.015	6	663	1.42
260	58.6	0.528	0.00901	1.02	0.396	0.00663	1.36
270	3	04	864	1.02	6	666	1.30
280	0	0.482	831	1.025	6	666	1.25
290	57.7	63	802	1.025	6	670	1.20
300	4	48	780	1.03	6	670	1.16

WATER SOLUTIONS

	Sp. Gr.	Sp. Ht.	k	VISCOSITY				
				−12.2°C 10°F	4.44°C 40°F	26.7°C 80°F	48.9°C 120°F	71.1°C 160°F
70% Acetic Acid	1.07	.7	.14	–	3.9	2.4	1.5	1.0
26% Ammonia	.905	1.0	.26	–	1.8	1.2	–	–
Brine–25% CaCl	1.23	.7	.28	8.0	4.5	2.1	–	–
Brine–25% NaCl	1.19	.8	.24	4.8	3.3	2.1	–	–
95% Ethyl alcohol	.81	.6	.11	3.0	2.0	1.3	.8	.53
40% Ethyl alcohol	.94	.95	.22	9.6	5.2	2.5	1.23	.65
31.5% Hydrochloric acid	1.15	.6	–	–	2.5	1.85	1.42	1.1
50% Glycerine	1.13	.8	.23	–	11.0	5.4	2.8	1.5
90% Methyl alcohol	.82	.65	.13	1.3	1.0	.73	.53	.43
40% Methyl alcohol	.94	.92	.23	5.5	3.4	1.8	1.0	.57
95% Nitric acid	1.503	–	–	1.9	1.5	1.1	.83	.65
60% Nitric acid	1.375	–	–	4.7	3.4	2.2	1.5	1.05
50% Sodium hydroxide	1.53	.78	–	–	–	60	19	8
30% Sodium hydroxide	1.33	.84	–	–	–	9.6	4.5	2.5
60% Sucrose (cane sugar)	1.29	–	–	–	–	41	14	7
40% Sucrose	1.18	–	–	–	12	5	2.5	1.6
20% Sucrose	1.08	–	–	–	3.2	1.6	.98	.68
98% Sulfuric acid	1.84	.35	.15	–	46	23	11.5	6.4
60% Sulfuric acid	1.50	.58	.24	–	9.5	6.0	3.9	2.7
Water	1.00	1.00	.34	–	1.55	0.861	0.56	0.40

Sp. Gr.–Specific gravity (approx.) at room temperature
Sp. Ht.–Specific heat (approx.) at room temperature
k–Thermal conductivity in BTU/hr/sq. ft./°F/ft. (room temp.)
Viscosity–Expressed in centipoises

HEAD AND PRESSURE EQUIVALENTS

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

CONVERSION FACTORS

TO CONVERT FROM	TO	MULTIPLY BY
Pressure		
Atmospheres	ft. of water	33.9
Atmospheres	mm. of mercury	760.0
Atmospheres	pounds/sq. in	14.696
Feet of water (40°F)	pounds/sq. in	0.4335
Inches of mercury (32°F)	feet of water (40°F)	1.133
Inches of mercury (32°F)	pounds/sq. in	0.49116
Inches of water (40°F)	pounds/sq. in	0.03614
mm. of mercury (32°F)	pounds/sq. in	0.01934
Pounds/sq. in	feet of water (40°F)	2.3066
Pounds/sq. in	inches of mercury(32°F)	2.036
Volume		
Barrels (oil)	gallons	42.0
Barrels (breweries)	gallons	31.0
Cubic cm	cubic inches	0.061023
Cubic ft	cubic inches	1728.0
Cubic ft	cubic meters	0.02832
Cubic ft	gallons	7.481
Cubic meters	gallons	264.17
Gallons	cubic ft	0.1337
Gallons	cubic inches	231.0
Gallons	gallons (British)	0.83268
Gallons	liters	3.7853
Liters	gallons	0.2642
Liters	quarts	1.0567
Heat		
Boiler horsepower (BHP)	BTU/hr	33479.0
BTU	calories (gram)	252.0
BTU	calories (kg.)	0.252
Calories (gram)/gram/°C	BTU pound/°F	1.0
Calories (gram) per gram	BTU/pound	1.8
Horsepower	BTU/hr	2545.0
K. W. hours	BTU	3413.0

TO CONVERT FROM	TO	MULTIPLY BY
Temperature		
Centigrade degrees	Fahrenheit degrees	1.8 and add 32°
Fahrenheit degrees	Centigrade degrees	Subtract 32° and multiply by 0.5555
Measure		
Centimeters	inches	0.3937
Feet	meters	0.3048
Inches	centimeters	2.54
Kilometers	miles	0.6214
Meters	feet	3.2808
Microns	millimeters	0.001
Sq. meters	sq. feet	10.764
Weight		
Cubic ft. of water (60°F)	pounds	62.37
Gallons	pounds of water (60°F)	8.34
Grains	pounds	1/7000
Grains/gal	parts per million	17.12
Grams	grains	15.43
Kilograms	pounds	2.2046
Pounds	grams	453.59
Pounds	kilograms	0.4536
Tons (long)	tons (short)	1.12
Volumetric Rate		
Cubic ft./sec	gallons/min	448.83
Gallons/min	cu. ft./sec	0.00223
Power		
Horsepower	ft. lbs./sec	550.0
Horsepower	K. W.	0.745
Viscosity		
Centipoises	lbs./sec./ft	0.000672
Poises	centipoises	0.01
Velocity		
Ft./sec	meters/sec	0.3048
Meters/sec	ft./sec	3.2808

HARARAT GOSTAR

MFG. & ENG. CO.