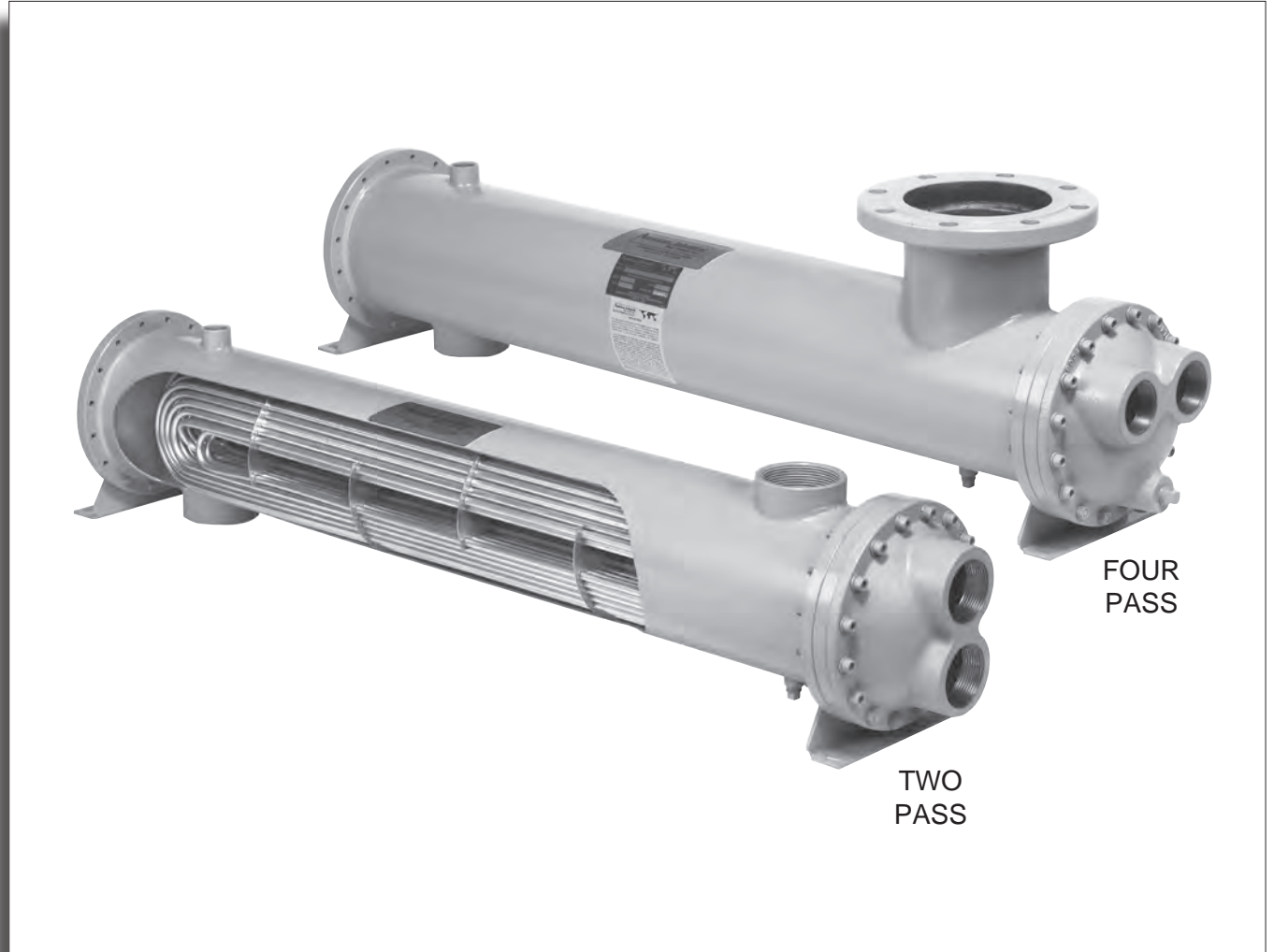


**UCN, URCN & UCF, URCF SERIES**



**U-TUBE FIXED & REMOVEABLE BUNDLE**

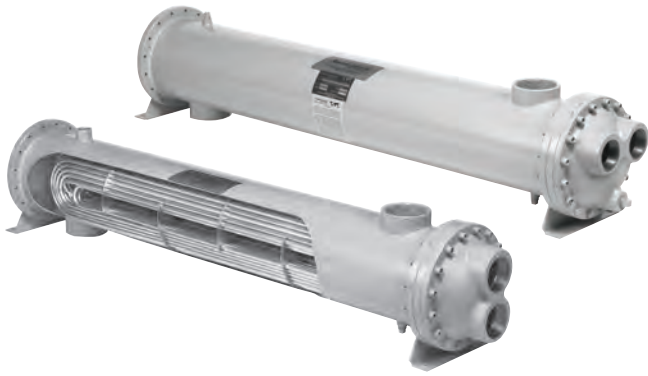
# **HEAT EXCHANGERS**

*For steam to liquid service*

- Operating pressure for tubes 100 PSI.
- Operating pressure for shell 100 PSI.
- Operating temperature 400 °F.
- Can be customized to fit any application.
- Computer generated data sheet available for any application
- As an option, available in ASME Code and Certified

# UCN, URCN, UCF & URCF Series *overview*

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## **UCN, URCN SERIES**

U-tube heat exchangers with fixed or removeable tube bundle for steam service. Normally applied when the differential temperature between the hot fluid entering and the cooling fluid entering is 150°F or greater. U-tube design allows tubing to freely expand and contract independently of the shell. Welded outer shell construction made of carbon steel with NPT connection ports. Sizes from 5" to 10" diameters. Standard two and four pass units available. Optional 90/10 copper nickel, stainless steel, and carbon steel tube. Can be modified to meet your requirements.



## **UCF & URCF SERIES**

U-tube heat exchangers with fixed or removeable tube bundle for steam service. Normally applied when the differential temperature between the hot fluid entering and the cooling fluid entering is 150°F or greater. U-tube design allows tubing to freely expand and contract independently of the shell. Welded outer shell construction made of carbon steel with ANSI flange ports. Sizes from 5" to 10" diameters. Standard two and four pass units available. Optional 90/10 copper nickel, stainless steel, and carbon steel tube. Can be modified to meet your requirements.



## **STANDARD URCS STOCK UNIT FOR STEAM APPLICATION**

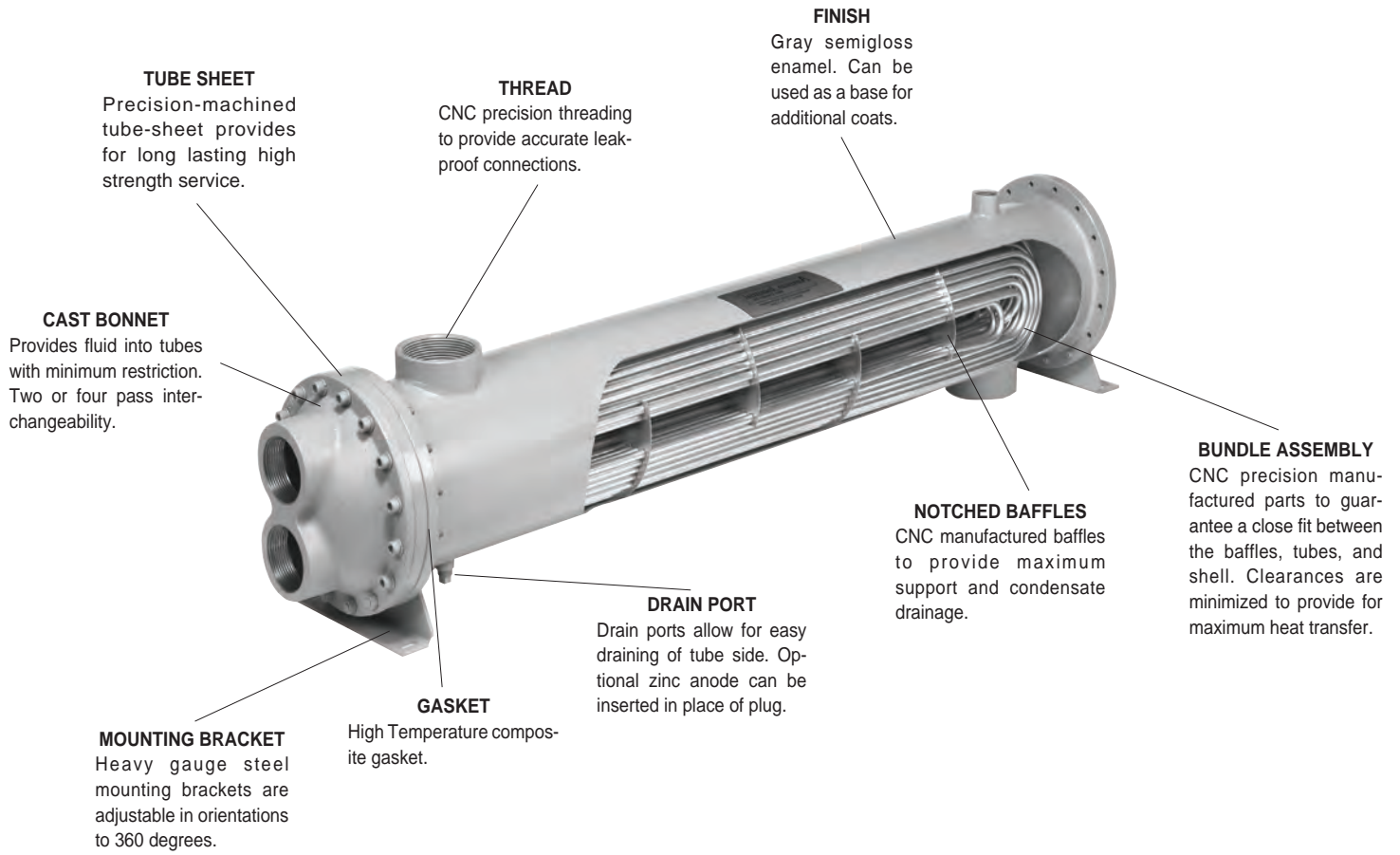
U-tube heat exchangers with removeable tube bundle for fluids with high differential inlet temperatures or where tube bundle requires removal. Normally applied when the differential temperature between the hot fluid entering and the cooling fluid entering is 150°F or greater. U-tube design allows tubing to freely expand and contract independently of the shell. Welded outer shell construction made of carbon steel with NPT or ANSI flange ports and viton o-ring seals. Sizes from 4" to 8" diameters. Standard Two Pass units available. Can be modified to meet your requirements. See page 140 for detailed dimension.



## **ACW / AOCHW SERIES**

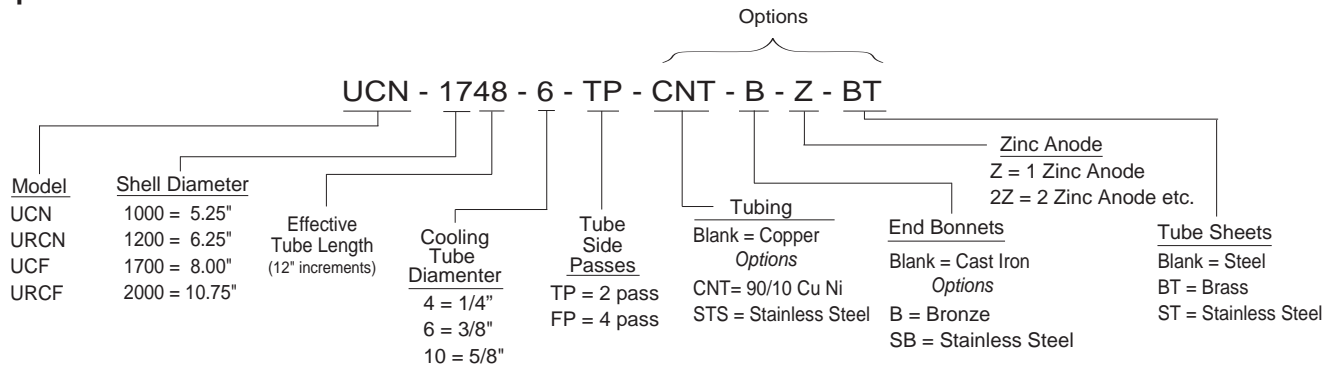
*Can be used as a Space heater by using steam or hot water*

# UCN, URCN, UCF & URCF Series *construction*



## UNIT CODING

### Example Model



## STANDARD CONSTRUCTION MATERIALS & RATINGS

Standard Model	UCN / URCN & UCF / URCF	Options	Standard Unit Ratings
Shell	Steel	Stainless Steel	Operating Pressure Tubes 100 psig Operating Pressure Shell 100 psig Operating Temperature 400 °F
Tubes	Copper	90/10 Cu. Ni. / Stainless Steel	
Baffles	Aluminum / Brass	Stainless Steel	
Tube Sheet	Steel	Brass / Stainless Steel	
End Bonnets	Cast Iron	Stainless Steel	
Mounting Brackets	Steel	Stainless Steel	
Gasket	High Temperature Gasket	Viton	

# UCN, URCN, UCF & URCF Series selection

Step 6. Select the proper diameter heat exchanger by calculating the capacity factor.

$$F_c = \frac{Q}{\text{Btu/lb}} = \text{lbs/hr} \quad \frac{587,169 \text{ Btu/hr}}{920 \text{ Btu/lb}} = 639 \text{ lbs/hr}$$

From graph F or G select the proper diameter heat exchanger. Capacity 639 lbs/hr saturated steam required @ 40psig.

Capacity = 639 lbs/hr = 1000 series 3/8" tubes

Step 7. Select the proper size heat exchanger from the surface area chart in table D.

Minimum surface area required = 15.9 sq.ft. = URCN1036-6-TP

Step 8. Select same using the performance chart.

$$F_s = \frac{\text{Btu/hr}}{T_s - T_{\text{exit}}} = \frac{587,169}{287 - 150} = 4,286 F_s$$

From the chart 1000, 3/8" tubes on page ( ) select unit landing closest on or above intersection point of 30gpm & 4,286 Btu/hr °F

Selection = URCN1036-6-TP

TABLE A- FACTOR M/LMTD = L x M

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

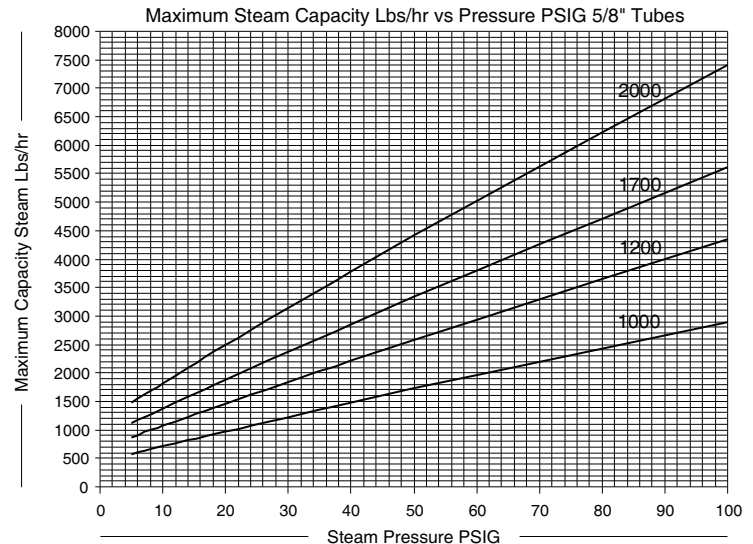
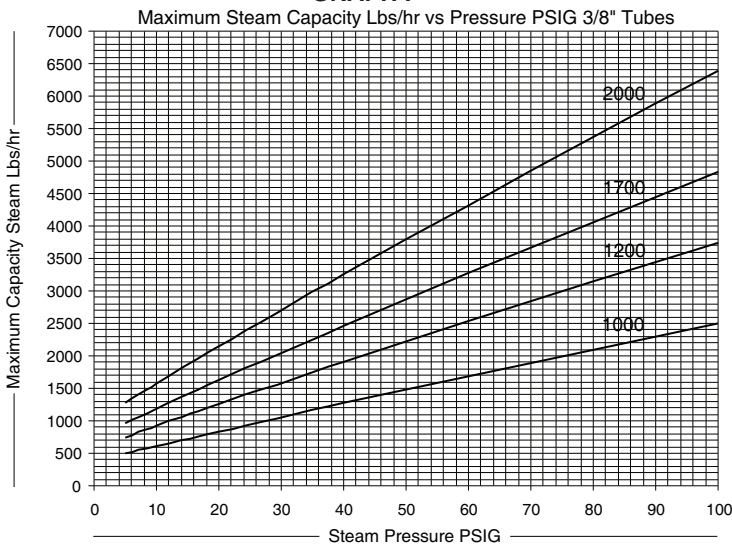
TABLE D- Surface Area

Model Number	Surface Area in Sq.ft.		Model Number	Surface Area in Sq.ft.	
	3/8" O.D Tubing CODE 6	5/8" O.D Tubing CODE 10		3/8" O.D Tubing CODE 6	5/8" O.D Tubing CODE 10
1024	11.0	6.5	1724	32.2	17.0
1036	16.5	9.8	1736	48.3	25.5
1048	22.0	13.0	1748	64.4	34.0
			1760	80.5	42.5
1224	17.3	9.1	1772	96.6	51.0
1236	25.9	13.7	1784	112.7	59.5
1248	34.5	18.3			
1260	43.2	22.9	2036	80.1	41.2
1272	51.8	27.5	2048	106.8	55.0
1284	60.5	32.0	2060	133.5	68.7
			2072	160.2	82.5
			2084	186.9	96.2

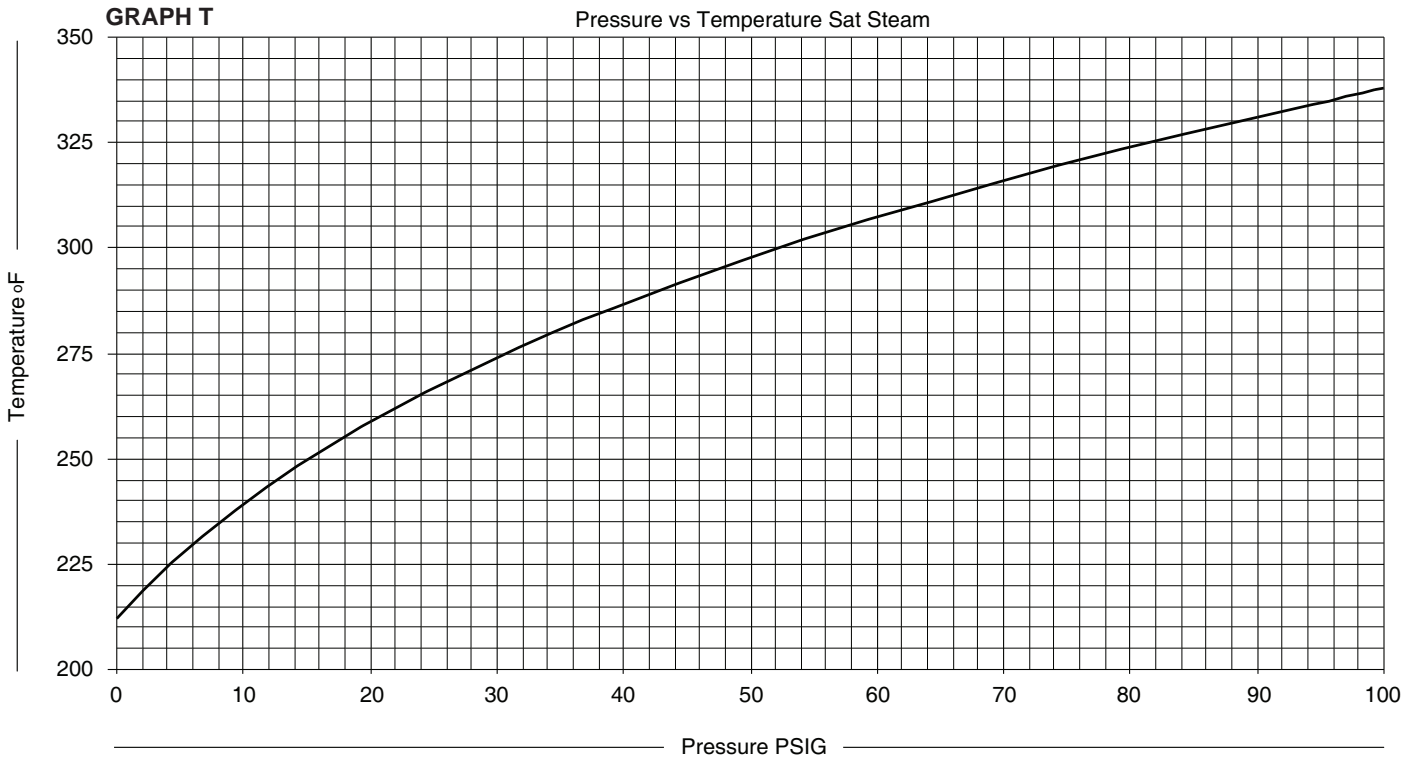
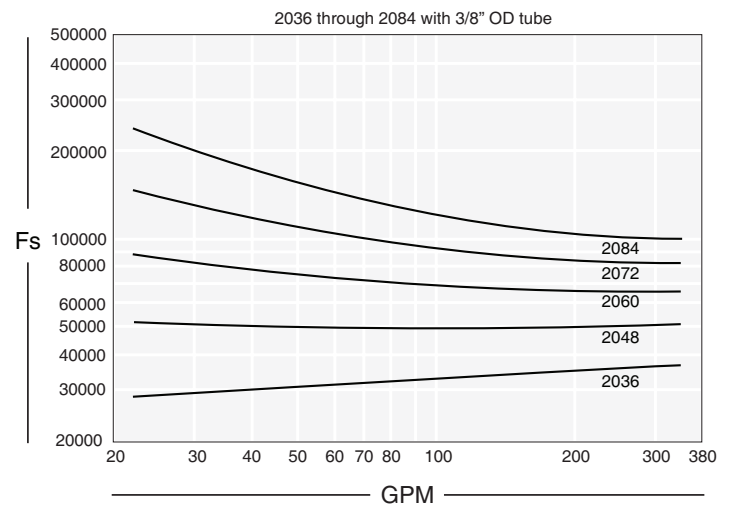
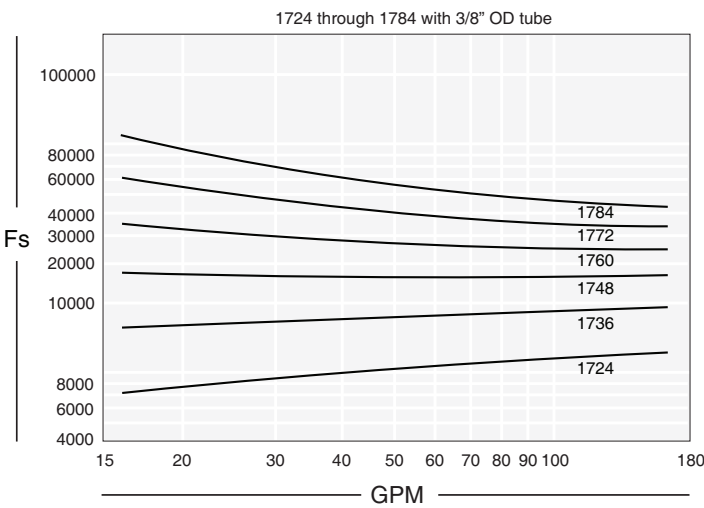
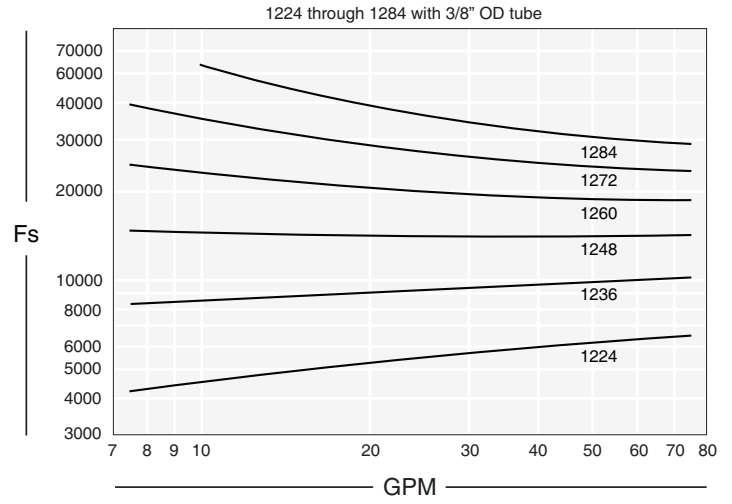
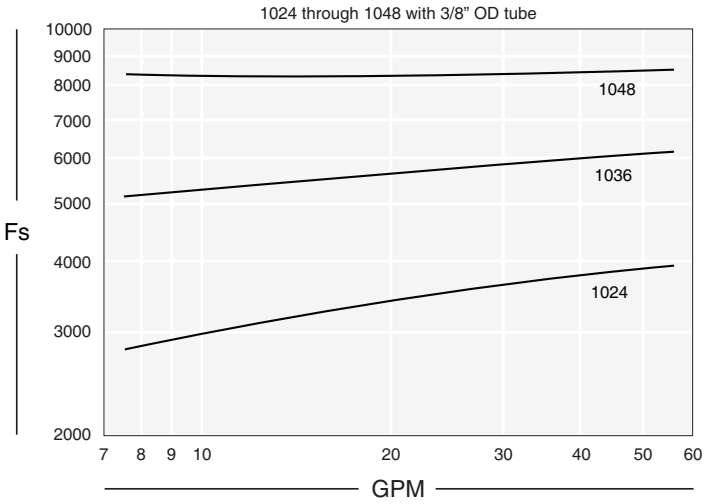
TABLE E- Flow Rate for Shell & Tube

Shell dia. Code	Liquid Flow - Tube Side							
	3/8" TP		5/8" TP		3/8" FP		5/8" FP	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1000	5	60	5	60	5	37	5	33
1200	5	100	5	100	7.5	56	7.5	50
1700	10	180	10	160	14	90	14	80
2000	15	340	15	300	25	160	25	145

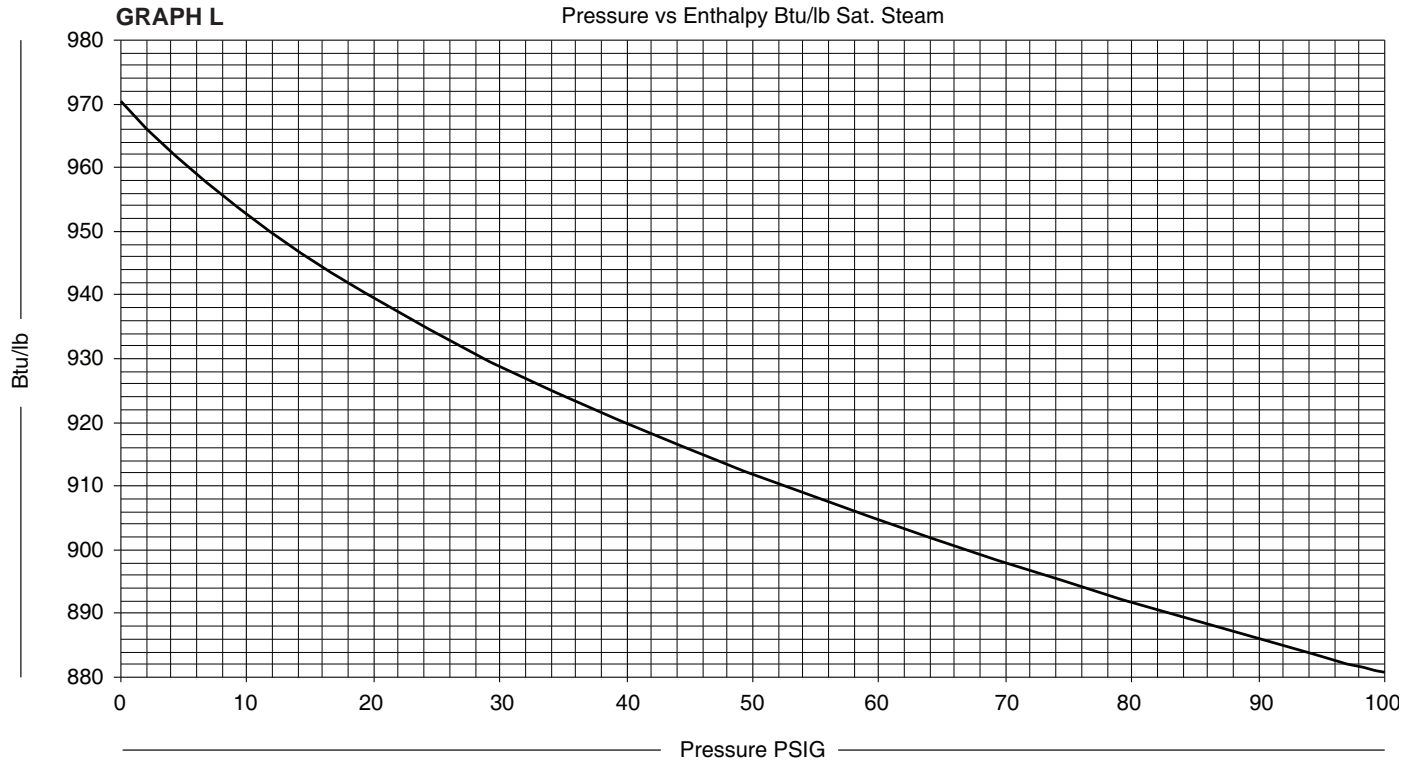
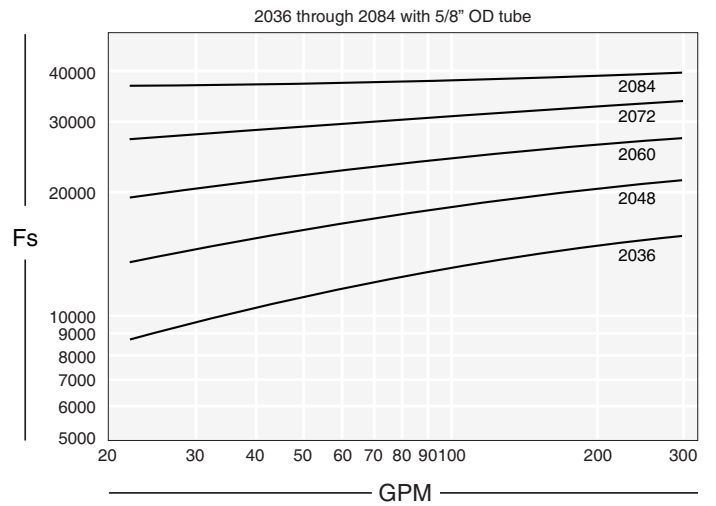
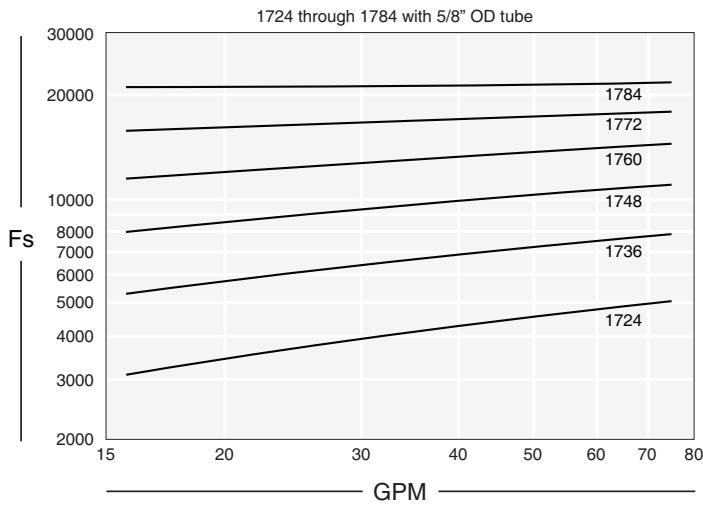
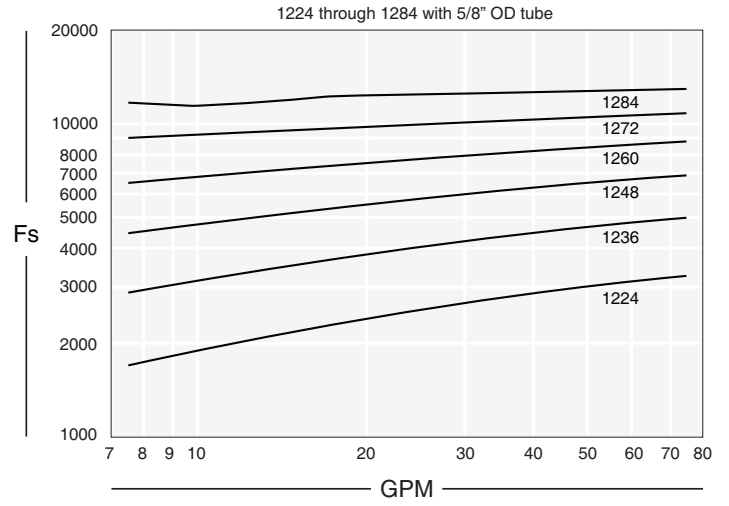
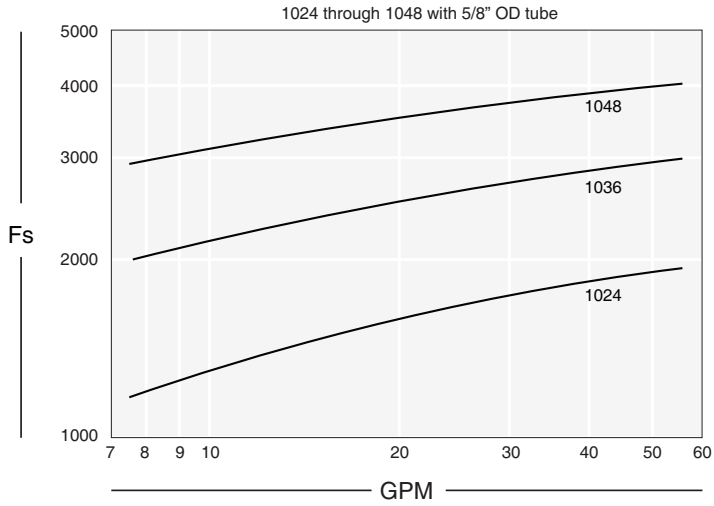
GRAPH F



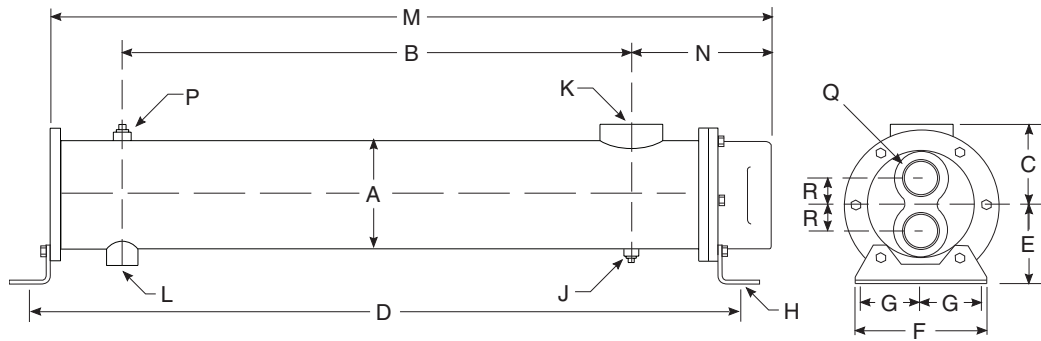
# UCN, URCN, UCF & URCF Series selection



# UCN, URCN, UCF & URCF Series *selection*

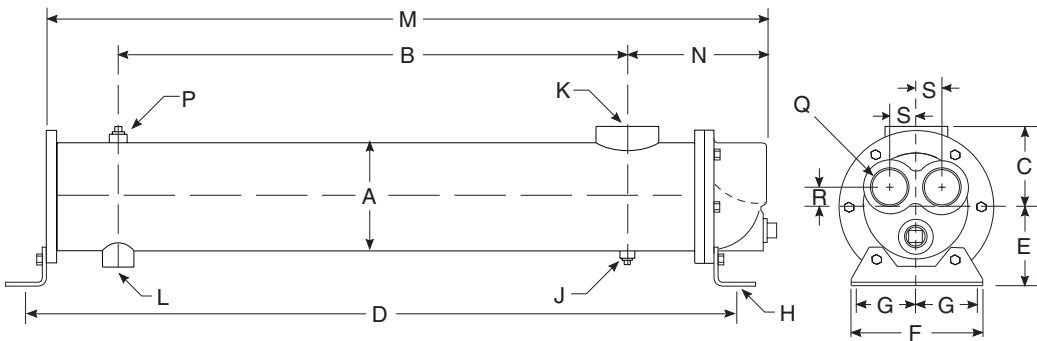


# UCN Series



**Two Pass (TP)**

Model	M	N	Q NPT	R
UCN-1024	28.88			
UCN-1036	40.88	6.00	1.50	1.19
UCN-1048	52.88			
UCN-1224	29.17			
UCN-1236	41.17	6.67	2.00	1.44
UCN-1248	53.17			
UCN-1260	65.17			
UCN-1272	77.17			
UCN-1284	89.17			
UCN-1724	30.13			
UCN-1736	42.13	7.88	2.50	1.88
UCN-1748	54.13			
UCN-1760	66.13			
UCN-1772	78.13			
UCN-1784	90.13			
UCN-2036	43.91			
UCN-2048	55.91	10.16	3.00	2.50
UCN-2060	67.91			
UCN-2072	79.91			
UCN-2084	91.91			



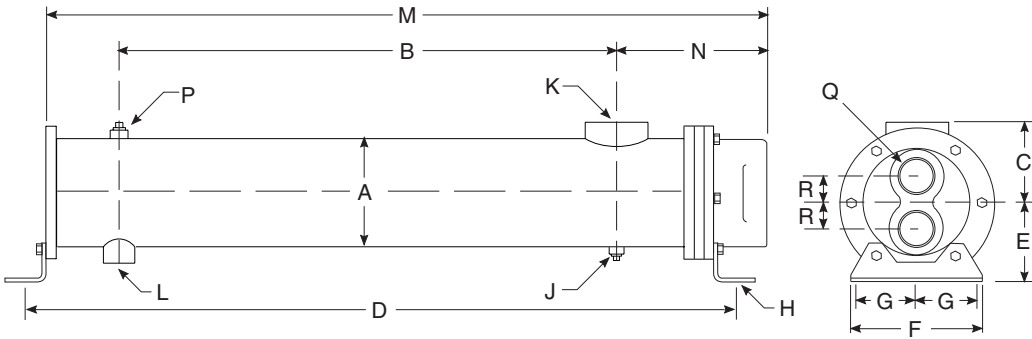
**FOUR PASS (FP)**

Model	M	N	Q NPT	R	S
UCN-1024	29.21				
UCN-1036	41.21	6.34	1.00	.75	1.19
UCN-1048	53.21				
UCN-1224	29.58				
UCN-1236	41.58	7.08	1.50	1.06	1.44
UCN-1248	53.58				
UCN-1260	65.58				
UCN-1272	77.58				
UCN-1284	84.58				
UCN-1724	29.78				
UCN-1736	41.78	7.53	2.00	1.38	1.88
UCN-1748	53.78				
UCN-1760	65.78				
UCN-1772	77.78				
UCN-1784	89.78				
UCN-2036	44.00				
UCN-2048	56.00	10.26	2.50	1.75	2.50
UCN-2060	68.00				
UCN-2072	80.00				
UCN-2084	92.00				

## COMMON DIMENSIONS

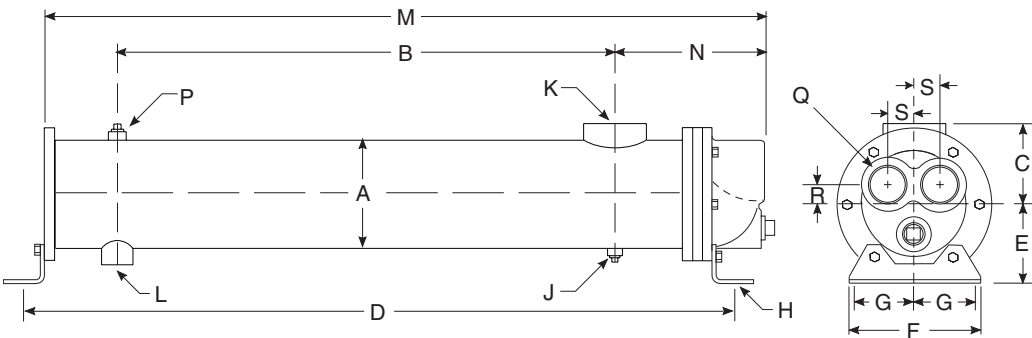
Model	A	B	C	D	E	F	G	H	J NPT	K NPT	L NPT	P NPT	Weight	Model
UCN-1024				29.13									55.00	UCN-1024
UCN-1036	5.25	32.00	3.69	41.13	4.00	5.25	2.00	.44 x 1.00 thru slot	.375	2.00	1.50	.75	70.00	UCN-1036
UCN-1048		44.00		53.13									85.00	UCN-1048
UCN-1224		19.00		29.59									83.00	UCN-1224
UCN-1236		31.00		41.59									108.00	UCN-1236
UCN-1248	6.25	43.00	4.19	53.59	4.50	6.25	2.50	.44 x 1.00 thru slot	.375	2.50	2.00	.75	132.00	UCN-1248
UCN-1260		55.00		65.59									158.00	UCN-1260
UCN-1272		67.00		77.59									182.00	UCN-1272
UCN-1284		79.00		89.59									206.00	UCN-1284
UCN-1724		19.00		29.50									138.00	UCN-1724
UCN-1736		31.00		41.50									180.00	UCN-1736
UCN-1748	8.00	43.00	5.06	53.50	5.75	8.25	3.50	.44 x 1.00 thru slot	.375	3.00	2.00	1.00	219.00	UCN-1748
UCN-1760		55.00		65.50									258.00	UCN-1760
UCN-1772		67.00		77.50									300.00	UCN-1772
UCN-1784		79.00		89.50									342.00	UCN-1784
UCN-2036		30.00		42.63									620.00	UCN-2036
UCN-2048		42.00		54.63									670.00	UCN-2048
UCN-2060	10.75	54.00	6.88	66.63	8.00	11.50	5.00	.781 x 1.25 thru slot	.50	4.00	3.00	1.25	730.00	UCN-2060
UCN-2072		66.00		78.63									820.00	UCN-2072
UCN-2084		78.00		90.63									870.00	UCN-2084

# URCN dimensions



**Two Pass (TP)**

Model	M	N	Q NPT	R
URCN-1024	28.88			
URCN-1036	40.88	6.00	1.50	1.19
URCN-1048	52.88			
URCN-1224	29.17			
URCN-1236	41.17			
URCN-1248	53.17	6.67	2.00	1.44
URCN-1260	65.17			
URCN-1272	77.17			
URCN-1284	89.17			
URCN-1724	30.13			
URCN-1736	42.13			
URCN-1748	54.13	7.88	2.50	1.88
URCN-1760	66.13			
URCN-1772	78.13			
URCN-1784	90.13			
URCN-2036	43.91			
URCN-2048	55.91			
URCN-2060	67.91	10.16	3.00	2.50
URCN-2072	79.91			
URCN-2084	91.91			



**FOUR PASS (FP)**

Model	M	N	Q NPT	R	S
URCN-1024	29.21				
URCN-1036	41.21	6.34	1.00	.75	1.19
URCN-1048	53.21				
URCN-1224	29.58				
URCN-1236	41.58				
URCN-1248	53.58	7.08	1.50	1.06	1.44
URCN-1260	65.58				
URCN-1272	77.58				
URCN-1284	84.58				
URCN-1724	29.78				
URCN-1736	41.78				
URCN-1748	53.78	7.53	2.00	1.38	1.88
URCN-1760	65.78				
URCN-1772	77.78				
URCN-1784	89.78				
URCN-2036	44.00				
URCN-2048	56.00				
URCN-2060	68.00	10.26	2.50	1.75	2.50
URCN-2072	80.00				
URCN-2084	92.00				

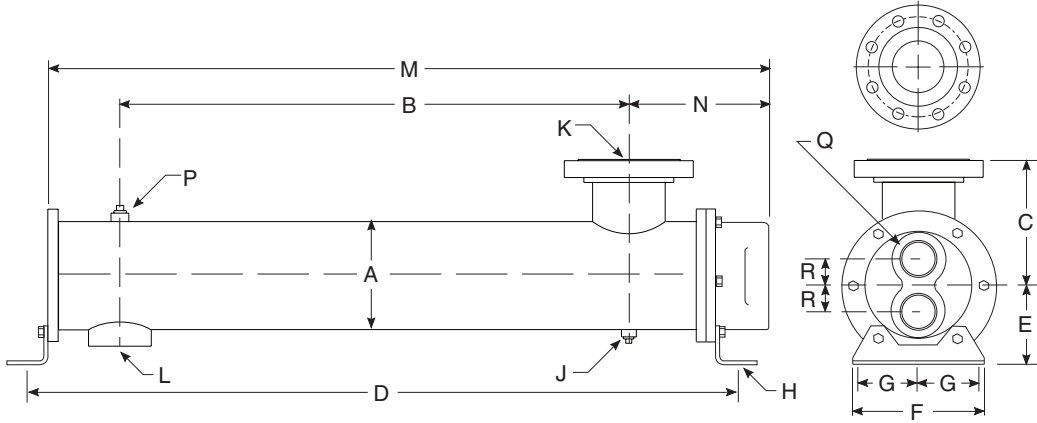
## COMMON DIMENSIONS

Model	A	B	C	D	E	F	G	H	J NPT	K NPT	L NPT	P NPT	Weight	Model
URCN-1024		20.00		29.13									55.00	URCN-1024
URCN-1036	5.25	32.00	3.69	41.13	4.00	5.25	2.00	.44 x 1.00 thru slot	.375	2.00	1.50	.75	70.00	URCN-1036
URCN-1048		44.00		53.13									85.00	URCN-1048
URCN-1224		19.00		29.59									83.00	URCN-1224
URCN-1236		31.00		41.59									108.00	URCN-1236
URCN-1248	6.25	43.00	4.19	53.59	4.50	6.25	2.50	.44 x 1.00 thru slot	.375	2.50	2.00	.75	132.00	URCN-1248
URCN-1260		55.00		65.59									158.00	URCN-1260
URCN-1272		67.00		77.59									182.00	URCN-1272
URCN-1284		79.00		89.59									206.00	URCN-1284
URCN-1724		19.00		29.50									138.00	URCN-1724
URCN-1736		31.00		41.50									180.00	URCN-1736
URCN-1748	8.00	43.00	5.06	53.50	5.75	8.25	3.50	.44 x 1.00 thru slot	.375	3.00	2.00	1.00	219.00	URCN-1748
URCN-1760		55.00		65.50									258.00	URCN-1760
URCN-1772		67.00		77.50									300.00	URCN-1772
URCN-1784		79.00		89.50									342.00	URCN-1784
URCN-2036		30.00		42.63									620.00	URCN-2036
URCN-2048		42.00		54.63									670.00	URCN-2048
URCN-2060	10.75	54.00	6.88	66.63	8.00	11.50	5.00	.781 x 1.25 thru slot	.50	4.00	3.00	1.25	730.00	URCN-2060
URCN-2072		66.00		78.63									820.00	URCN-2072
URCN-2084		78.00		90.63									870.00	URCN-2084



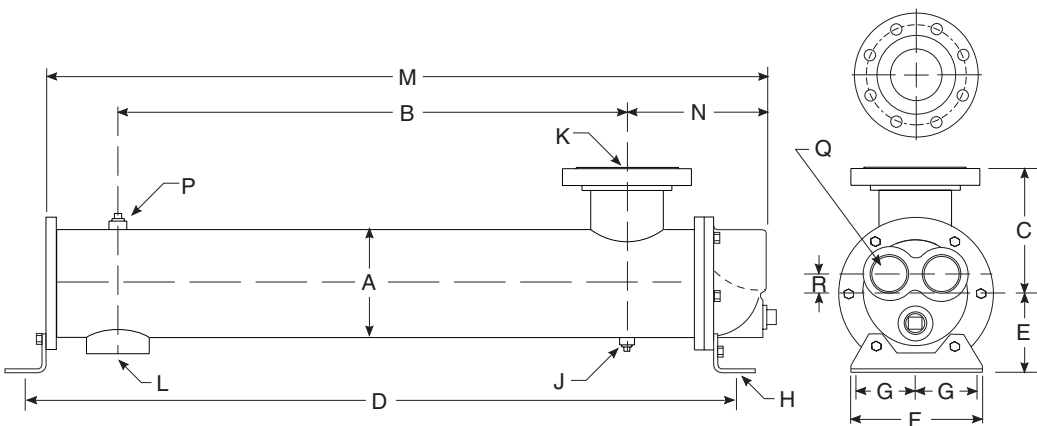
# UCF Series *dimensions*

## FIXED TUBE BUNDLE (U-TUBE DESIGN)



Model	M	N	Q NPT	R
UCF-1024	28.88			
UCF-1036	40.88	6.43	1.50	1.19
UCF-1048	52.88			
UCF-1224	29.17			
UCF-1236	41.17	7.23	2.00	1.44
UCF-1248	53.17			
UCF-1260	65.17			
UCF-1272	77.17			
UCF-1284	89.17			
UCF-1724	30.13			
UCF-1736	42.13	8.64	2.50	1.88
UCF-1748	54.13			
UCF-1760	66.13			
UCF-1772	78.13			
UCF-1784	90.13			
UCF-2036	43.91			
UCF-2048	55.91	11.07	3.00	2.50
UCF-2060	67.91			
UCF-2072	79.91			
UCF-2084	91.91			

## Two Pass (TP)



Model	M	N	Q NPT	R	S
UCF-1024	29.21				
UCF-1036	41.21	6.77	1.00	.75	1.19
UCF-1048	53.21				
UCF-1224	29.58				
UCF-1236	41.58	7.64	1.50	1.06	1.44
UCF-1248	53.58				
UCF-1260	65.58				
UCF-1272	77.58				
UCF-1284	84.58				
UCF-1724	29.78				
UCF-1736	41.78	8.29	2.00	1.38	1.88
UCF-1748	53.78				
UCF-1760	65.78				
UCF-1772	77.78				
UCF-1784	89.78				
UCF-2036	44.00				
UCF-2048	56.00	11.16	2.50	1.75	2.50
UCF-2060	68.00				
UCF-2072	80.00				
UCF-2084	92.00				

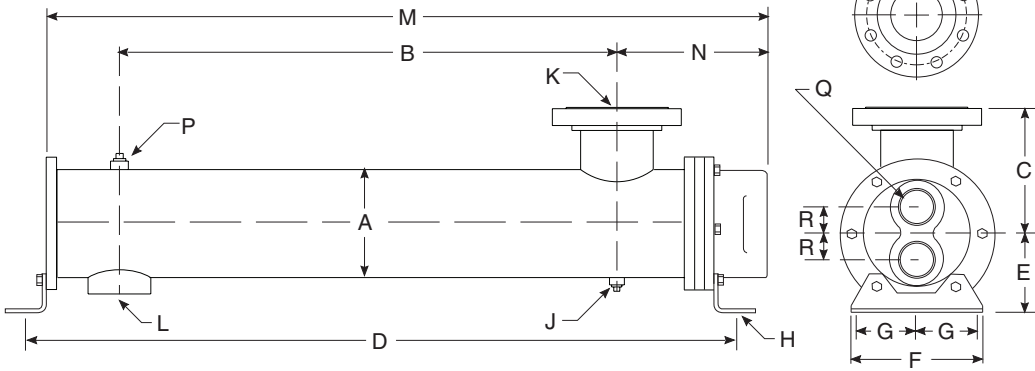
## FOUR PASS (FP)

## COMMON DIMENSIONS

Model	A	B	C	D	E	F	G	H	J NPT	K ANSI Flange	L NPT	P NPT	Weight	Model
UCF-1024		19.75		29.13									55.00	UCF-1024
UCF-1036	5.25	31.75	7.63	41.13	4.00	5.25	2.00	.44 x 1.00 thru slot	.375	3.00	1.50	.75	70.00	UCF-1036
UCF-1048		43.75		53.13									85.00	UCF-1048
UCF-1224		19.00		29.59									83.00	UCF-1224
UCF-1236		31.00		41.59									108.00	UCF-1236
UCF-1248	6.25	43.00	8.13	53.59	4.50	6.25	2.50	.44 x 1.00 thru slot	.375	4.00	2.00	.75	132.00	UCF-1248
UCF-1260		55.00		65.59									158.00	UCF-1260
UCF-1272		67.00		77.59									182.00	UCF-1272
UCF-1284		79.00		89.59									206.00	UCF-1284
UCF-1724		18.25		29.50									138.00	UCF-1724
UCF-1736		30.25		41.50									180.00	UCF-1736
UCF-1748	8.00	42.25	9.00	53.50	5.75	8.25	3.50	.44 x 1.00 thru slot	.375	5.00	2.00	1.00	219.00	UCF-1748
UCF-1760		54.25		65.50									258.00	UCF-1760
UCF-1772		66.25		77.50									300.00	UCF-1772
UCF-1784		78.25		89.50									342.00	UCF-1784
UCF-2036		29.00		42.63									620.00	UCF-2036
UCF-2048		41.00		54.63									670.00	UCF-2048
UCF-2060	10.75	53.00	10.38	66.63	8.00	11.50	5.00	.781 x 1.25 thru slot	.50	6.00	3.00	1.25	730.00	UCF-2060
UCF-2072		65.00		78.63									820.00	UCF-2072
UCF-2084		76.00		90.63									870.00	UCF-2084

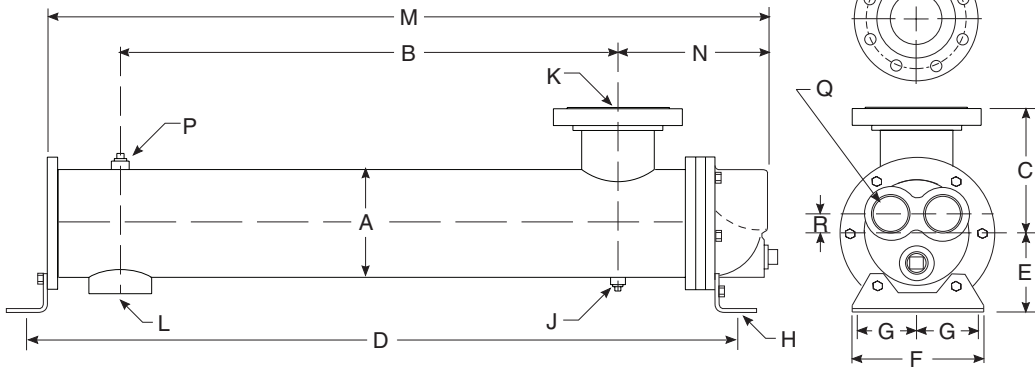
# URCF Series *dimensions*

## REMOVABLE TUBE BUNDLE (U-TUBE DESIGN)



### Two Pass (TP)

Model	M	N	Q NPT	R
URCF-1024	28.88			
URCF-1036	40.88	6.43	1.50	1.19
URCF-1048	52.88			
URCF-1224	29.17			
URCF-1236	41.17	7.23	2.00	1.44
URCF-1248	53.17			
URCF-1260	65.17			
URCF-1272	77.17			
URCF-1284	89.17			
URCF-1724	30.13			
URCF-1736	42.13	8.64	2.50	1.88
URCF-1748	54.13			
URCF-1760	66.13			
URCF-1772	78.13			
URCF-1784	90.13			
URCF-2036	43.91			
URCF-2048	55.91	11.07	3.00	2.50
URCF-2060	67.91			
URCF-2072	79.91			
URCF-2084	91.91			



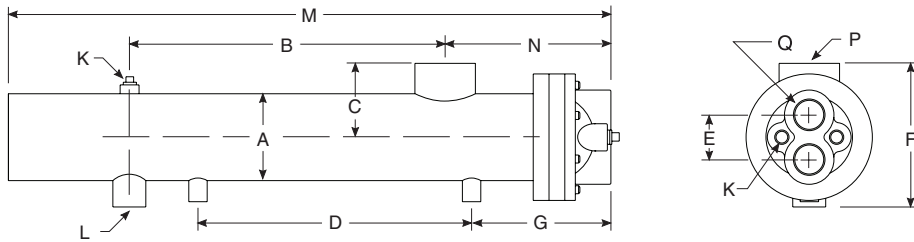
### FOUR PASS (FP)

Model	M	N	Q NPT	R	S
URCF-1024	29.21				
URCF-1036	41.21	6.77	1.00	.75	1.19
URCF-1048	53.21				
URCF-1224	29.58				
URCF-1236	41.58	7.64	1.50	1.06	1.44
URCF-1248	53.58				
URCF-1260	65.58				
URCF-1272	77.58				
URCF-1284	84.58				
URCF-1724	29.78				
URCF-1736	41.78	8.29	2.00	1.38	1.88
URCF-1748	53.78				
URCF-1760	65.78				
URCF-1772	77.78				
URCF-1784	89.78				
URCF-2036	44.00				
URCF-2048	56.00	11.16	2.50	1.75	2.50
URCF-2060	68.00				
URCF-2072	80.00				
URCF-2084	92.00				

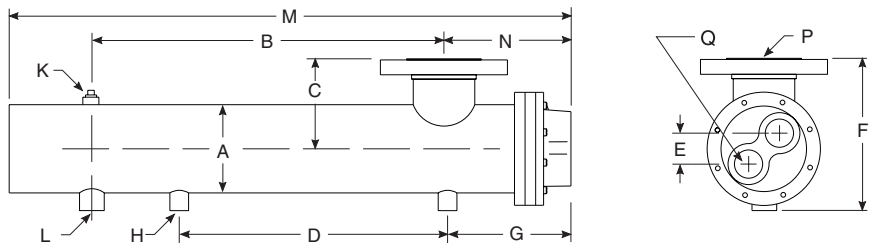
## COMMON DIMENSIONS

Model	A	B	C	D	E	F	G	H	J NPT	K ANSI Flange	L NPT	P NPT	Weight	Model
URCF-1024		19.75		29.13									55.00	URCF-1024
URCF-1036	5.25	31.75	7.63	41.13	4.00	5.25	2.00	.44 x 1.00 thru slot	.375	3.00	1.50	.75	70.00	URCF-1036
URCF-1048		43.75		53.13									85.00	URCF-1048
URCF-1224		19.00		29.59									83.00	URCF-1224
URCF-1236		31.00		41.59									108.00	URCF-1236
URCF-1248	6.25	43.00	8.13	53.59	4.50	6.25	2.50	.44 x 1.00 thru slot	.375	4.00	2.00	.75	132.00	URCF-1248
URCF-1260		55.00		65.59									158.00	URCF-1260
URCF-1272		67.00		77.59									182.00	URCF-1272
URCF-1284		79.00		89.59									206.00	URCF-1284
URCF-1724		18.25		29.50									138.00	URCF-1724
URCF-1736		30.25		41.50									180.00	URCF-1736
URCF-1748	8.00	42.25	9.00	53.50	5.75	8.25	3.50	.44 x 1.00 thru slot	.375	5.00	2.00	1.00	219.00	URCF-1748
URCF-1760		54.25		65.50									258.00	URCF-1760
URCF-1772		66.25		77.50									300.00	URCF-1772
URCF-1784		78.25		89.50									342.00	URCF-1784
URCF-2036		29.00		42.63									620.00	URCF-2036
URCF-2048		41.00		54.63									670.00	URCF-2048
URCF-2060	10.75	53.00	10.38	66.63	8.00	11.50	5.00	.781 x 1.25 thru slot	.50	6.00	3.00	1.25	730.00	URCF-2060
URCF-2072		65.00		78.63									820.00	URCF-2072
URCF-2084		76.00		90.63									870.00	URCF-2084

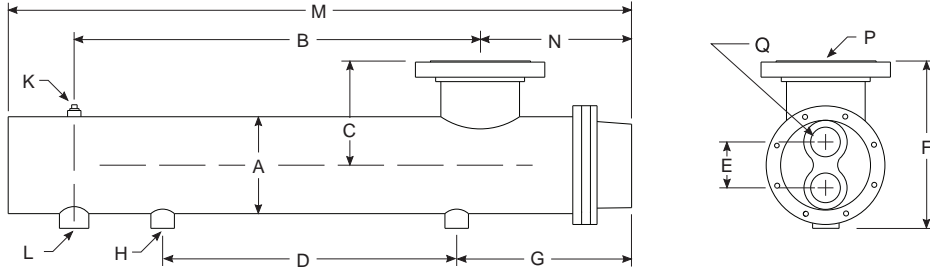
# Standard URCS stock unit for steam application



URCS-830



URCS-1230, URCS-1242, URCS-1254



URCS-1754

## COMMON DIMENSIONS

MODEL	A	B	C	D	E	F	G	H NPT	K NPT	L NPT	M	N	P	Q NPT	WEIGHT
URCS-830-25180	4.25	15.00	3.56	13.00	2.38	6.81	5.75	1.00	.38	1.25	28.63	7.88	2.5" NPT	1.25	35
URCS-1230-25182	6.25	13.00	6.38	13.00	3.12	10.75	5.75	1.00	—	1.50	27.75	9.00	4" ANSI	2.00	69
URCS-1242-25183	6.25	25.00	6.38	19.00	3.12	10.75	8.75	1.00	—	1.50	39.75	9.00	4" ANSI	2.00	87
URCS-1254-25184	6.25	37.00	6.38	25.00	3.12	10.75	11.75	1.00	—	1.50	51.75	9.00	4" ANSI	2.00	105
URCS-1754-25185	8.00	34.50	8.75	25.00	4.50	14.00	14.88	1.25	—	2.00	53.00	12.88	6" ANSI	2.50	187

## STANDARD CONSTRUCTION MATERIALS & RATINGS

Construction Material		Optional Material	Standard Unit Ratings
Shell	Steel	Steel	Operating Pressure Tubes 100 psig
Tubes	Copper	90/10 Cu. Ni. / S. Steel	
Baffle	Brass	Brass	Operating Pressure Shell 100 psig
End Bonnet	Cast Iron	Brass / Stainless Steel	Operating Temperature 400 °F
Gasket	Viton O-Ring		

## SURFACE AREA

Model Number	Surface Area in Sq.ft.	
	1 / 4" O.D. Tubing	3 / 8" O.D. Tubing
URCS-830-25180	15.0	—
URCS-1230-25182	—	21.5
URCS-1242-25183	—	30.2
URCS-1254-25184	—	38.8
URCS-1754-25185	—	72.4