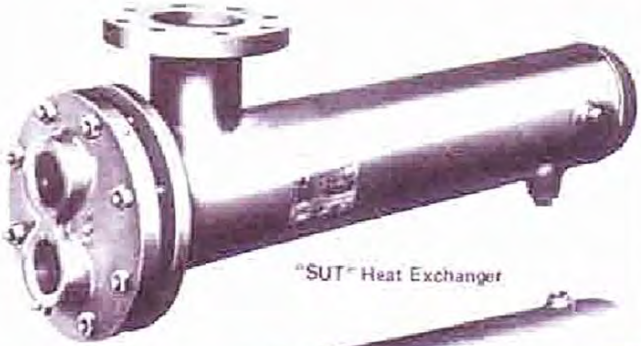
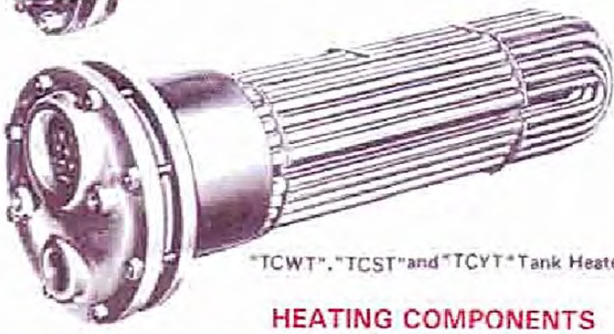
T.M offers a Complete Heat Exchanger Line



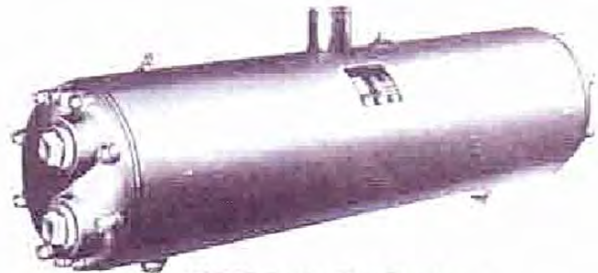
"SUT" Heat Exchanger

"WUT" Heat Exchanger



"TCWT", "TCST" and "TCYT" Tank Heaters

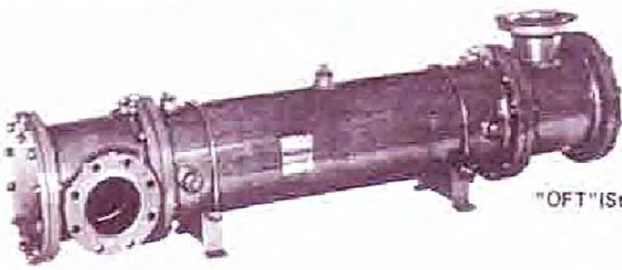
HEATING COMPONENTS



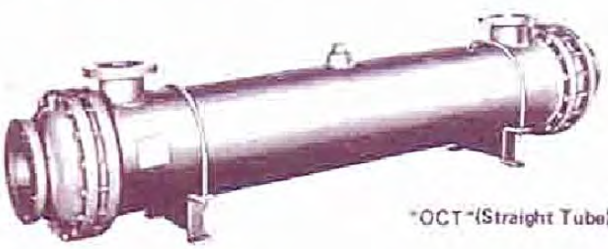
"RCFT" Straight Tube Condenser

"REFAT" Evaporator

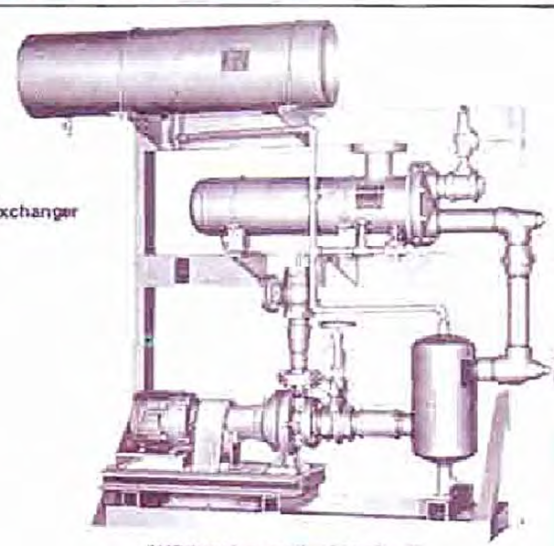
REFRIGERATION COMPONENTS



"OFT" (Straight Tube) Heat Exchanger



"OCT" (Straight Tube) Heat Exchanger



"HTPT" Heat Transfer Package

"TST" Tank Suction Heater

"GCT" Gas Cooler

INDUSTRIAL PRODUCTS

Tehran Mobaddel

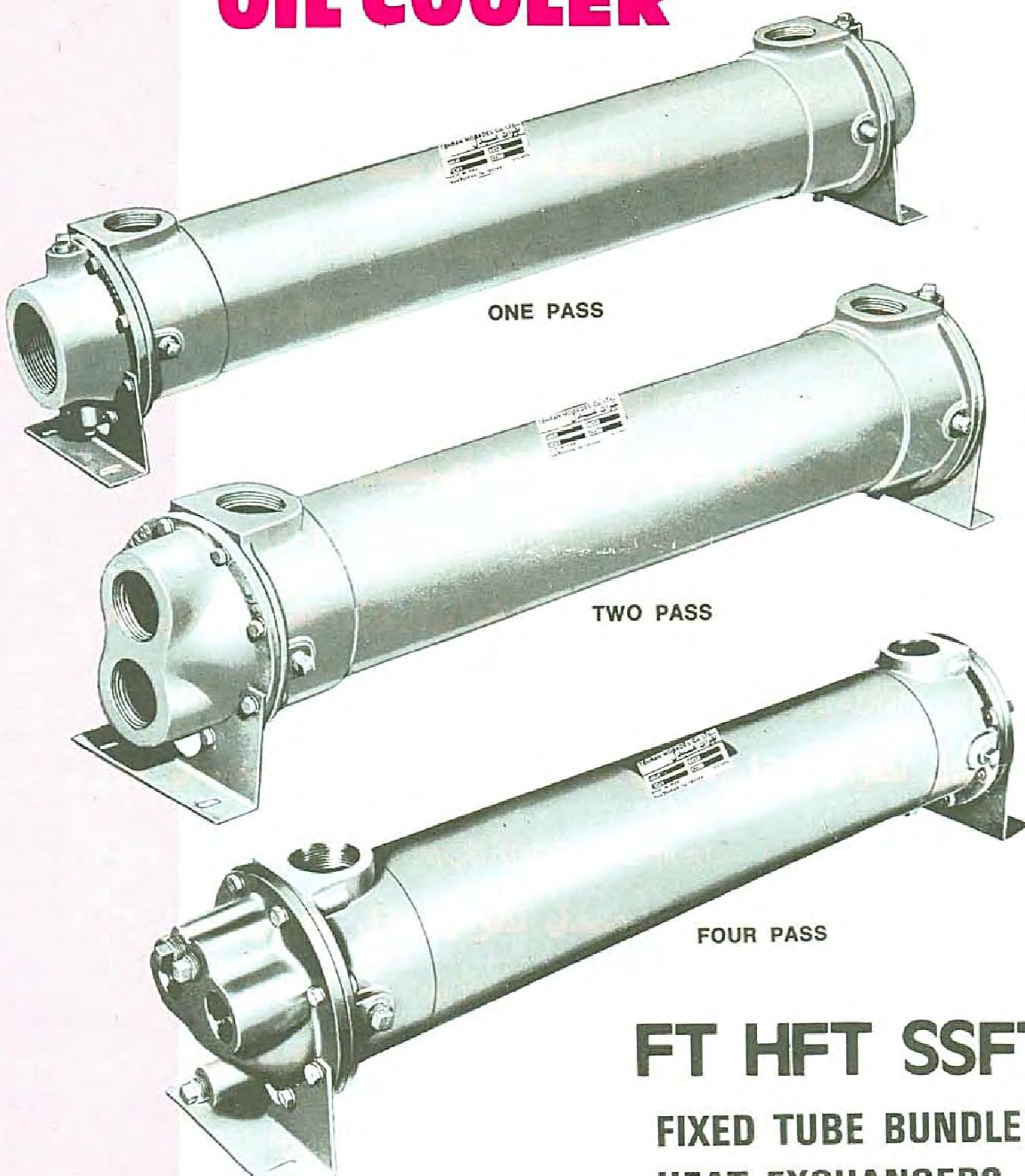
FT HFT SSFT Oil Cooler

Catalog

شرکت تهران مبدل

TEHRAN MOBADDEL Co.

OIL COOLER



FT HFT SSFT

FIXED TUBE BUNDLE HEAT EXCHANGERS

IRAN TEHRAN

TEHRAN MOBADDEL

fixed tube bundle heat exchangers

T. M. fixed tube bundle heat exchangers are available in two basic types, copper base alloy and stainless steel construction, to cover virtually any application. These heat exchangers are capable of satisfying various cooling requirements — from simple cooling of oil or water to the more complex cooling and heating requirements of exotic liquids or gases.

One of the many advantages T. M. heat exchangers offer is economy, both in initial cost and in operation. Savings are possible because stock models are constructed of standard components. Economy is possible because their multi-pass, close packed construction permits a reduction in cooling liquid requirements. In addition, the tube side is readily accessible for cleaning and inspection.

The use of inhibited admiralty tubing and zinc anodes in FT and HFT exchangers provides for some resistance to many, mildly corrosive fluids; however the use of 90-10 copper nickel tubes is recommended for improved resistance to corrosion from salt or brackish waters.

Bonnets provide smooth flow with minimum impact on the tube ends and tube sheets.

FT HEAT EXCHANGER

FT fixed tube bundle heat exchangers are nonferrous except the 10 SHELL DIAMETER CODE units which have steel shells. The tubes are high temperature bonded into the headers, allowing minimum tube pitch and permitting a greater number of tubes, resulting in maximum cooling surface area per unit volume of space.

Applications range from cooling of engine jacket water and lube oil, torque converter fluid and hydraulic fluid, to the heating or cooling of process fluids.

HFT (high pressure) HEAT EXCHANGER

HFT fixed tube bundle heat exchangers are specially designed for higher shell pressures. The **HFT** ine is identical to the **FT** dimensionally, however, due to construction differences, operating pressures of **250 psi** 1725 kPa on the shell side are possible.

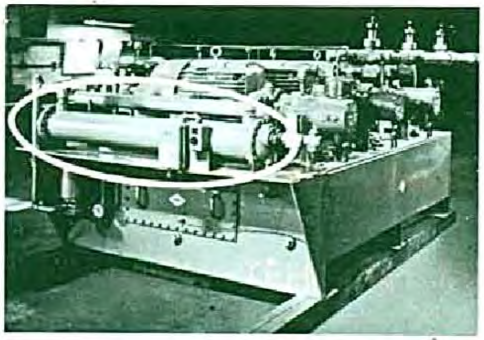
HFT exchangers are used with hydraulic fluids, process fluids and other similar applications where high pressures are encountered.

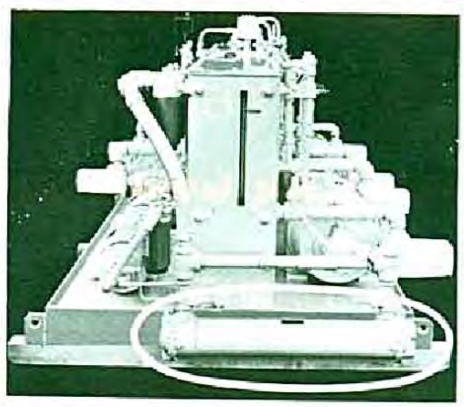
SSFT (stainless steel) HEAT EXCHANGER

The shell and tube passages of **SSFT** fixed tube bundle heat exchangers are constructed mainly of 316 stainless steel (18% chromium, 14% nickel, 3% molybdenum) for corrosion resistance and strength. They are used for heating and cooling of liquids and gases where a high degree of corrosion is encountered. Tubes are rolled into tube sheets by an electronically controlled process, making high-strength, leakproof joints.

The corrosion resistant properties of **SSFT** fixed tube bundle heat exchangers make them suitable for applications in the chemical, food, pharmaceutical, refining and petro-chemical industries.

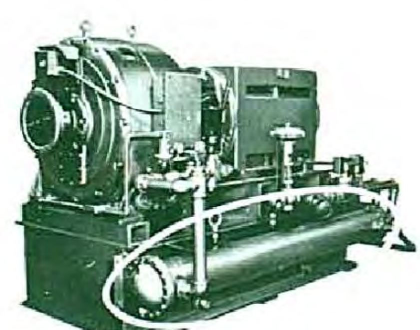
Temperature control is provided on this packaged hydraulic power system by a Model HFT-806-ER-4P heat excnanger.





One Model FT-604-AR-2P-CNTB heat exchanger cools the hydraulic drive winch unit used aboard a 1200 ton tuna purse seine vessel.

A Model HFT-806-AR-2P heat exchanger controls the temperature of the coolant for this eddy current drive.



FT HFT SSFT basic information

CONSTRUCTION FEATURES

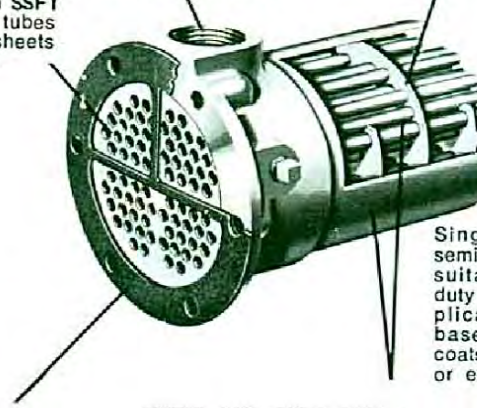
STURDY BRACKET
Made of heavy gauge steel . . . adjustable for installation in various positions. Rotatable through 360 degrees.

SMOOTH FLOW BONNET
Distributes fluid to tubes with minimum turbulence. One, two or four pass interchangeability.

TUBES
On FT and HFT tubes are high temperature bonded into tube sheets. On SSFT and FT-1000 series, tubes are rolled into tube sheets by electronic control.

END HUB
End hub is high quality forging and/or casting. Full-flow opening is designed for minimum pressure drop.

BAFFLES
Segmented baffles available in five spacings for maximum heat transfer with minimum fluid pressure drop.



FINISH
Single coat of grey, semi-gloss enamel paint suitable for outdoor duty in non-critical applications, and as a base for subsequent coats for severe duty or extended life.

ZINC ANODE
All FT and HFT heat exchangers are furnished with zinc anodes. These protect the tube metal through sacrificial corrosion. The protective value of the zinc decreases in time due to metal loss. It is recommended they be inspected on a regular basis and be replaced when required.

FULL-FLOW OPENINGS
Adequately sized for minimum pressure drop. Flexible connections are recommended when vibration is present.

FULL FACE GASKET
Asbestos-neoprene bonded gasket for maximum pressure and temperature.

SHELL AND TUBE BUNDLE ASSEMBLY
Baffles precision stamped to close tolerances. Clearances between baffles and tubes, baffles and shell are minimum—to obtain maximum heat transfer. Available in various size combinations to suit heat transfer requirements.

MODEL IDENTIFICATION						
TYPE CODE	SHELL DIAMETER CODE	SHELL LENGTH CODE	BAFFLE SPACING CODE	TUBE DIAMETER CODE	PASS CODE	OPTION CODE
FT= fixed tube bundle with **150 psi** 1040 kPa shell HFT= fixed tube bundle with **250 psi** 1725 kPa shell SSFT= fixed tube bundle with **300 psi** 2070 kPa shell and stainless steel materials	2=**2.13 in** 3=**3.63 in** 5=**5.13 in** 6=**6.13 in** 8=**8.38 in** 10=**10.75 in**	01= **9 in** 02=**18 in** 03=**27 in** 04=**36 in** 05=**45 in** 06=**54 in** 08=**72 in** 10=**90 in**	H=**1.13 in** D=**2.25 in** E=**4.50 in** A=**9.00 in** T=**15 in** (approx.)	Y=**0.250 in** OD R=**0.375 in** OD C=**0.625 in** OD	1P=one pass 2P=two pass 4P=four pass	CN=90-10 copper nickel tube CNT=90-10 copper nickel tube and tube sheet B=brass bonnet CNB=90-10 copper nickel tube and brass bonnet CNTB=90-10 copper nickel tube, tube sheet and brass bonnet

NOTE A: FT TYPE CODE not available in 2 and 8 SHELL DIAMETER CODE.
NOTE B: HFT TYPE CODE not available in 10 SHELL DIAMETER CODE.
NOTE C: HFT2 TYPE CODE, SHELL DIAMETER CODE not available in 2P or 4P PASS CODE.
NOTE D: SSFT.3R TYPE CODE, SHELL DIAMETER CODE and TUBE DIAMETER CODE not available in 4P PASS CODE.
NOTE E: CN OPTION CODE available with 10 SHELL DIAMETER CODE only, all others are CNT OPTION CODE.

NOTE F: MODEL EXAMPLE—

FT-604-AR-4P-CNT

Tehran Mobeddel fixed tube bundle
6.13 in. shell diameter
36 in. nominal shell length
90-10 copper nickel tube and tube sheet option
four pass
0.375 in. tube
9.00 in. baffle spacing

METRIC CONVERSIONS					
VARIABLE	PREFERRED		ALTERNATE		CONVERSION MULTIPLIER**
	SI UNIT	ABBREVIATION	UNIT	ABBREVIATION	
length	metre	m	millimetre	mm	0.001
mass	kilogram	kg	gram	g	0.001
time	second	s	hour*	hr	0.0002777
heat energy	joule	J	calorie*	cal	4.187
force	newton	N	kilogram-force*	kgf	9.81
power	watt	W	joule/second	J/s	1.0
pressure	newton/metre²	N/m²	kilopascal	kPa	1000
volume flow rate	cubic metre/second	m³/s	litre*	l	0.001
volume flow rate	cubic centimetre/second	cm³/s	litre*	l	1000
acceleration	metre/second	m/s²	—	—	—

*does not conform to SI metric standard
**to convert to preferred, multiply alternate by CONVERSION MULTIPLIER

EXPLANATION OF METRIC NOMENCLATURE

This catalog is dual dimensioned with the primary units being **U. S. customary (bold face type)** and the secondary dimensions being SI metric as defined in ASTM Designation: E380. Strict conformance to the SI metric standard produces some unfamiliar units in the tables and charts. Particular note should be made of the SI metric units of CAPACITY FACTOR (J/s-C = W/C) and SHIPPING WEIGHT (N). In the former case, the Joule (J) is the preferred unit of heat energy instead of the calorie and the preferred unit of weight or force is the Newton instead of the kilogram-force. Mass is related to force by the formula: force (N) = mass (g) x acceleration (9.8 m/s²). For reference, a tabulation of the metric units used in this catalog is provided as well as selected conversions to other metric units some of which do not conform to the SI standard.

FT HFT SSFT technical data

TECHNICAL SPECIFICATIONS

MECHANICAL DESIGN DATA

RATINGS		FT psi	FT kPa	HFT psi	HFT kPa	SSFT psi	SSFT kPa
Maximum operating pressure psi kPa	Shell	150	1040	250	1725	300	2070
	Tube	150	1040	150	1040	150	1040
Test pressure psi kPa	Shell	250	1725	500	3450	500	3450
	Tube	250	1725	300	2070	300	2070
Maximum operating temperature F C	Shell	350	177	350	177	400	204
	Tube	350	177	350	177	400	204

MATERIAL DATA

COMPONENT		SHELL DIAMETER CODE	FT	HFT	SSFT
Shell		2 and 8	—	brass	316 stainless steel
		3, 5 and 6	brass	steel	
		10	steel	—	
Baffle		2, 3, 5, 6 and 8	brass		
		10	steel		
Tube		All	admiralty (Cu-Ni if OPTION CODE includes CN)		
Tube sheet		All	brass (Cu-Ni if OPTION CODE includes CNT)		
Bonnet		All	cast iron (cast brass if OPTION CODE includes B)		316 stainless steel casting
Hub		All	brass forging		
Pipe Plug	Shell	All	brass		316 stainless steel
	Bonnet	All	steel (brass if OPTION CODE includes B)		
Mounting Brkt.		All	steel		steel

NOTE G: The differential between the shell fluid average temperature and tube fluid average temperature should not exceed **200F** 93C for models through 06 SHELL LENGTH CODE and **150F** 70C for longer models. For temperature differences exceeding these limits, heat exchangers should be furnished with expansion joints. To eliminate high pressure surges a pressure relief valve, accumulator or other suitable device should be used with a hydraulic system.

NOTE H: One pass heat exchangers should be used for steam service. Pressures to **75 psig** 520 kPa (maximum) and temperatures to **350F** 177C (maximum) may be used. Steam should be admitted through the tube side, with the exchanger mounted vertically to permit condensate to drain. A trap of proper type and size should be used. Horizontal installation can be accomplished if the heat exchanger is pitched at least **0.5 in/ft** 4 cm/m of tube length.

PHYSICAL DATA

SHELL DIAMETER and LENGTH CODE	SHELL FLUID VOLUME gal	l	TUBE FLUID VOLUME gal	l	OUTSIDE TUBE SURFACE ft² Y	m² Y	ft² R	m² R	SHIPPING WEIGHT lbs	N
201	0.10	0.38	0.10	0.38	1.52	0.14	—	—	7	31
202	0.15	0.57	0.15	0.57	3.04	0.28	—	—	10	44
301	0.20	0.76	0.15	0.57	3.74	0.33	2.66	0.24	17	75
302	0.50	1.9	0.30	1.1	7.47	0.69	5.31	0.48	25	110
303	0.70	2.6	0.40	1.5	11.1	1.03	7.97	0.73	30	130
502	1.0	3.8	0.50	1.9	18.1	1.68	11.2	1.04	40	180
503	1.5	5.7	0.75	2.8	27.1	2.52	16.8	1.56	50	220
504	2.0	7.6	1.0	3.8	36.1	3.35	22.4	2.08	60	270
602	1.2	4.5	0.90	3.4	26.9	2.50	17.5	1.63	55	240
603	1.9	7.2	1.3	4.9	40.2	3.73	26.2	2.43	70	310
604	2.5	9.5	1.6	6.1	53.6	4.98	34.9	3.24	90	400
606	3.7	14	2.4	9.1	80.8	7.51	52.7	4.90	130	580
608	5.0	19	3.1	12	108	10.0	70.2	6.52	170	750
802	2.4	9.1	1.8	6.8	—	—	34.1	3.17	155	690
803	3.6	14	2.4	9.1	—	—	50.6	4.70	180	800
804	4.7	18	3.1	12	—	—	67.1	6.23	205	910
805	5.8	22	3.7	14	—	—	83.6	7.77	230	1000
806	6.9	26	4.4	17	—	—	100	9.29	265	1200
808	9.1	34	5.6	21	—	—	133	12.4	325	1400
810	11	42	6.9	26	C		166	15.4	405	1900
1005	11	42	7.1	27	74.0	6.87	130	12.1	670	3000
1006	13	49	8.5	32	89.0	8.27	157	14.6	720	3200
1008	18	68	11	42	119	11.1	210	19.5	820	3600
1010	22	83	14	53	149	13.8	263	24.4	920	4100

CORRECTION TO CAPACITY FACTOR REQUIRED

SHELL LIQUID TYPE	Tsi (temperature of shell liquid at inlet) F C 120 49	150 66	200 93	250 121
SAE 5 oil	1.09	1.03	0.93	0.85
SAE 10 oil	1.19	1.10	1.00	0.92
SAE 20 oil	1.28	1.19	1.06	0.96
SAE 30 oil	1.32	1.27	1.09	0.99
SAE 40 oil	1.37	1.28	1.14	1.02
polyglycol	0.78	0.77	0.72	0.69
phosphate ester	0.67	0.65	0.62	0.60
water	0.59	0.58	0.57	0.57
50% ethylene glycol in water	0.65	0.64	0.62	0.60

OIL VISCOSITY

CENTIPOISES = CENTISTOKES X SPECIFIC GRAVITY
For SI Conversion: 1 kg/m-s = 1000 Centipoises

OIL TYPE	VISCOSITY @ 100 F 37.8 C SUS	Centistokes	Centipoise	VISCOSITY @ 210 F 98.9 C SUS	Centistokes	Centipoise
SAE 5	110	24	22	41	4.5	4.0
SAE 10	160	35	32	44	5.5	5.0
SAE 20	270	60	55	50	7.5	7.0
SAE 30	500	110	100	63	11	10
SAE 40	750	170	155	76	14.5	13
polyglycol	210	45	47	52	7.7	7.8
phosphate ester	250	56	66	43	5.1	5.8

LMTD (Logarithmic Mean Temperature Difference) F or C

Tsi — Tto F or C	Tso — Tti F or C: 5	7	10	15	20	25	30	40	50	60	80	100	120
5	5.0	6.0	7.2	9.1	11	12	14	17	20	22	27	32	36
7	6.0	7.0	8.4	10	12	14	16	19	22	25	30	35	40
10	7.2	8.4	10	12	14	16	18	22	25	28	34	39	44
15	9.1	10	12	15	17	20	22	26	29	32	39	45	51
20	11	12	14	17	20	22	25	29	33	36	43	50	56
25	12	14	16	20	22	25	27	32	36	40	47	54	61
30	14	16	18	22	25	27	30	35	39	43	51	58	65
35	15	17	20	24	27	30	32	37	42	46	54	62	69
40	17	19	22	26	29	32	35	40	45	49	58	66	73
45	18	20	23	27	31	34	37	42	47	52	61	69	77
50	20	22	25	29	33	36	39	45	50	55	64	72	80
60	22	25	28	32	36	40	43	49	55	60	70	78	87
70	25	27	31	36	40	44	47	54	60	65	75	84	93
80	27	30	34	39	43	47	51	58	64	70	80	90	99
100	32	35	39	45	50	54	58	66	72	78	90	100	110
120	36	40	44	51	56	61	65	73	80	87	99	110	120

LIQUID TYPE	LIQUID CONSTANT Btu/gal-F	J/l-C
SAE 5 oil	3.5	1800
SAE 10 oil	3.5	1800
SAE 20 oil	3.5	1800
SAE 30 oil	3.5	1800
SAE 40 oil	3.5	1800
polyglycol	7.2	3600
phosphate ester	3.9	2000
water	8.3	4200
50% ethylene glycol in water	7.3	3700

capacity factor and pressure loss

CAPACITY FACTOR and RATED PRESSURE LOSS of SHELL LIQUID

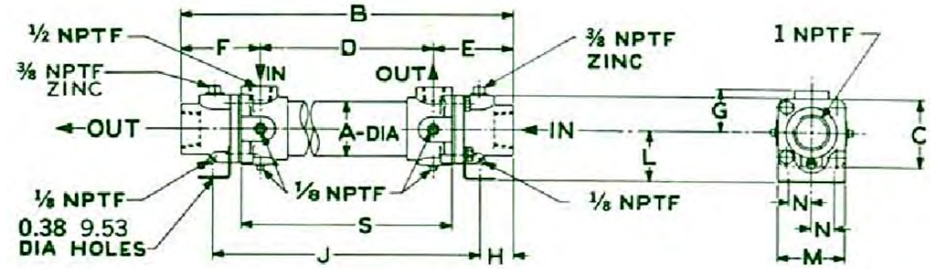
NORMALLY STOCKED TYPE				BASE MODEL	CAPACITY FACTOR Btu/min-F J/s-C @ liquid flow in shell, Fs, gpm l/s										RATED PRESSURE LOSS OF SHELL LIQUID psi kPa @ RATED FLOW gpm l/s	
FT	HFT	SSFT	CNT												psi	kPa
				Fs gpm l/s	2.0	0.13	4.0	0.25	6.0	0.38	8.0	0.50	10.	0.63	6.0	0.38
	•	•	•	201-HY	2.9	92	3.6	114	3.9	123	4.2	133	4.4	139	4.5	32
	•	•		202-HY	5.8	183	7.2	228	7.9	250	8.3	262	8.7	275	9.1	63
				Fs gpm l/s	3.0	0.19	6.0	0.38	9.0	0.57	12	0.76	15	0.95	9.0	0.57
•	•	•	•	301-HY	6.3	199	7.7	243	8.7	275	9.4	297	9.9	313	2.6	18
•	•	•	•	302-HY	13	420	16	518	18	579	19	610	20	638	8.3	57
•		•		303-HY	20	635	25	777	27	863	30	935	31	980	14.2	98
				Fs gpm l/s	6.0	0.38	12	0.76	18	1.1	24	1.5	30	1.9	18	1.1
•				301-DY	6.9	218	8.4	265	9.3	294	9.9	313	11	332	3.0	21
•				302-DY	14	439	17	531	19	588	20	629	21	657	6.0	42
•				303-DY	21	657	25	796	28	882	30	942	31	989	9.3	62
				Fs gpm l/s	10	0.63	15	0.95	20	1.3	25	1.6	30	1.9	20	1.3
•		•		301-EY	6.4	202	7.3	231	8.0	253	8.5	269	8.9	281	0.5	4
•	•	•	•	302-EY	13	408	15	465	16	506	17	547	18	566	1.1	8
•				303-EY	20	619	22	695	24	758	26	815	27	844	1.6	11
				Fs gpm l/s	5.0	0.32	10	0.63	15	0.95	20	1.3	25	1.6	15	0.95
•	•			502-HY	33	1060	41	1310	46	1440	49	1540	51	1600	15.7	109
•				503-HY	51	1610	63	1990	69	2170	73	2300	76	2420	26.7	185
•				504-HY	69	2170	84	2670	93	2940	98	3090	104	3290	37.9	262
				Fs gpm l/s	10	0.63	20	1.3	30	1.9	40	2.5	50	3.2	30	1.9
•	•			502-DY	35	1120	43	1340	47	1480	50	1570	52	1650	11.3	78
•				503-DY	52	1650	64	2020	71	2230	75	2360	78	2450	17.1	118
•				504-DY	69	2190	85	2690	94	2970	100	3150	104	3290	22.8	157
				Fs gpm l/s	15	0.95	25	1.6	35	2.2	45	2.8	55	3.5	35	2.2
•	•	•	•	502-EY	32	1000	38	1190	41	1290	44	1400	46	1460	2.2	15
•		•	•	503-EY	48	1510	57	1790	61	1940	66	2070	69	2190	3.3	22
•		•		504-EY	64	2010	74	2340	82	2580	87	2760	92	2890	4.3	30
				Fs gpm l/s	30	1.9	40	2.5	50	3.2	60	3.8	70	4.4	50	3.2
				502-AY	32	1000	35	1100	38	1190	39	1240	41	1310	0.6	4.0
				503-AY	53	1670	57	1800	60	1910	63	2000	66	2090	2.0	13
				504-AY	63	2000	70	2210	75	2360	78	2480	82	2600	1.2	8
				Fs gpm l/s	5.0	0.32	10	0.03	15	0.95	20	1.3	25	1.6	15	0.95
•				602-HY	45	1410	56	1750	62	1960	67	2120	70	2220	8.8	61
				603-HY	70	2200	86	2710	97	3070	105	3290	110	3440	17.8	123
				604-HY	95	3000	115	3670	130	4110	140	4390	145	4610	27.2	188
				606-HY	140	4460	175	5590	195	6190	210	6570	—	—	40.6	280
				Fs gpm l/s	10	0.63	20	1.3	35	2.2	50	3.2	65	4.1	35	2.2
•				602-DY	45	1420	56	1760	65	2040	71	2260	75	2370	5.7	40
•				603-DY	70	2220	87	2750	100	3150	110	3410	115	3600	11.8	81
•				604-DY	94	2970	115	3670	135	4230	145	4580	155	4830	17.9	124
				606-DY	145	4550	175	5560	205	6480	220	6950	230	7330	30.5	211
				608-DY	190	—	235	7490	275	8630	300	9480	—	—	43.3	299
				Fs gpm l/s	20	1.3	40	2.5	60	3.8	80	5.0	100	6.3	60	3.8
•				602-EY	50	1560	61	1930	67	2110	72	2260	75	2360	5.0	34
•				603-EY	74	2330	92	2910	100	3220	110	3440	110	3540	7.4	50
•			•	604-EY	99	3110	120	3820	135	4230	145	4520	150	4770	9.9	68
•				606-EY	150	4710	180	5750	200	6380	215	6760	225	7110	14.8	102
•				608-EY	196	6190	240	7650	270	8560	285	9010	305	9610	19.7	136
				Fs gpm l/s	40	2.5	60	3.8	80	5.0	100	6.3	120	7.6	80	5.0
				602-AY	49	1550	56	1760	61	1920	64	2020	68	2130	1.2	8
				603-AY	81	2550	92	2900	97	3070	105	3250	110	3440	4.0	27
•				604-AY	98	3100	110	3540	120	3860	130	4040	135	4230	2.4	16
•				606-AY	150	4680	165	5280	185	5810	195	6160	200	6350	3.6	25
•				608-AY	195	6190	225	7080	240	7620	255	8090	270	8470	4.8	33
				Fs gpm l/s	2.0	0.13	5.0	0.32	8.0	0.50	11	0.69	14	0.88	8.0	0.50
•				301-HR	3.7	117	5.0	158	5.8	183	6.3	199	6.6	207	1.6	11
•		•		302-HR	7.8	246	11	332	12	379	13	417	14	433	5.0	35
				303-HR	12	373	16	515	19	585	20	626	21	664	8.6	60
				Fs gpm l/s	10	0.63	15	0.95	20	1.3	25	1.6	30	1.9	20	1.3
				301-DR	5.5	174	6.1	193	6.5	205	7.0	221	7.1	224	2.7	19
				302-DR	11	348	12	386	13	414	14	436	14	452	5.5	38
•				303-DR	16	518	19	588	20	619	21	651	22	679	8.2	57
				Fs gpm l/s	10	0.63	15	0.95	20	1.3	25	1.6	30	1.9	20	1.3
•				301-ER	4.5	142	5.0	158	5.5	174	5.8	183	6.2	196	0.4	3
•				302-ER	8.8	278	10	319	11	348	12	370	12	389	0.8	6
•				303-ER	13	417	15	474	16	518	16	553	18	578	1.2	8
				Fs gpm l/s	4.0	0.25	8.0	0.50	12	0.76	16	1.0	20	1.3	12	0.76
•		•		502-HR	18	581	23	736	26	806	28	872	29	910	7.9	55
•				503-HR	28	894	35	1110	39	1230	42	1320	44	1390	13.4	93
				504-HR	38	1210	47	1490	53	1670	56	1760	59	1850	19.1	132
				Fs gpm l/s	8.0	0.50	18	1.1	28	1.8	38	2.4	48	3.0	28	1.8
•				502-DR	20	616	25	787	27	866	29	926	31	970	7.5	52
				503-DR	29	913	37	1170	42	1320	44	1390	46	1460	11.3	78
				504-DR	39	1220	490	1548	55	1740	59	1850	62	1940	15.1	104
				Fs gpm l/s	15	0.95	25	1.6	35	2.2	45	2.8	55	3.5	35	2.2
•		•	•	502-ER	19	594	22	705	24	771	26	825	27	866	1.6	11
•				503-ER	29	904	33	1060	37	1150	39	1240	41	1300	2.5	17
				504-ER	38	1190	44	1400	49	1550	53	1660	55	1720	3.2	22

Capacity factor and pressure loss

CAPACITY FACTOR and RATED PRESSURE LOSS of SHELL LIQUID																
NORMALLY STOCKED TYPE				BASE MODEL	CAPACITY FACTOR Btu/min-F J/s-C @ liquid flow in shell, Fs, gpm l/s										RATED PRESSURE LOSS OF SHELL LIQUID psi kPa @ RATED FLOW gpm l/s	
FT	HFT	SSFT	CNT													
				Fs gpm l/s	25	1.6	35	2.2	45	2.8	55	3.5	65	4.1	45	2.8
				502-AR	18	562	20	632	21	679	23	720	24	752	0.4	3
				503-AR	29	926	33	1030	35	1120	37	1170	39	1220	1.2	8
				504-AR	36	1130	40	1250	43	1360	46	1440	48	1530	2.2	15
				Fs gpm l/s	8.0	0.32	10	0.63	15	0.95	20	1.3	25	1.6	15	0.95
				602-HR	28	894	35	1120	39	1250	43	1350	45	1410	6.6	46
				603-HR	44	1390	55	1740	60	1910	65	2060	68	2160	13.3	92
				604-HR	59	1870	74	2340	82	2600	89	2800	93	2950	20.3	140
				606-HR	89	2810	110	3510	125	3890	135	4200	140	4360	30.5	210
				Fs gpm l/s	10	0.63	20	1.3	30	1.9	40	2.5	50	3.2	30	1.9
				602-DR	28	885	35	1110	39	1240	42	1330	44	1400	3.3	23
				603-DR	44	1380	54	1710	61	1910	65	2050	69	2170	6.6	46
				604-DR	59	1870	73	2310	82	2600	89	2810	92	2910	10.2	70
				606-DR	91	2890	110	3540	125	3920	135	4230	140	4420	17.3	120
				608-DR	120	3820	150	4710	170	5340	180	5660	190	5970	24.6	170
				Fs gpm l/s	20	1.3	40	2.5	60	3.8	80	5.0	100	6.3	60	3.8
•			•	602-ER	31	986	39	1220	42	1340	46	1440	48	1510	3.7	26
•		•		603-ER	47	1490	57	1800	64	2010	68	2130	71	2250	5.5	39
•			•	604-ER	62	1970	77	2440	85	2690	92	2890	96	3020	7.4	51
•				606-ER	93	2940	115	3600	125	4010	135	4270	145	4520	11.1	76
				608-ER	125	3950	155	4870	170	5340	180	5720	190	6070	14.7	102
				Fs gpm l/s	30	1.9	50	3.2	70	4.4	90	5.7	110	6.9	70	4.4
•				602-AR	29	900	33	1050	37	1170	39	1250	42	1310	0.7	5
				603-AR	47	1480	54	1710	60	1900	64	2010	66	2100	2.3	16
•				604-AR	56	1770	66	2100	73	2310	79	2480	83	2610	1.4	9
				606-AR	84	2660	100	3190	110	3480	120	3730	125	3920	2.1	15
•				608-AR	110	3540	135	4200	145	4610	160	5020	165	5210	2.8	20
				Fs gpm l/s	15	0.95	30	1.9	45	2.8	60	3.8	75	4.7	45	2.8
				802-DR	55	1720	68	2140	75	2390	81	2570	85	2690	4.6	32
				803-DR	86	2730	105	3350	115	3670	125	3950	135	4200	9.4	65
				804-DR	115	3670	145	4520	160	5020	170	5440	175	5560	14.3	99
				805-DR	145	4580	180	5690	200	6260	215	6790	—	—	19.4	134
				806-DR	175	5530	215	6790	240	7550	260	8180	—	—	24.5	169
				808-DR	235	7430	290	9130	320	10100	—	—	—	—	34.8	240
				Fs gpm l/s	25	1.6	50	3.2	75	4.7	100	6.3	125	7.9	75	4.7
	•			802-ER	57	1800	71	2230	78	2470	84	2640	88	2780	3.7	26
				803-ER	90	2850	105	3320	120	3730	125	3950	135	4200	5.6	39
	•		•	804-ER	115	3570	140	4460	160	4990	165	5250	175	5500	7.4	52
	•			805-ER	140	4460	175	5560	195	6190	210	6670	220	6890	9.4	65
				806-ER	170	5370	210	6600	235	7360	255	7990	265	8340	11.2	77
				808-ER	225	7140	285	8940	315	9890	335	10500	350	11000	15.0	104
				810-ER	285	8970	350	11000	390	12400	420	13200	—	—	18.8	130
				Fs gpm l/s	50	3.2	90	5.7	130	8.2	170	10.7	210	13.2	130	8.2
	•			802-AR	57	1790	68	2150	75	2370	81	2540	85	2670	1.4	10
				803-AR	94	2970	110	3510	120	3860	130	4080	135	4230	4.8	34
				804-AR	115	3570	135	4300	150	4770	160	5060	170	5310	2.9	20
				805-AR	150	4800	180	5690	195	6190	210	6600	220	6920	6.0	41
	•			806-AR	170	5400	205	6410	225	7170	240	7580	250	7960	4.3	30
	•			808-AR	225	7140	270	8560	300	9450	325	10300	335	10600	5.8	40
				810-AR	300	9510	360	11300	390	12400	420	13200	440	13800	12.1	83
				Fs gpm l/s	60	3.8	100	6.3	140	8.8	180	11.3	220	13.9	140	8.8
	•		•	805-TR	140	4390	165	5180	180	5690	195	6100	200	6380	2.2	15
				806-TR	160	4990	185	5880	210	6570	225	7080	230	7330	1.6	11
	•			808-TR	220	6950	260	8250	285	9070	305	9570	320	10100	2.9	20
	•			810-TR	250	7960	305	9570	335	10500	360	11300	380	11900	4.3	29
				Fs gpm l/s	50	3.2	100	6.3	150	9.4	200	12.6	250	15.8	150	9.4
				1005-AR	215	8630	265	8440	295	9350	325	10200	335	10600	6.8	47
				1006-AR	250	7840	305	9610	345	10800	370	11800	390	12200	4.9	34
				1008-AR	320	10000	410	12900	460	14600	490	15500	520	16500	6.4	44
				1010-AR	440	13700	550	17200	600	18900	640	20300	680	21600	13.3	92
				Fs gpm l/s	150	9.5	200	12.6	250	15.8	300	18.9	350	22.1	250	15.8
•			•	1005-2R	245	7740	270	8530	285	8970	300	9390	310	9730	2.5	17
				1005-TR	270	8470	290	9200	305	9640	320	10100	330	10500	5.5	38
•				1006-TR	305	9640	335	10600	360	11200	370	11600	390	12200	4.0	27
				1008-TR	420	13300	460	14400	440	15300	510	16200	520	16500	7.3	50
•			•	1010-TR	500	15600	540	17000	570	18000	610	19200	620	19700	10.9	75
				Fs gpm l/s	50	3.2	100	6.3	150	9.4	200	12.6	250	15.8	150	9.4
				1005-AC	110	3410	135	4300	150	4740	165	5180	170	5440	4.0	28
				1006-AC	120	3860	155	4870	175	5500	190	5940	195	6230	2.8	19
				1008-AC	165	5180	205	6480	230	7270	250	7930	265	8440	3.8	26
				1010-AC	215	6790	270	8530	305	9640	325	10300	345	10900	7.8	54
				Fs gpm l/s	150	9.5	200	12.6	250	15.8	300	18.9	350	22.1	250	15.8
				1005-TC	135	4300	150	4710	155	4900	165	5210	170	5370	3.2	22
				1006-TC	155	4870	165	5280	180	5720	185	5910	195	6190	2.3	16
				1008-TC	215	6760	230	7300	245	7740	260	8250	270	8470	4.2	29
				1010-TC	250	7960	270	8560	290	9160	305	9610	320	10000	6.3	43

FT HFT SSFT dimensions

2 SHELL DIA. CODE
1P PASS CODE



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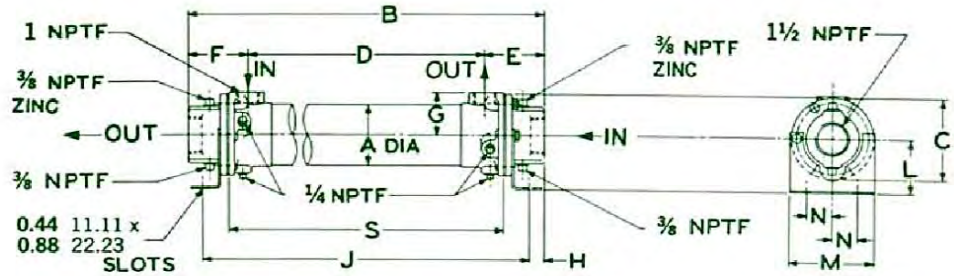

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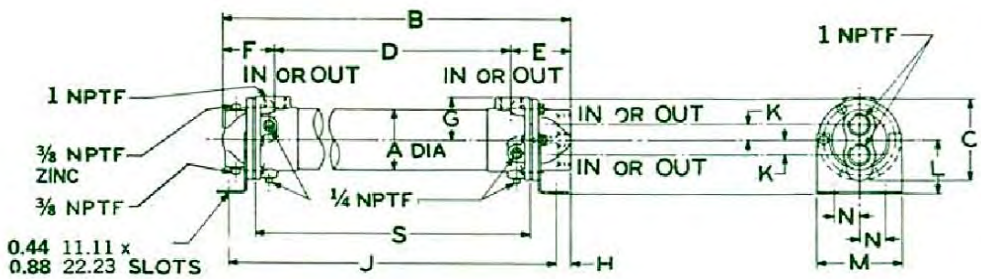

5 & 6 SHELL DIA. CODE
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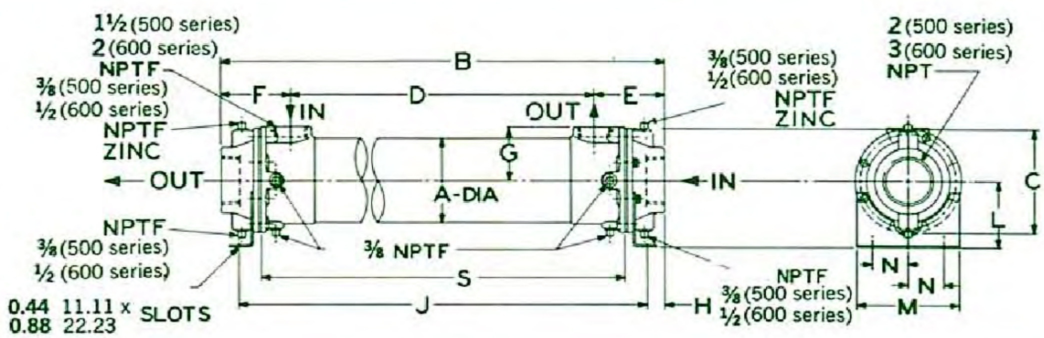

5 & 6 SHELL DIA. CODE
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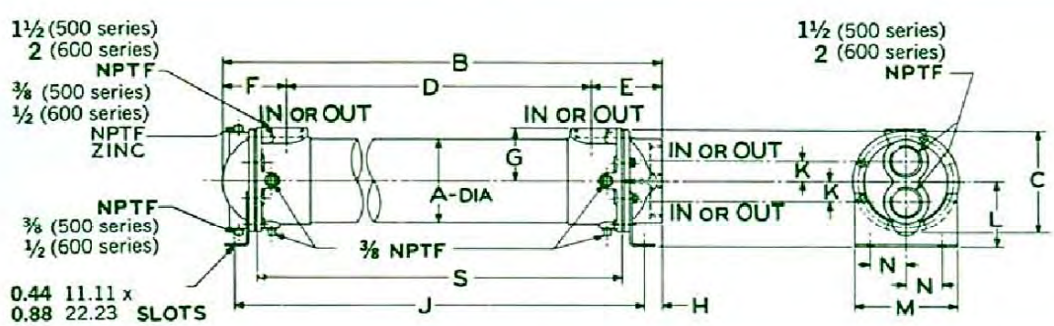

FT HFT SSFT dimensions

8 SHELL DIA. CODE

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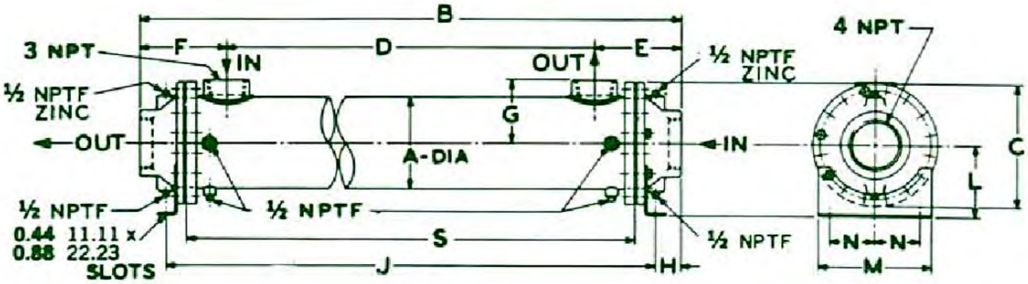

8 SHELL DIA. CODE

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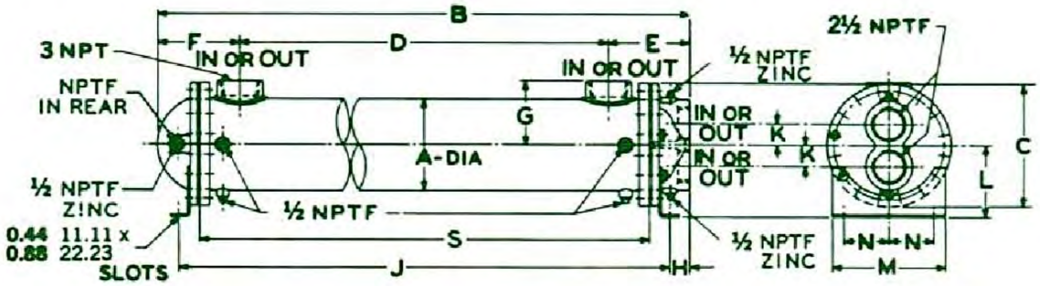

10 SHELL DIA. CODE

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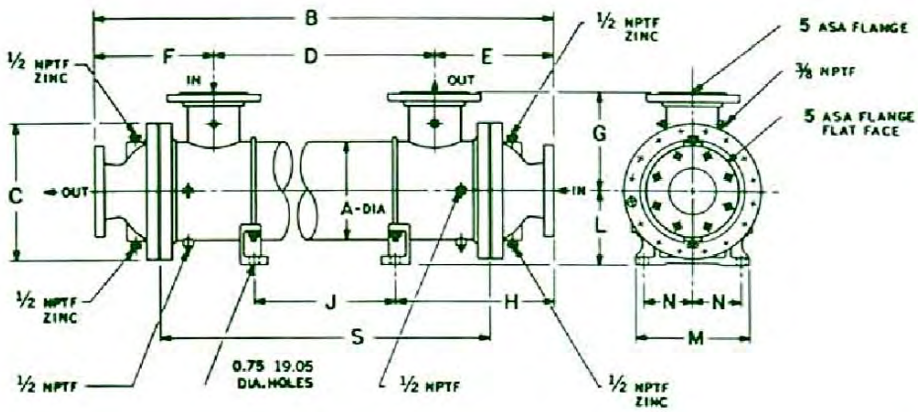

10 SHELL DIA. CODE

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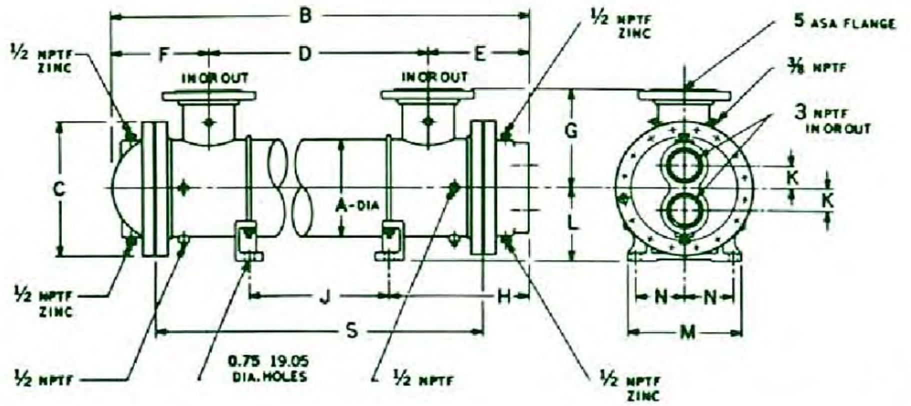


Fig. 20

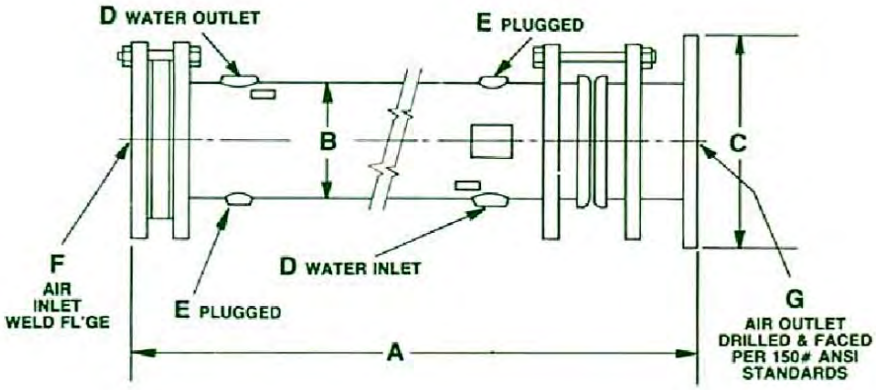
SHELL DIAMETER & SHELL LENGTH CODE	ALL UNITS									ONE PASS			
	A	C	D	G	J	L	M	N	S	H	B	E	F
201	2.12 53.8	2.50 63.5	7.62 193.5	1.56 39.6	11.06 280.9	1.88 47.7	2.50 63.5	.88 22.3	9.00 228.6	1.16 29.4	13.38 339.8	2.88 73.1	2.88 73.1
202	2.12 53.8	2.50 63.5	16.62 422.1	1.56 39.6	20.06 509.5	1.88 47.7	2.50 63.5	.88 22.3	18.00 457.2	1.16 29.4	22.38 568.4	2.88 73.1	2.88 73.1
301	3.62 91.9	4.88 123.9	7.00 177.8	2.50 63.5	12.38 314.4	3.25 82.5	5.00 127.0	1.50 38.1	9.25 234.9	0.81 20.5	13.88 352.5	3.44 87.3	3.44 87.3
302	3.62 91.9	4.88 123.9	16.00 406.4	2.50 63.5	21.38 543.0	3.25 82.5	5.00 127.0	1.50 38.1	18.25 463.5	0.81 20.5	22.88 581.1	3.44 87.3	3.44 87.3
303	3.62 91.9	4.88 123.9	25.00 635.0	2.50 63.5	30.38 771.6	3.25 82.5	5.00 127.0	1.50 38.1	27.25 692.1	0.81 20.5	31.88 809.7	3.44 87.3	3.44 87.3
502	5.12 130.0	6.50 165.1	15.50 393.7	3.31 84.0	21.62 549.1	4.00 101.6	6.25 158.7	2.00 50.8	18.50 469.9	1.06 26.9	23.62 599.9	4.06 103.1	4.06 103.1
503	5.12 130.0	6.50 165.1	24.50 622.3	3.31 84.0	30.62 777.7	4.00 101.6	6.25 158.7	2.00 50.8	27.50 698.5	1.06 26.9	32.62 828.5	4.06 103.1	4.06 103.1
504	5.12 130.0	6.50 165.1	33.50 850.9	3.31 84.0	39.62 1006.3	4.00 101.6	6.25 158.7	2.00 50.8	36.50 927.1	1.06 26.9	41.62 1057.1	4.06 103.1	4.06 103.1
602	6.12 155.4	7.50 190.5	14.62 371.3	3.81 96.7	21.50 546.1	4.75 120.6	7.25 184.1	2.50 63.5	18.38 466.8	1.31 33.2	24.00 609.6	4.69 119.1	4.69 119.1
603	6.12 155.4	7.50 190.5	23.50 596.9	3.81 96.7	30.38 771.6	4.75 120.6	7.25 184.1	2.50 63.5	27.25 692.1	1.31 33.2	32.88 835.1	4.69 119.1	4.69 119.1
604	6.12 155.4	7.50 190.5	32.38 822.4	3.81 96.7	39.25 996.9	4.75 120.6	7.25 184.1	2.50 63.5	36.12 917.4	1.31 33.2	41.76 1060.7	4.69 119.1	4.69 119.1
606	6.12 155.4	7.50 190.5	50.50 1282.7	3.81 96.7	57.38 1457.4	4.75 120.6	7.25 184.1	2.50 63.5	54.25 1377.9	1.31 33.2	59.88 1520.9	4.69 119.1	4.69 119.1
608	6.12 155.4	7.50 190.5	68.38 1736.8	3.81 96.7	75.25 1911.3	4.75 120.6	7.25 184.1	2.50 63.5	72.12 1831.8	1.31 33.2	77.76 1975.1	4.69 119.1	4.69 119.1
802	8.25 209.5	11.00 279.4	12.00 304.8	5.62 142.7	22.75 577.8	6.50 165.1	10.00 254.0	4.00 101.6	19.12 485.6	2.25 57.1	27.24 691.8	7.62 193.5	7.62 193.5
803	8.25 209.5	11.00 279.4	21.00 533.4	5.62 142.7	31.75 806.4	6.50 165.1	10.00 254.0	4.00 101.6	28.12 714.2	2.25 57.1	36.24 920.4	7.62 193.5	7.62 193.5
804	8.25 209.5	11.00 279.4	30.00 762.0	5.62 142.7	40.75 1035.0	6.50 165.1	10.00 254.0	4.00 101.6	37.12 942.8	2.25 57.1	45.24 1149.0	7.62 193.5	7.62 193.5
805	8.25 209.5	11.00 279.4	39.00 990.6	5.62 142.7	49.75 1263.6	6.50 165.1	10.00 254.0	4.00 101.6	46.12 1171.4	2.25 57.1	54.24 1377.6	7.62 193.5	7.62 193.5
806	8.25 209.5	11.00 279.4	48.00 1219.2	5.62 142.7	58.75 1492.2	6.50 165.1	10.00 254.0	4.00 101.6	55.12 1400.0	2.25 57.1	63.24 1606.2	7.62 193.5	7.62 193.5
808	8.25 209.5	11.00 279.4	66.00 1676.4	5.62 142.7	76.75 1949.4	6.50 165.1	10.00 254.0	4.00 101.6	73.12 1857.2	2.25 57.1	81.24 2063.4	7.62 193.5	7.62 193.5
810	8.25 209.5	11.00 279.4	84.00 2133.6	5.62 142.7	94.75 2406.6	6.50 165.1	10.00 254.0	4.00 101.6	91.12 2314.4	2.25 57.1	99.24 2520.6	7.62 193.5	7.62 193.5
1005	10.75 273.0	14.88 377.9	34.12 866.6	10.75 273.0	25.00 635.0	8.00 203.2	12.25 311.1	5.00 127.0	46.12 1171.4	17.38 441.4	59.88 1520.9	12.88 327.1	12.88 327.1
1006	10.75 273.0	14.88 377.9	43.12 1095.2	10.75 273.0	34.00 863.6	8.00 203.2	12.25 311.1	5.00 127.0	55.12 1400.0	17.38 441.4	68.88 1749.5	12.88 327.1	12.88 327.1
1008	10.75 273.0	14.88 377.9	61.12 1552.4	10.75 273.0	52.00 1320.8	8.00 203.2	12.25 311.1	5.00 127.0	73.12 1857.2	17.38 441.4	86.88 2206.7	12.88 327.1	12.88 327.1
1010	10.75 273.0	14.88 377.9	79.12 2009.6	10.75 273.0	70.00 1778.0	8.00 203.2	12.25 311.1	5.00 127.0	91.12 2314.4	17.38 441.4	104.88 2663.9	12.88 327.1	12.88 327.1

SHELL DIAMETER & SHELL LENGTH CODE	TWO PASS				
	H	B	E	F	K
201	— —	— —	— —	— —	— —
202	— —	— —	— —	— —	— —
301	0.81 20.5	13.38 339.8	3.44 87.3	2.94 74.6	0.88 22.3
302	0.81 20.5	22.38 568.4	3.44 87.3	2.94 74.6	0.88 22.3
303	0.81 20.5	31.38 797.0	3.44 87.3	2.94 74.6	0.88 22.3
502	1.06 26.9	23.12 537.2	4.06 103.1	3.56 90.4	1.18 29.9
503	1.06 26.9	32.12 815.8	4.06 103.1	3.56 90.4	1.18 29.9
504	1.06 26.9	41.12 1044.4	4.06 103.1	3.56 90.4	1.18 29.9
602	1.31 33.2	23.50 596.9	4.69 119.1	4.19 106.4	1.50 38.1
603	1.31 33.2	32.38 822.4	4.69 119.1	4.19 106.4	1.50 38.1
604	1.31 33.2	41.26 1048.0	4.69 119.1	4.19 106.4	1.50 38.1
606	1.31 33.2	59.38 1508.2	4.69 119.1	4.19 106.4	1.50 38.1
608	1.31 33.2	77.26 1962.4	4.69 119.1	4.19 106.4	1.50 38.1
802	1.75 44.4	26.24 666.4	7.12 180.8	7.12 180.8	1.88 47.7
803	1.75 44.4	35.24 895.0	7.12 180.8	7.12 180.8	1.88 47.7
804	1.75 44.4	44.24 1123.6	7.12 180.8	7.12 180.8	1.88 47.7
805	1.75 44.4	53.24 1352.2	7.12 180.8	7.12 180.8	1.88 47.7
806	1.75 44.4	62.24 1580.8	7.12 180.8	7.12 180.8	1.88 47.7
808	1.75 44.4	80.24 2038.0	7.12 180.8	7.12 180.8	1.88 47.7
810	1.75 44.4	98.24 2495.2	7.12 180.8	7.12 180.8	1.88 47.7
1005	15.38 390.6	55.63 1413.0	10.88 276.3	10.63 270.0	2.50 63.5
1006	15.38 390.6	64.63 1641.6	10.88 276.3	10.63 270.0	2.50 63.5
1008	15.38 390.6	82.63 2098.8	10.88 276.3	10.63 270.0	2.50 63.5
1010	15.38 390.6	100.63 2556.0	10.88 276.3	10.63 270.0	2.50 63.5

(All dimensions are inches millimetres)

(Certified drawings are available upon request)

Model "ACAT" Compressed Air Aftercoolers



DESCRIPTION

"ACAT" Compressed Air Aftercoolers are of the shell and tube type. Tube Bundles are removable and tubes are easily cleaned both inside and outside. Tube ends are expanded into both the front and rear tubesheets. Floating tubesheet construction within the rear head compensates for expansion or contraction of the entire bundle regardless of temperature variations. Baffles are stamped to close tolerances, minimizing the slippage of water between the baffles and shell wall. Standard materials include copper tubes, steel and cast iron heads, steel tubesheets, baffles and shell.

MODEL NO.	SUR-FACE	SHIP WT.	CAPACITY FREE AIR SCFM		A	B	C	D NPT	E NPT	F I.D.	G	RECOMM. SEPARATOR	DESIGN PRES. AT 375°F
			1 STAGE	2 STAGE									
ACAT 34-12	3.1	90	50	65	54⅞	3½	7½	¾	½	3 9/16	3	LAS T 3165	150
ACAT 34-20	5.2	95	80	100	54⅞	3½	7½	¾	½	3 9/16	3	LAS T 3165	150
ACAT 34-24	6.3	100	100	125	54⅞	3½	7½	¾	½	3 9/16	3	LAS T 3165	150
ACAT 46-12	7.6	200	125	155	86	4½	9	¾	½	4 9/16	4	LAS T 4165	150
ACAT 46-16	10.2	210	160	200	86	4½	9	¾	½	4 9/16	4	LAS T 4165	150
ACAT 46-22	14.0	220	210	260	86	4½	9	¾	½	4 9/16	4	LAS T 4165	150
ACAT 46-26	16.6	230	260	325	86	4½	9	¾	½	4 9/16	4	LAS T 4165	150
ACAT 66-30	19.1	350	305	375	86⅜	6⅝	11	¾	¾	6¾	6	LAS T 6165	150
ACAT 66-36	23.0	360	360	450	86⅜	6⅝	11	¾	¾	6¾	6	LAS T 6165	150
ACAT 66-42	26.8	370	400	500	86⅜	6⅝	11	¾	¾	6¾	6	LAS T 6165	150
ACAT 66-52	33.2	380	480	600	86⅜	6⅝	11	¾	¾	6¾	6	LAS T 6165	150
ACAT 66-64	39.6	390	605	755	86⅜	6⅝	11	¾	¾	6¾	6	LAS T 6165	150
ACAT 86-84	53.7	500	740	925	86½	8⅝	13½	1	¾	8¾	8	LAS T 8165	150
ACAT 86-92	58.7	515	900	1125	86½	8⅝	13½	1	¾	8¾	8	LAS T 8165	150
ACAT 86-96	61.0	530	960	1200	86½	8⅝	13½	1	¾	8¾	8	LAS T 8165	150
ACAT 86-134	86.9	560	1280	1625	86½	8⅝	13½	1	¾	8¾	8	LAS T 8165	150
ACAT 109-82	99.0	800	1620	2025	117½	10¾	16	1¼	¾	10⅞	10	LAS T 10165	150
ACAT 109-102	123.0	840	2000	2500	117½	10¾	16	1¼	¾	10⅞	10	LAS T 10165	150
ACAT 109-128	155.0	880	2460	3100	117½	10¾	16	1¼	¾	10⅞	10	LAS T 10165	150
ACAT 109-136	164.0	1000	2960	3700	117½	10¾	16	1¼	¾	10⅞	10	LAS T 10165	150
ACAT 109-144	174.0	1020	3600	4500	117½	10¾	16	1¼	¾	10⅞	10	LAS T 10165	150

150 PSIG Design Pressure at 375°F Design Temperature

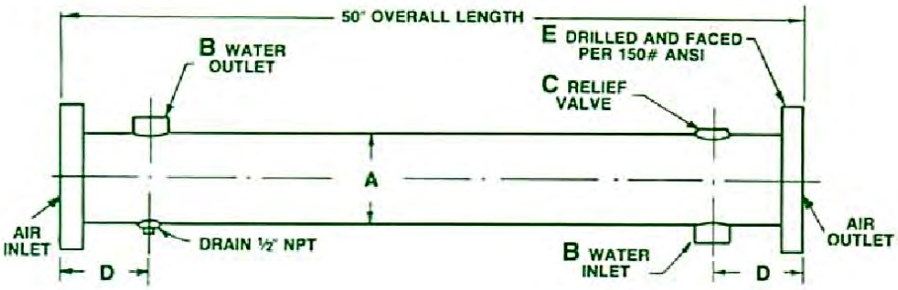
Dimensions are subject to change. If exact dimensions are needed for layout, write for certified prints.

Capacities are based on ambient air at 14.7 psia, 60°F, 70% RH; air entering aftercooler at 100 psig, 350°F single stage, 250°F two stage; and cooling water at 85°F with 2 gpm per 100 SCFM single stage and 1.5 gpm per 100 SCFM two stage. Leaving air temperature is 100°F, pressure drops are approximately 1 psi air or water side.

CAUTION:

Cooling water should be circulating through the shellside before hot compressed air enters the tubeside of the Aftercooler.

Model "ACFT" Compressed Air Aftercoolers



DESCRIPTION

"ACFT" Compressed Air Aftercoolers are of the fixed tubesheet, shell and tube type. Tubes have an aluminum inner spline for increased efficiency. Tube ends are expanded into both tubesheets. Baffles are stamped to close tolerances, minimizing slippage of water between the baffles and shell wall. Standard materials include copper tubes, steel tubesheets, baffles and shell.

NOTE: Type "ACFT" aftercoolers are intended for use with oil free air. Use with a lubricated compressor system can lead to premature fouling.

MODEL NO.	A	B NPT	C NPT	D	E FLG	SURFACE	SHIP. WT.	RECOMMENDED SEPARATOR
ACFT 33	3½	¾	½	3¾	3	7	63	LAST 3165
ACFT 35	3½	¾	½	3¾	3	11	65	LAST 3165
ACFT 37	3½	¾	½	3¾	3	15	70	LAST 3165
ACFT 410	4½	¾	½	3¾	4	22	104	LAST 4165
ACFT 614	6⅝	¾	¾	4	6	30	160	LAST 6165
ACFT 620	6⅝	¾	¾	4	6	44	165	LAST 6165
ACFT 626	6⅝	¾	¾	4	6	56	170	LAST 6165
ACFT 833	8⅝	1	¾	4	8	70	250	LAST 8165
ACFT 840	8⅝	1	¾	4	8	85	256	LAST 8165
ACFT 847	8⅝	1	¾	4	8	99	262	LAST 8165
ACFT 1060	10¾	1¼	¾	4¾	10	127	385	LAST 10165
ACFT 1072	10¾	1¼	¾	4¾	10	152	398	LAST 10165
ACFT 1084	10¾	1¼	¾	4¾	10	178	412	LAST 10165

165 PSIG Design Pressure at 375°F Design Temperature

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

FREE AIR CAPACITIES IN SCFM

MODEL NUMBER	SINGLE STAGE 80-125 PSIG		TWO STAGE 80-125 PSIG		SINGLE STAGE 70 PSIG		SINGLE STAGE 60 PSIG		SINGLE STAGE 50 PSIG		SINGLE STAGE 40 PSIG		SINGLE STAGE 30 PSIG	
	10°F*	15°F*	10°F*	15°F*	10°F*	15°F*	10°F*	15°F*	10°F*	15°F*	10°F*	15°F*	10°F*	15°F*
ACFT 33	73	80	86	92	68	73	64	68	60	64	56	60	53	56
ACFT 35	120	132	140	150	122	128	116	122	110	116	103	110	96	103
ACFT 37	163	180	190	208	155	163	145	155	137	145	128	137	119	128
ACFT 410	264	270	283	310	223	244	220	223	207	220	195	207	183	195
ACFT 614	345	375	375	425	325	339	305	325	287	305	270	287	252	270
ACFT 520	470	520	546	595	446	470	420	446	344	420	370	394	345	370
ACFT 626	585	650	684	750	550	585	520	550	486	520	455	486	422	455
ACFT 833	745	875	865	950	700	745	660	700	620	660	580	620	536	580
ACFT 840	900	1000	1050	1150	850	900	800	850	750	800	700	750	650	700
ACFT 847	1060	1175	1240	1350	1000	1060	940	1000	880	940	820	880	764	820
ACFT 1060	1350	1500	1580	1730	1280	1350	1200	1280	1130	1200	1050	1130	974	1050
ACFT 1072	1620	1800	1900	2070	1540	1620	1440	1540	1350	1440	1260	1350	1170	1260
ACFT 1084	1900	2100	2200	2420	1800	1890	1680	1800	1570	1680	1470	1570	1370	1470

165 PSIG Design Pressure at 375°F Design Temperature

Ratings Based on 70°F Inlet Water. Water Flow 1½ GPM Per 100 SCFM for Single Stage Operation

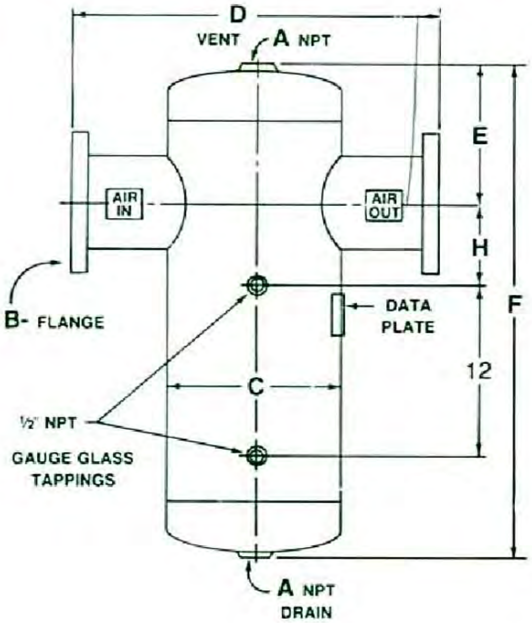
Water Flow 1 GPM Per 100 SCFM for Two Stage Operation. Maximum Pressure Drop: Air Side 1 PSI, Water Side 1 PSI.

*T Air Leaving — t Water Entering, T Inlet Air = 300°F

CAUTION:

Cooling water should be circulating through the shellside before hot compressed air enters the tubeside of the Aftercooler

Model "LAST" Compressed Air Moisture Separators



DESCRIPTION

"LAST" Moisture Separators are fabricated steel ASME constructed pressure vessels with an internal steel baffle for minimum pressure drop. Threaded connections are provided for vent, drain and gauge glasses. Rated at 165 PSIG, 375° F.

Model No.	A	B	C	D	E	F	H	SHIP. WT.	MAX. FLOW SCFM
LAST-3165	¾	3	6⅝	11½	6 3/16	26⅝	2⅞	55	208
LAST-4165	¾	4	8⅝	13½	7⅛	31½	6¼	75	325
LAST-6165	1¼	6	10¾	17	9⅜	40¼	12½	130	755
LAST-8165	1½	8	12¾	20	10¼	46¼	16⅝	195	1625
LAST-10165	1½	10	16	24½	12¾	54¼	21⅜	330	4500

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

Why an Aftercooler is needed on compressed air systems

Heated, compressed air can be hazardous! In the interests of both safety and protection against damage to tools and material, it is highly important that compressed air be *cooled* and *dried* before it is distributed for use.

When air is compressed it becomes very hot and, when in the presence of compressor oil, it is a potential explosive. Danger of combustion explosions and/or fire in either the air receiver or the pipe lines is always present. Cooling the air after it leaves the compressor will greatly reduce this possibility.

Heated air likewise causes the pipe lines to expand, with subsequent contraction when the compressor is shut down and the pipes cool. This alternate lengthening and shortening of the lines ultimately produces leaky joints and air losses.

Why moisture collects in compressed air lines

Water, in a *vaporized* condition, is always present in the air. The amount of water which can be held before condensation occurs is in direct proportion to the temperature of the air and in inverse proportion to the pressure. Or, in other words, the hotter the air the more water it can hold in vapor form and the greater the pressure the less vapor it can hold.

At any given pressure and temperature, the air is called *"saturated"* if it is carrying all the water vapor it can hold. The air is considered as *"dry"* if its dew point is below that of the ambient condition.

A change in either pressure or temperature upsets the stabilized condition of saturated air. If the pressure becomes higher while the temperature remains constant, the air loses part of its vapor-carrying capacity and condensation occurs. Conversely, if the temperature becomes cooler, while pressure remains constant, vapor-carrying capacity is lessened and the vapor condenses to liquid form. It is this latter case which occurs in the operation of compressed air equipment.

Why compressed air must be dried

As the compressed air approaches the end of the transport lines it becomes cooler. In cooling it loses its capacity for carrying moisture in the vaporized form. Hence it condenses and is discharged in liquid form. Sudden expansion of compressed air at the point of use also causes rapid cooling and condensation, thus allowing moisture to be blown into tools and/or the work being processed.

In pneumatically operated machines this release of liquid water removes lubricating oil which will result in loss of efficiency and deterioration of equipment. It may cause water-cutting and faulty operation of valves and air controlled devices. Water in the pipe lines produces "water hammer" and may collect at low points in such quantities that freezing will burst the pipes.

Oil must also be removed

Oil is likewise a hazard. As air passes through the compressor it picks up oil which, at the high temperature of compressed air, is converted into vapor. The oil returns to liquid form as the air cools. It can then be released at the point of use, damaging the material being processed.

The function of the Aftercooler, therefore, is to *cool the air* before it enters the receiver or pipe lines. In so doing it reduces danger of combustion explosions and/or fires, removes moisture and cleanses the air of oil and dirt. To omit an Aftercooler is a standing invitation to equipment damage and possible personal injury.

Models "ACAT" and "ACFT" Aftercoolers and "LAST" Moisture Separators conform to the latest ASME Code for pressure vessels.

Typical installation of "ACAT" or "ACFT" Aftercoolers

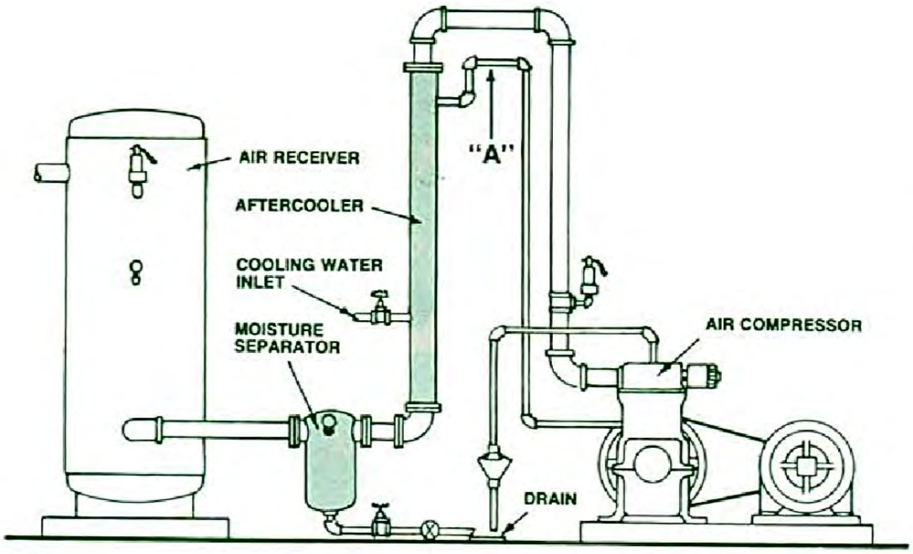


FIGURE 1
Aftercooler installed vertically. This is the preferred position.

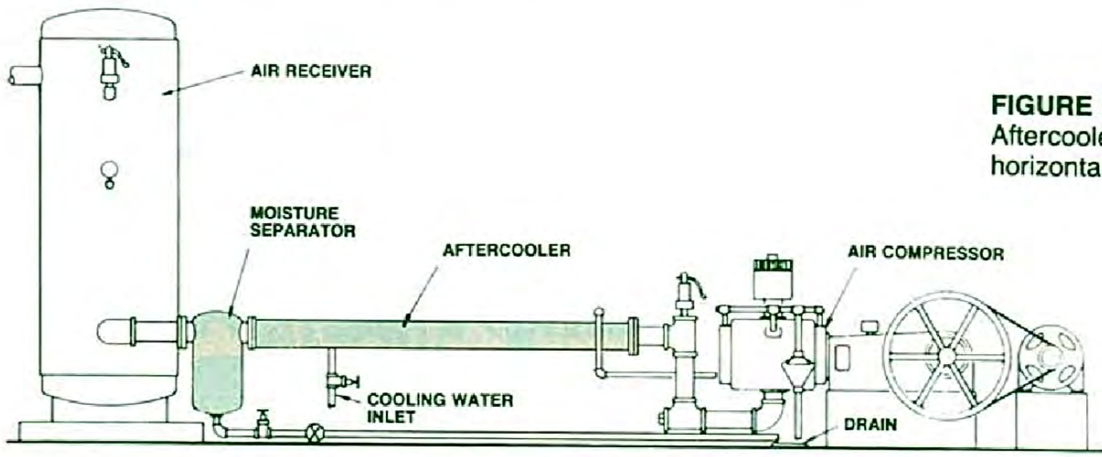


FIGURE 2
Aftercooler installed horizontally.

INSTALLATION

T . M Aftercoolers should preferably be installed in one of two positions as shown in Figure 1 and Figure 2.

Figure 1 shows an ACFT Aftercooler installed in a vertical position. This is the preferred position because the moisture and oil condensed in the Cooler will always drain into the Moisture Separator. With this installation it is imperative that the air be passed *downward* through the Cooler and the cooling water passed *upward*. The outlet water line must extend above the height of the cooler (See "A" Fig. 1) to provide for complete filling of cooler and prevent "hot spots" at air inlet.

In cases where a vertical installation is not possible, the horizontal method illustrated in Figure 2 can be used. It is important that the cooling water be brought in at the bottom of the Cooler shell and taken out at the top, causing the water to flow in a direction counter to the air flow. It is also important that the packing end of the Model ACAT be at the cool side or the air outlet from the cooler.

OPERATION & MAINTENANCE

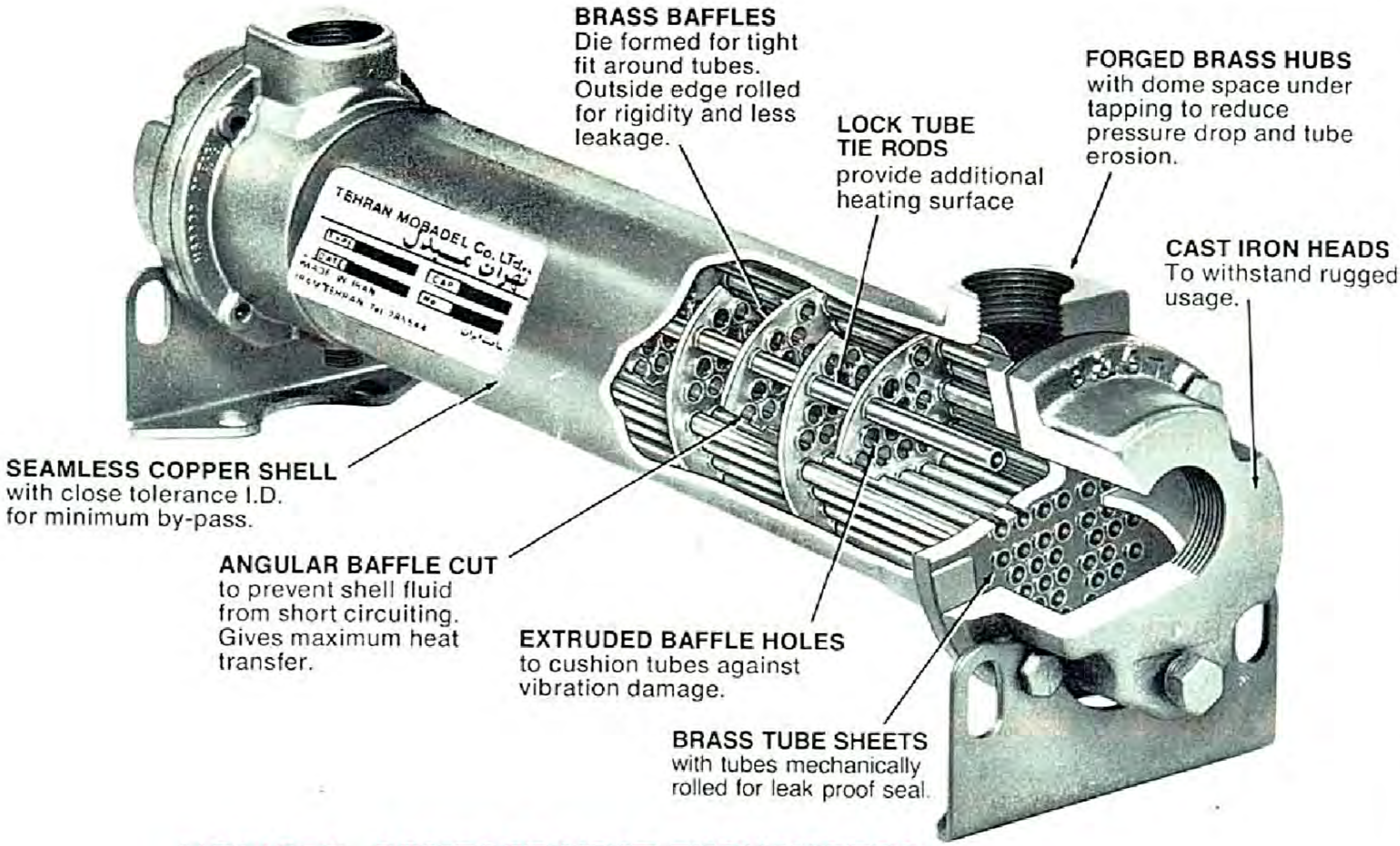
1. When placing an Aftercooler in operation, start by circulating the cooling water only, opening all vent connections so that the water may flow freely through the Cooler and observation made of same through the Sight Flow Funnel.

2. Start operation gradually. Do not admit the compressed air into the Aftercooler, unless water is flowing through the shell of the unit.

3. In shutting down, the air flow should be shut off first. If it is necessary to stop circulation of the cooling water, the circulation of the compressed air should also be stopped by by-passing the Aftercooler or shutting off the compressor.

4. Maintenance instructions are found in HT-205-SM Service Manual for ACFT Aftercoolers and HT-320-SM Service Manual for fixed tubesheet ACAT Aftercoolers.

T . M . COMPACT HEAT EXCHANGERS



MOBADDEL **COMPACT HEAT EXCHANGERS**

T. M. Compact Heat Exchangers are ideally designed to satisfy the heat transfer requirements of any number of industrial applications . This means that there is no long wait for delivery once you give your T. M. representative the system requirements. Simply let him know what you need, and T. M. will select the right unit for your particular requirements.

You will probably find your area of interest covered in this sample list of industries and applications served by T. M. CHXT Model heat exchangers. But remember, for almost any heat exchanger applications you may have, your T. M. representative can come up with the right answer and products.

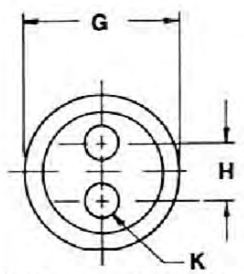
Transformer Oil Cooling / Engine Oil Cooling / Injection Molding Machine Cooling / Mechanical Seal Cooling / Compressed Air Cooling / Cutting Fluid Cooling / Torque Converter Fluid Cooling / Solar Heat Transfer / Gas Turbines / Rectifiers / Laboratory Applications / Marine Applications / Machine Tools

T. M. CHXT heat exchangers — in addition to being immediately available — incorporate advanced design techniques. Each unit has been designed to be the best size for the job.

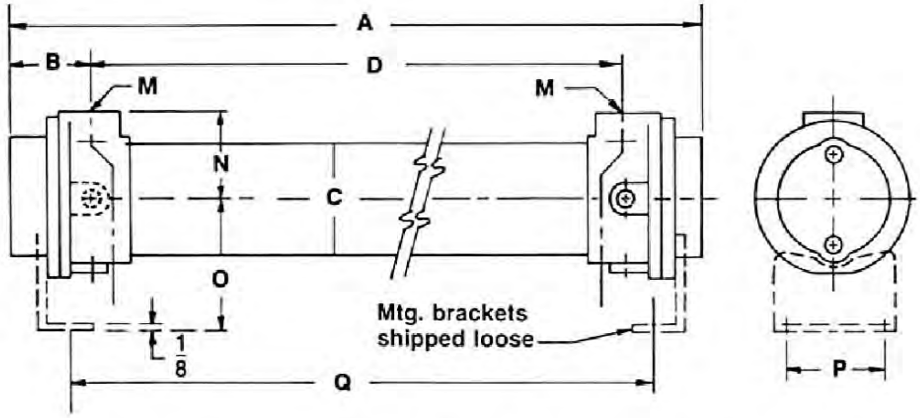
Angular baffle cut design prevents shell fluid short circuiting, insuring maximum heat transfer for your investment. The use of a lock tube to serve as a tie rod also increases heat transfer surface.

T. M. designs are matched in quality by advanced manufacturing techniques. Unit components are precision die formed to insure an extremely tight fit.

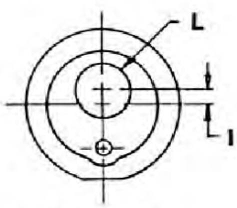
TYPE CHXT HEAT EXCHANGERS DIMENSIONS



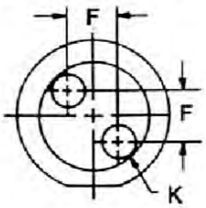
2 Pass Head (3" & 5")



All vent & drain tappings ¼" NPT



1 Pass Head (front & rear)



2 Pass Head (4" & 6")

	Tubeside	Shellside
Design Press.	150 PSI	225 PSI
Test Press.	225 PSI	300 PSI
Design Temp.	300°F	300°F

Materials of Construction	
Heads-Cast Iron	Shell-Copper
Tube Sheets-Brass	Shell Ends-Brass
Tube-CHXT300&400	Series ¼ in. copper
CHXT500&600	Series ⅜ in. copper

MODEL	AREA sq. ft.	1 Pass A in.	1 Pass B in.	2 Pass A in.	2 Pass B in.	C in.	D in.	E in.	F in.	G in.	H in.	I in.	J NPT	K NPT	L NPT	M NPT	N in.	O in.	P in.	Q in.	Approx. Wt.
CHXT-308-*	2.5	11¼		10¾			6⅛													7⅞	12
CHXT-314-*	4.3	17¼	2⅝	16¾	2½	3⅛	12⅛	1	—	4¼	2	⅜	¾	1	1½	1	2 7/16	3⅛	2 3/16	13⅞	15
CHXT-324-*	7.3	27¼		26¾			22⅛													23⅞	19
CHXT-414-*	7.6	18		17¾			11½													14	35
CHXT-424-*	13.1	28	3¼	27¾	3¼	4⅛	21½	1¼	1⅜	5¼	—	0	1	1	2	1¼	3	4 3/16	5	24	40
CHXT-436-*	19.7	40		39¾			33½													36	60
CHXT-514-*	9.2	18½		18¼			11⅛													12⅛	50
CHXT-524-*	15.7	28½	3¾	28¼	3¾	5⅛	21⅛	1 11/16	—	6½	3	0	1	1½	2½	1½	3⅝	3½	4	22⅛	56
CHXT-536-*	23.6	40½		40¼			33⅛													34⅛	68
CHXT-624-*	22.8	29		28¾			20½													21⅞	80
CHXT-636-*	34.2	41	4¼	40¾	4¼	6⅛	32½	2	2 3/16	7½	—	0	1½	2	3	2	4¼	4⅛	5	33⅞	99
CHXT-648-*	45.6	53		52¾			44½													45⅞	118
CHXT-660-*	57.0	65		64¾			56½													57⅞	137

*No. of passes, either 1, 2
Baffle Spacing, either S or L.

"RCFT" CONDENSERS -

TYPICAL SPECIFICATION

Furnish and install approximately where shown on plans and with manufacturers' recommendations, '**RCFT**' Water Cooled Condenser(s), according to the following specifications:

1. **Type:** The Condenser(s) shall be of the shell and straight tube design with removable water heads.
   a. The integral externally finned copper tubing shall be rolled into serrated tube sheet holes.
   b. There shall be metal to metal contact between fins for rapid liquid drainage.
   c. The inlet gas shall be evenly distributed to the tubes by means of a high velocity nozzle.
   d. The condenser(s) shall be equipped with three test cocks located in the shell for visual liquid level determination during operation and pump-down.

2. **Materials:**
   a. Heads—Cast Iron
   b. Tube sheets—Steel (Serrated)
   c. Shell—Steel
   d. ¾"O.D.Tubes-Integral externally finned copper.

3. **Capacity:** The unit shall have a capacity of no less than ________ tons, using refrigerant ________ when supplied with ________ GPM of ________ °F water. The condensing temperature shall be ______ °F. The water pressure loss shall not exceed ________PSIG. The Condenser(s) selection shall be based on a .001 fouling factor, and the heat rejection based on 15,000 BTU/hr/ton of refrigeration. The condenser(s) shall have a pumpdown capacity of ________ of pounds of refrigerant ________ when 80% full at ________ °F.

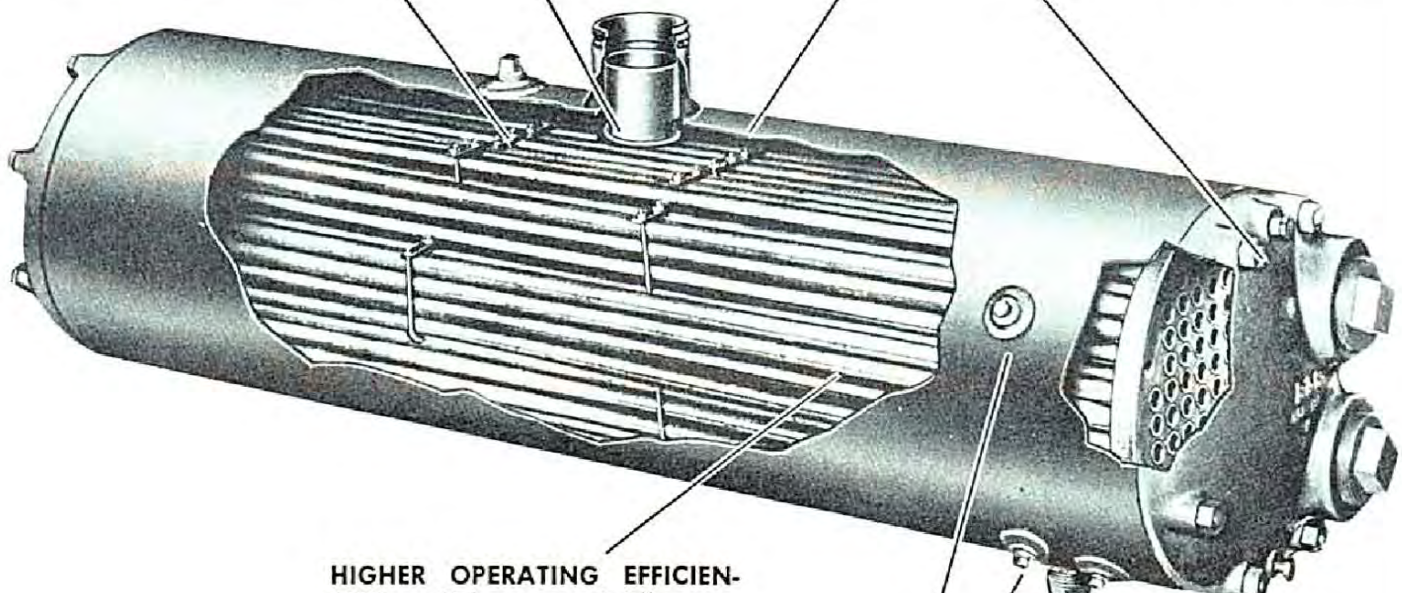
DESIGN FEATURES

LESS SERVICE — Higher water velocities minimize build-up of scale and dirt on tube walls. Life of the unit is also extended by a .001 fouling factor.

QUIET AND VIBRATION-FREE OPERATION — Tubes are rigidly held together in rows with U bolts. This construction eliminates tube vibrations usually caused by hot gas pulsations.

UNIFORM GAS DISTRIBUTION — Gas inlet nozzle provides high entrance velocity and develops uniform gas distribution over the tubes.

CLEANABLE TUBES — Removeable water heads are cast iron and are securely bolted to the tube sheets. The straight tubes of these units are easily cleaned.



HIGHER OPERATING EFFICIENCIES — Tubes are rigidly supported in stacks with metal to metal contact between fins. This permits free drainage of the condensing Freon. With less liquid on the fins, the tubes condense more gas and efficiency is considerably higher.

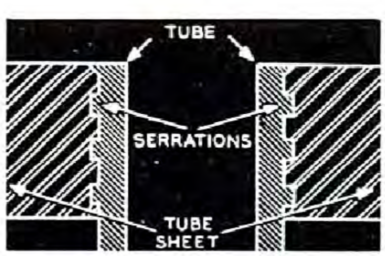
LIGHTER AND MORE COMPACT—RCFT Condensers are smaller in size. They require less space, cost less to ship and are easy to move and install.

LIQUID LEVEL OPENINGS — Three liquid level openings are provided, two at the operating level, one at the 80% pump-down level. When test cocks are installed in these openings costlier and breakable sight glasses can be eliminated.

Other Plus Features

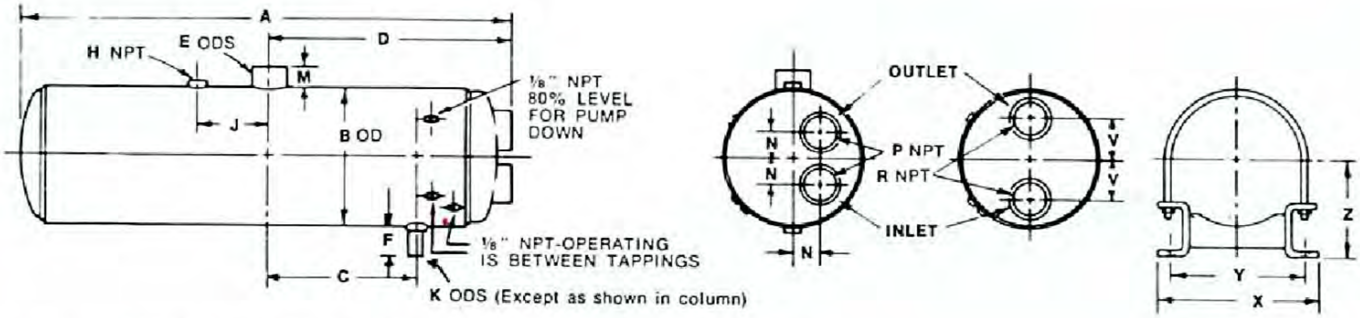
AVAILABILITY — Many sizes available from factory stock. Fast deliveries assured.

ASME CONSTRUCTED AND STAMPED — All model RCT condensers are constructed, tested and stamped in accordance with ASME Pressure Vessel Code.



FIXED TUBE SHEETS — RCFT Condensers are constructed with fixed tube sheets. Finned tubes are rolled into serrated tube sheet openings, assuring a leak-free seal.

Dimensions



Dimensions are subject to change without notice. Certified dimensional prints will be supplied on request.
Design Pressures: Shell 325 PSI. Tubes 125 PSI. ASME constructed and stamped.
Maximum design temperature 250°F.

Support Legs
Available at Extra Cost.

MODEL NUMBER		DIMENSIONS (INCHES)																	Approx. Shpg. Wt. Lbs.
												4 PASS		2 PASS		SUPPORT LEGS			
TWO PASS	FOUR PASS	A	B	C	D	E	F	H	J	*K	M	N	P	R	V	X	Y	Z	
—	RCFT-3-34	39 5/8	6 7/16	12	19 13/16	1 1/8	—	1/2	6	1/2 NPT	3	1 1/4	1 1/4	—	—	8 1/8	6 3/4	6 11/16	75
—	RCFT-5-34	39 5/8	6 7/16	12	19 13/16	1 1/8	—	1/2	6	1/2 NPT	3	1 1/4	1 1/4	—	—	8 1/8	6 3/4	6 11/16	85
RCFT-7.5-42	RCFT-7.5-44	51 3/4	8 7/16	18	25 7/8	1 5/8	—	3/4	6	1 NPT	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	135
RCFT-10-42	RCFT-10-44	51 3/4	8 7/16	18	25 7/8	1 5/8	—	3/4	6	1 NPT	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	145
RCFT-15-42	RCFT-15-44	51 3/4	8 7/16	18	25 7/8	1 5/8	—	3/4	6	1 NPT	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	160
RCFT-20-42	RCFT-20-44	53 1/8	10 5/8	18	26 7/8	2 5/8	—	3/4	6	1 NPT	3	1 7/8	2	3	2 1/4	11 1/8	9 5/8	9 3/8	250
RCFT-20-62	RCFT-20-64	75 3/4	8 5/8	32	37 7/8	2 5/8	3	1/2	8	1 3/8	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	245
RCFT-20-82	RCFT-20-84	99 3/4	8 5/8	42	49 7/8	2 5/8	3	3/4	8	1 3/8	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	320
RCFT-25-42	RCFT-25-44	53 1/8	10 5/8	18	26 7/8	2 5/8	—	3/4	6	1 NPT	3	1 7/8	2	3	2 1/4	11 1/8	9 5/8	9 3/8	265
RCFT-25-62	RCFT-25-64	75 3/4	8 5/8	32	37 7/8	2 5/8	3	1/2	8	1 3/8	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	265
RCFT-25-82	RCFT-25-84	99 3/4	8 5/8	42	49 7/8	2 5/8	3	3/4	8	1 3/8	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	340
RCFT-30-42	RCFT-30-44	54	12 5/8	18	27 5/16	3 1/8	3	3/4	6	1 3/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	340
RCFT-30-62	RCFT-30-64	77 1/8	10 3/4	32	38 7/8	2 5/8	3	3/4	8	1 3/8	3	1 7/8	2	3	2 1/4	11 1/8	9 5/8	9 3/8	360
RCFT-30-82	RCFT-30-84	99 3/4	8 5/8	42	49 7/8	2 5/8	3	3/4	8	1 3/8	3	1 3/8	1 1/2	2 1/2	1 27/32	10 3/8	9	7	365
RCFT-40-42	RCFT-40-44	54	12 5/8	18	27 5/16	3 1/8	3	3/4	6	1 3/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	375
RCFT-40-62	RCFT-40-64	77 1/8	10 3/4	32	38 7/8	3 1/8	3	3/4	8	1 3/8	3	1 7/8	2	3	2 1/4	11 1/8	9 5/8	9 3/8	390
RCFT-40-82	RCFT-40-84	101 1/8	10 3/4	42	50 1/2	3 1/8	3	3/4	8	1 3/8	3	1 7/8	2	3	2 1/4	11 1/8	9 5/8	9 3/8	475
RCFT-50-42	RCFT-50-44	54	12 5/8	18	27 5/16	3 1/8	3	3/4	6	1 3/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	520
RCFT-50-62	RCFT-50-64	78	12 3/4	32	39	3 1/8	3	3/4	8	1 3/8	3	2 1/2	2 1/2	4	2 1/4	13 1/8	11 5/8	9 3/4	510
RCFT-50-82	RCFT-50-84	101 1/8	10 3/4	42	50 1/2	3 1/8	3	3/4	8	1 3/8	3	1 7/8	2	3	2 1/4	11 1/8	9 5/8	9 3/8	520
RCFT-60-42	RCFT-60-44	54 3/4	16	18	27 11/16	3 5/8	3	1	6	1 5/8	3	3 1/4	3	5	3 7/16	16 1/2	14 3/8	12	590
RCFT-60-62	RCFT-60-64	78	12 3/4	32	39	3 5/8	3	1	8	1 5/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	550
RCFT-60-82	RCFT-60-84	102	12 3/4	42	51	4 1/8	3	1	8	2 1/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	625
RCFT-75-42	RCFT-75-44	54 3/4	16	18	27 11/16	3 5/8	3	1	6	1 5/8	3	3 1/4	3	5	3 7/16	16 1/2	14 3/8	12	650
RCFT-75-62	RCFT-75-64	78	12 3/4	32	39	3 5/8	3	1	8	1 5/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	650
RCFT-75-82	RCFT-75-84	102	12 3/4	42	51	4 1/8	3	1	8	2 1/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	700
RCFT-100-42	RCFT-100-44	56 1/2	18	18	28 3/8	4 1/8	3	1	6	2 1/8	3	3 7/8	4	6	4 1/8	18 1/2	16	13 5/8	730
RCFT-100-82	RCFT-100-84	102	12 3/4	42	51	4 1/8	3	1	8	2 1/8	3	2 1/2	2 1/2	4	2 13/16	13 1/8	11 5/8	9 3/4	775
RCFT-125-82	RCFT-125-84	102 3/4	16	42	51 3/8	5 1/8	3	1 1/4	8	2 5/8	4	3 1/4	3	5	3 7/16	16 1/2	14 3/8	12	1020
RCFT-150-82	RCFT-150-84	102 3/4	16	42	51 3/8	5 1/8	3	1 1/4	8	2 5/8	4	3 1/4	3	5	3 7/16	16 1/2	14 3/8	12	1200
RCFT-175-82	RCFT-175-84	104 1/4	18	42	52 1/8	6 1/8	3	1 1/2	8	2 5/8	4	3 7/8	4	6	4 1/8	18 1/2	16	13 5/8	1400
RCFT-200-82	RCFT-200-84	104 1/4	18	42	52 1/8	6 1/8	3	1 1/2	8	2 5/8	4	3 7/8	4	6	4 1/8	18 1/2	16	13 5/8	1600

*K is threaded for 1" and smaller connections. Sweat connections are used for all connections larger than 1".

'RCFT' Selection Table

MODEL RCFT CONDENSER—FOR R-12 and R-22
Tonnage ratings are based on 15,000 BTU/HR/TON heat rejection and .001 FOULING FACTOR
Ratings based on maintaining liquid level between operating level tappings. (See illustration pg. 2)
Design pressures: Shell 325 PSI. Tubes 125 PSI. ASME constructed and stamped.

Condensing Temp.	105°F			105°F			105°F			PUMP DOWN CAPACITY (LBS.) @ 80% LEVEL		OPERATING CHARGE LBS.	
Inlet Water Temp.	75°F			85°F			90°F						
UNIT	TONS	GPM	P.D. Lbs.	TONS	GPM	P.D. Lbs.	TONS	GPM	P.D. Lbs.	R-12	R-22	R-12	R-22
RCFT 3-34	4.6	8	4	3.5	10.5	6.8	2.7	10.5	6.8	28	25	3	3
RCFT 5-34	6.5	13.5	4	5.8	17.5	6.8	4.5	17.5	6.8	24	22	3	3
RCFT7.5-42	—	—	—	10	53	5.3	8	53	5.3	68	62	12	11
RCFT7.5-44	10.7	20	4	8.6	26	6.8	6.8	26	6.8	68	62	12	11
RCFT 10-42	—	—	—	13	70	5.3	10.5	70	5.3	64	59	11	10
RCFT 10-44	15	27	4	11.5	35	6.8	9	35	6.8	64	59	11	10
RCFT 15-42	—	—	—	20	105	5.3	16	105	5.3	56	51	10	9
RCFT 15-44	22.5	40	4	17	53	6.8	13.5	53	6.8	56	51	10	9
RCFT 20-42	—	—	—	27	140	5.3	21	140	5.3	96	88	12	11
RCFT 20-44	30	54	4	23	70	6.8	18	70	6.8	96	88	12	11
RCFT 20-62	—	—	—	24	88	3.8	18.5	88	3.8	89	82	20	19
RCFT 20-64	27.5	44	5.7	18	44	5.7	14.5	44	5.7	89	82	20	19
RCFT 20-82	30	54	3	23	70	5	18	70	5	129	118	29	27
RCFT 20-84	24	35	7.6	16	35	7.6	—	—	—	129	118	29	27
RCFT 25-42	—	—	—	33	175	5.3	27	175	5.3	89	81	9	8
RCFT 25-44	37.5	67.5	4	29	87.5	6.8	22.5	87.5	6.8	89	81	9	8
RCFT 25-62	—	—	—	30	110	3.8	23	110	3.8	84	77	19	18
RCFT 25-64	34	54	5.6	22	54	5.6	18	54	5.6	84	77	19	18
RCFT 25-82	37.5	67.5	3	29	87.5	5	—	—	—	119	109	27	25
RCFT 25-84	30	44	7.5	20	44	7.5	—	—	—	119	109	27	25
RCFT 30-42	—	—	—	40	210	5.3	32	210	5.3	140	128	17	16
RCFT 30-44	45	81	4	35	106	7	27	106	7	140	128	17	16
RCFT 30-62	—	—	—	36	132	3.8	28	132	3.8	144	132	23	21
RCFT 30-64	41	65	5.6	26.5	65	5.6	22	65	5.6	144	132	23	21
RCFT 30-82	45	81	3	35	106	5.1	27	106	5.1	112	102	26	23
RCFT 30-84	36	52.5	7.5	24	52.5	7.5	—	—	—	112	102	26	23
RCFT 40-42	—	—	—	54	280	5.3	42	280	5.3	124	113	15	14
RCFT 40-44	60	108	4	47	140	6.8	36	140	6.8	124	113	15	14
RCFT 40-62	—	—	—	48	176	3.8	37	176	3.8	133	121	22	20
RCFT 40-64	55	87	5.6	35	87	5.6	29	87	5.6	133	121	22	20
RCFT 40-82	60	108	3	47	140	5	36	140	5	192	175	31	29
RCFT 40-84	48	70	7.5	32	70	7.5	—	—	—	192	175	31	29
RCFT 50-42	—	—	—	67	350	5.3	53	350	5.3	110	101	14	13
RCFT 50-44	75	135	4	58	175	6.8	45	175	6.8	110	101	14	13
RCFT 50-62	—	—	—	60	220	3.8	47	220	3.8	204	187	25	23
RCFT 50-64	69	108	5.6	44	108	5.6	36	108	5.6	204	187	25	23
RCFT 50-82	75	135	3	58	175	5	45	175	5	177	162	29	26
RCFT 50-84	60	88	7.5	40	88	7.5	—	—	—	177	162	29	26
RCFT 60-42	—	—	—	80	420	5.3	64	420	5.3	245	224	25	23
RCFT 60-44	90	162	4	70	210	6.8	54	210	6.8	245	224	25	23
RCFT 60-62	—	—	—	72	264	3.8	56	264	3.8	186	170	29	27
RCFT 60-64	83	130	5.6	53	130	5.6	43	130	5.6	186	170	29	27
RCFT 60-82	90	162	3	70	210	5	54	210	5	280	256	65	59
RCFT 60-84	72	105	7.5	48	105	7.5	—	—	—	280	256	65	59
RCFT 75-42	—	—	—	98	525	5.3	80	525	5.3	223	204	23	21
RCFT 75-44	112	202	4	87	262	6.8	67	262	6.8	223	204	23	21
RCFT 75-62	—	—	—	90	330	3.8	69	330	3.8	166	152	26	24
RCFT 75-64	103	163	5.6	67	163	5.6	53	163	5.6	166	152	26	24
RCFT 75-82	112	202	3	87	262	5	67	262	5	255	234	59	54
RCFT 75-84	90	131	7.5	60	131	7.5	—	—	—	255	234	59	54
RCFT100-42	—	—	—	132	700	5.3	106	700	5.3	279	256	35	32
RCFT100-44	150	270	4	117	350	6.8	90	350	6.8	279	256	35	32
RCFT100-82	150	270	3	117	350	5	90	350	5	221	202	51	47
RCFT100-84	120	175	7.5	80	175	7.5	—	—	—	221	202	51	47
RCFT125-82	187	337	3	145	438	5	113	438	5	483	442	99	90
RCFT125-84	150	218	7.5	100	218	7.5	—	—	—	483	442	99	90
RCFT150-82	225	405	3	175	525	5	135	525	5	446	408	91	83
RCFT150-84	180	263	7.5	120	263	7.5	—	—	—	446	408	91	83
RCFT175-82	257	468	3	205	612	5	155	612	5	588	538	101	92
RCFT175-84	210	306	7.5	140	306	7.5	—	—	—	588	538	101	92
RCFT200-82	300	540	3	235	700	5	180	700	5	559	511	96	88
RCFT200-84	290	350	7.5	160	350	7.5	—	—	—	559	511	96	88

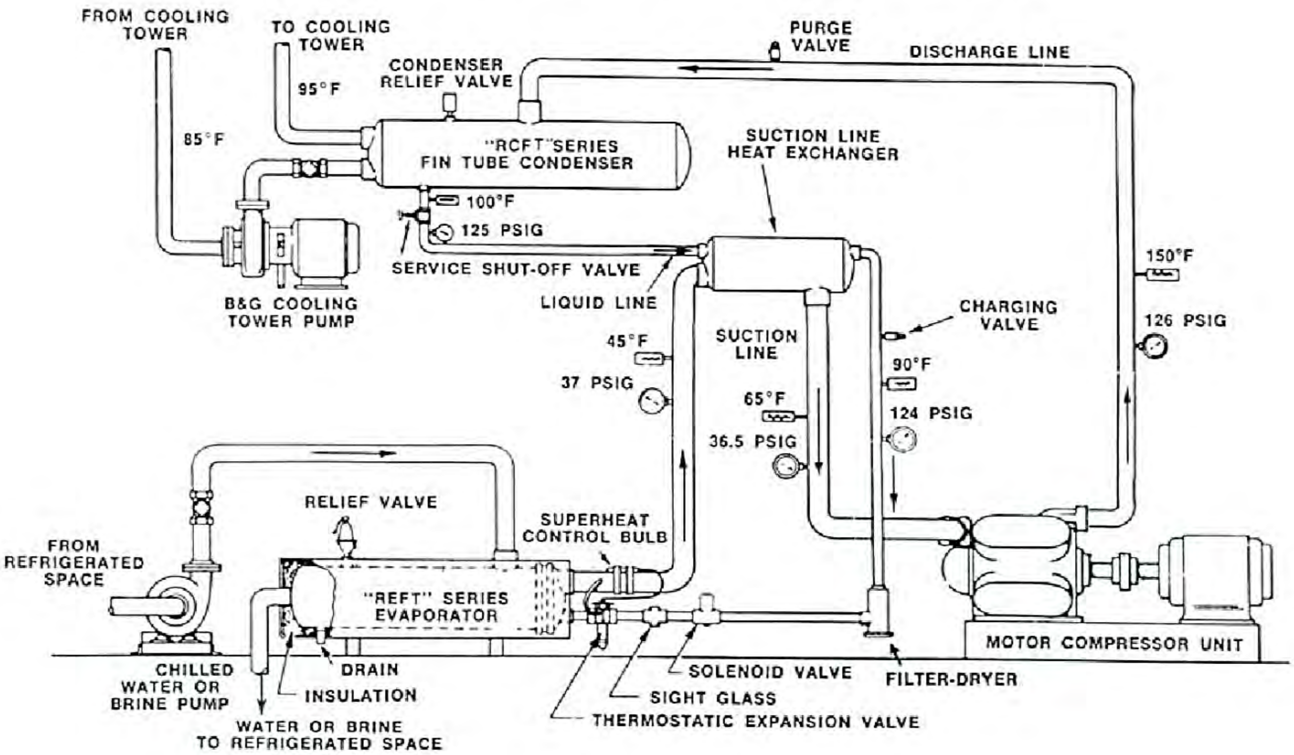
NOTE: Whenever possible use this quick selection table. If conditions of the problem are not adequately covered by one of the columns in the quick selection table

TEHRAN MOBADDEL

Type " **RET** " Evaporators

Refrigeration Components – Direct Expansion Chillers

Typical Application of T. M Refrigeration Components



TYPICAL SPECIFICATION

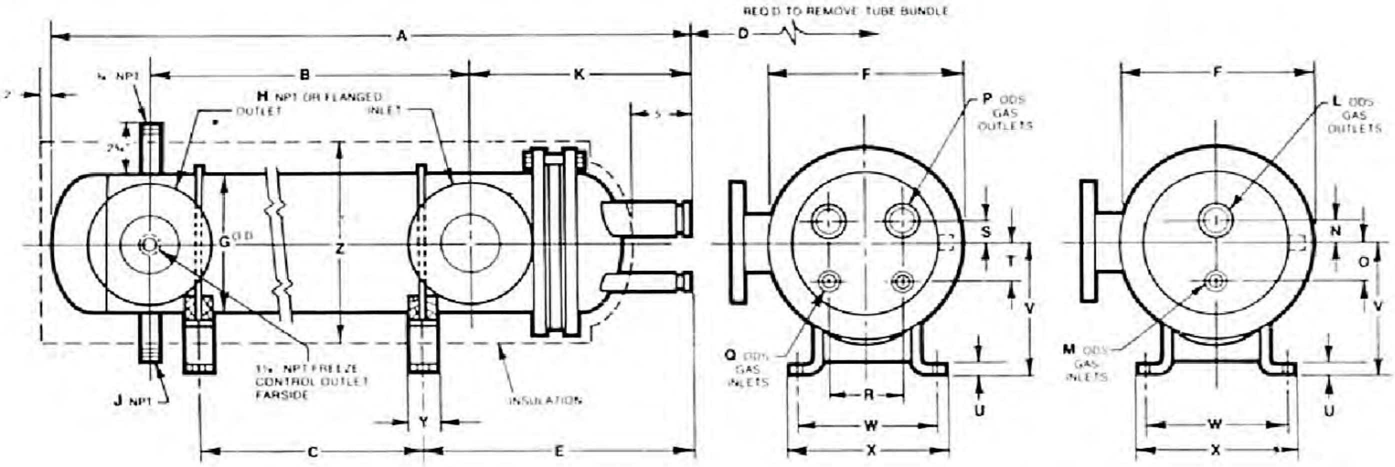
Furnish and install approximately where shown on plans and with manufacturers' recommendations, " RET " Water or Brine Refrigerant Chiller(s), according to the following specifications:

1. **Type:** The evaporator(s) shall be of the shell and tube removable tube bundle design. The tubes shall be formed in a "U" bend and shall be rolled into the serrated tube sheet. Extruded aluminum inner splines of the 7 star design shall be so installed that a positive and permanent bond will be maintained between the tube and the inner spline for all temperature variations and providing a positive contact throughout the 180° bend.

2. **Materials:**
   - a. Shell—Steel
   - b. Tubes—⅝" O.D. Copper with 7 star design extruded aluminum inner spline
   - c. Head—Steel
   - d. Tube Sheet—Steel
   - e. Baffles—Steel
   - f. Insulation–Polyurethane foam with steel jacket

3. **Capacity:** The Evaporator(s) shall be designed to cool ________ GPM water or brine from ________ °F to ________ °F by means of refrigerant R-________ at ________ °F suction temperature. The water pressure drop shall not exceed ________ PSIG.

DIMENSIONS AND PHYSICAL DATA



NOTES: 1. REFT-67—Available in one circuit, fixed tube sheet design only.

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

MODEL NO.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	
REFT-67	Refer to drawing at top of opposite page.														
REFT-86	84¾	64	57	65	18	12½	8⅝	2½"NPT	¾	14¾	2⅛	⅞	1⅛	2¾	
REFT-87	96¾	76	69	77	18	12¼	8⅝	2½"NPT	¾	14¾	2⅛	⅞	1⅛	2¾	
REFT-106	87½	63¾	56	65	20	14⅝	10¾	3"NPT	¾	16⅜	2⅝	1⅛	1¼	3½	
REFT-107	99½	75¾	68	77	20	14⅝	10¾	3"NPT	¾	16⅜	2⅝	1⅛	1¼	3½	
REFT-126	88¼	63¼	54	67	21	16⅝	12¾	4"FLG	¾	16¾	3⅛	1⅜	1 9/16	4½	
REFT-127	100¼	75¼	66	79	21	16⅝	12¾	4"FLG	¾	16¾	3⅛	1⅜	1 9/16	4½	
REFT-146	90½	61¼	52	69	24½	17⅞	14	6"FLG	1	20⅛	3⅝	1⅝	1⅞	5	
REFT-147	102½	73¼	64	81	24½	17⅞	14	6"FLG	1	20⅛	3⅝	1⅝	1⅞	5	
REFT-166	93¼	63	52	68	26	19⅞	16	6"FLG	1	20¾	3⅝	1⅝	1⅞	5	
REFT-167	105¼	75	64	80	26	19⅞	16	6"FLG	1	20¾	3⅝	1⅝	1⅞	5	
REFT-186	93½	61½	50	68	27	22	18	6"FLG	1	21⅜	4⅛	2⅛	2⅛	5½	
REFT-187	105½	73½	62	80	27	22	18	6"FLG	1	21⅜	4⅛	2⅛	2⅛	5½	
REFT-206	102	65	52	69	30	24	20	8"FLG	1	24¼	5⅛	2⅝	2⅝	6	
REFT-207	114	77	64	81	30	24	20	8"FLG	1	24¼	5⅛	2⅝	2⅝	6	
REFT-246	100¾	63½	50	75	31	28⅛	24	8"FLG	1	24⅜	5⅛	2⅝	2⅝	7	
REFT-247	112¾	75½	62	87	31	28⅛	24	8"FLG	1	24⅜	5⅛	2⅝	2⅝	7	

MODEL NO.	P	Q	R	S	T	U	V	W	X	Y	Z	AREA FT.²	SHELL VOLUME GALS.	LBS. REF TUBES ¼ FULL	APPROX. SHIP. WT.
REFT-67	Refer to drawing at top of opposite page.											34	7	5	295
REFT-86	1⅝	⅞	4½	1	2⅛	⅜	10½	9	10⅜	2½	12⅝	58	11	8	353
REFT-87	1⅝	⅞	4½	1	2⅛	⅜	10½	9	10⅜	2½	12⅝	68	13	10	396
REFT-106	2⅛	⅞	4½	1⅛	3	⅜	12⅞	9⅝	11⅛	2½	15	102	17	14	524
REFT-107	2⅛	⅞	4½	1⅛	3	⅜	12⅞	9⅝	11⅛	2½	15	119	20	17	588
REFT-126	2⅝	1⅛	6	1¼	3	⅜	13½	11⅝	13⅛	2½	17	160	24	22	713
REFT-127	2⅝	1⅛	6	1¼	3	⅜	13½	11⅝	13⅛	2½	17	186	28	26	796
REFT-146	2⅝	1⅛	8	1¼	3½	½	15¼	12½	14⅜	3	18½	199	30	28	954
REFT-147	2⅝	1⅛	8	1¼	3½	½	15¼	12½	14⅜	3	18½	232	34	32	1056
REFT-166	3⅛	1⅜	8	1¾	4	½	15⅝	14⅝	16½	3	20½	284	38	40	1182
REFT-167	3⅛	1⅜	8	1¾	4	½	15⅝	14⅝	16½	3	20½	329	44	46	1308
REFT-186	3⅛	1⅜	11	1⅝	3½	½	17⅜	16	18½	3	22½	355	50	50	1450
REFT-187	3⅛	1⅜	11	1⅝	3½	½	17⅜	16	18½	3	22½	412	58	58	1600
REFT-206	3⅝	1⅝	12	1⅞	4	½	18	18	20½	3	24½	479	62	67	1975
REFT-207	3⅝	1⅝	12	1⅞	4	½	18	18	20½	3	24½	553	70	77	2160
REFT-246	4⅛	2⅛	12	2⅛	6	½	18⅞	22¼	24¾	3	28⅝	735	88	103	2700
REFT-247	4⅛	2⅛	12	2⅛	6	½	18⅞	22¼	24¾	3	28⅝	849	100	119	3230

QUICK SELECTION TABLE

The following tables and charts cover the most commonly applied temperature ranges. Capacities are shown for one and two-circuit evaporators for R-12 and R-22. Selections on applications involving other fluids, temperatures, three or four-circuit design and special materials of construction are obtained by consulting the factory.

Example Problem:

Cool 75 GPM of water from 55 to 45°F using R-22 at 36°F Suction, zero fouling allowance.

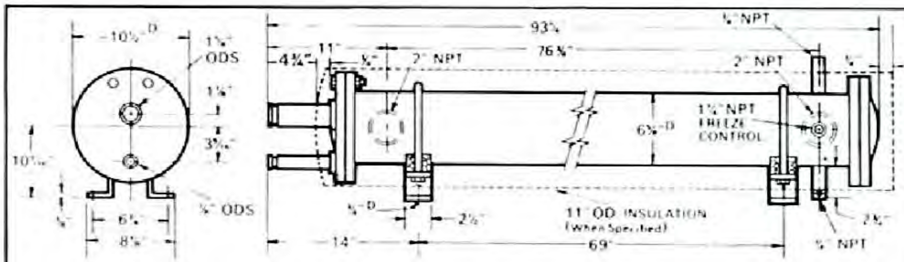
Step 1: Water temperature drop = 55° − 45° = 10°F. From Chart A below, a 10°F Temperature drop indicates a flow of 2.4 gpm per ton.

$$\text{TONS} = \frac{75\ \text{gpm}}{2.4\ \text{gpm/ton}} = 31.25\ \text{tons}$$

Temperature approach is 9°F. (Difference between suction temperature and leaving water temperature.)

Step 2: For a 9°F approach, REFT-106 has a capacity of 33.7 tons.

Step 3: Chart B gives shellside pressure drop of approximately 3.5 psi in REFT-106 for 75 gpm.

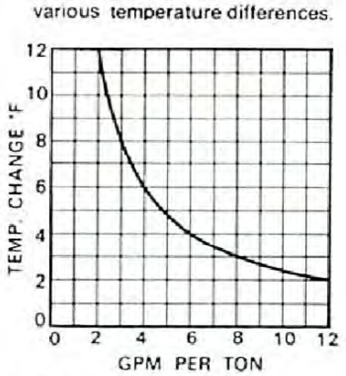


Only the REFT—67 is straight tubed, fixed tube sheet construction. Construction materials are steel front head, cast iron rear head, copper tubes with aluminum spline, remainder steel.

MODEL	Cool water 10° to 15°, 45° to 65° leaving temperature, 0.0000 fouling							Cool water 10° to 15°, 45° to 65° leaving temperature, 0.0005 fouling						
	APPROACH—LEAVING FLUID TEMP. MINUS SUCTION TEMP.							APPROACH—LEAVING FLUID TEMP. MINUS SUCTION TEMP.						
	5	6	7	8	9	10	11	6	7	8	9	10	11	12
	TONS OF REFRIGERATION—12,000 BTU/HR/TON							TONS OF REFRIGERATION—12,000 BTU/HR/TON						
REFT-67	5.2	6.5	7.9	9.4	10.9	12.5	14.2	5.4	6.4	7.5	8.6	9.8	10.9	12.2
REFT-86	5.8	10.5	13.4	15.6	17.9	20.2	22.6	7.5	10.4	12.7	14.5	16.2	18.0	19.9
REFT-87	8.5	13.4	16.5	19.1	21.9	24.7	27.6	9.7	13.0	15.6	17.6	19.7	21.9	24.1
REFT-106	14.2	21.5	25.5	29.5	33.7	38.1	42.5	15.3	20.2	24.0	27.1	30.4	33.7	36.9
REFT-107	16.5	25.0	29.7	34.4	39.3	44.4	49.6	17.9	23.5	27.9	31.6	35.4	39.3	43.1
REFT-126	18.5	30.6	37.9	44.1	50.4	57.0	63.6	21.9	29.6	35.8	40.7	45.7	50.7	55.8
REFT-127	22.9	36.4	44.8	51.9	59.3	67.0	75.3	26.2	35.1	42.2	47.9	53.8	59.7	65.4
REFT-146	27.7	41.9	49.7	57.6	65.8	74.3	83.0	29.9	39.4	46.8	52.8	59.3	65.8	72.0
REFT-147	29.3	45.8	56.3	65.2	74.6	84.2	94.0	32.9	44.1	53.0	60.3	67.3	74.6	82.3
REFT-166	28.4	52.0	66.0	76.4	87.9	99.3	110.8	37.1	51.0	62.4	70.9	79.6	88.3	97.4
REFT-167	45.2	68.9	81.7	95.2	108.8	122.2	137.2	49.2	64.7	76.8	87.3	97.4	108.1	118.5
REFT-186	56.7	79.0	93.6	108.3	123.9	139.1	147.9	58.2	75.7	87.0	98.3	109.7	121.8	133.4
REFT-187	75.4	98.0	115.5	133.7	151.9	171.6	171.7	74.2	92.5	105.8	119.5	133.4	148.0	162.1
REFT-206	68.7	102.1	121.0	140.1	160.2	181.0	199.6	73.4	98.3	113.1	128.5	143.4	159.2	174.4
REFT-207	88.4	123.1	146.0	168.9	193.1	216.9	230.4	90.7	117.8	135.5	153.1	170.9	189.6	207.7
REFT-246	123.1	167.1	198.2	229.3	260.6	294.4	306.3	124.4	159.8	182.7	206.4	230.3	255.6	280.0
REFT-247	154.3	200.8	236.8	274.1	311.6	338.0	338.0	152.0	189.6	218.0	246.3	274.9	303.0	332.0

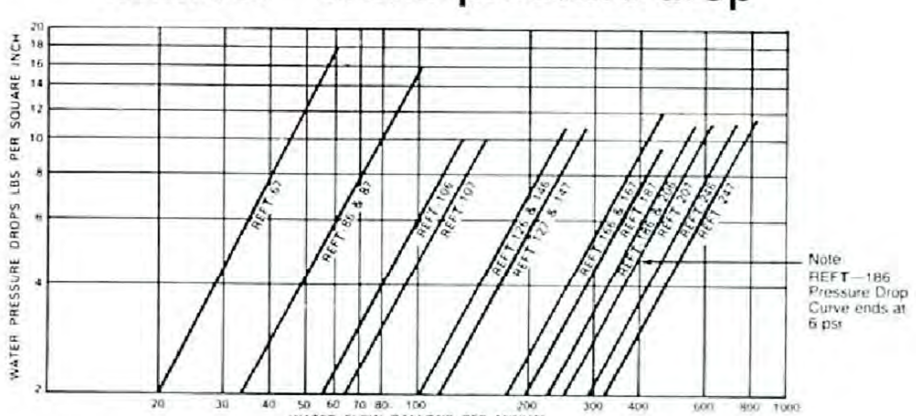
Chart A

GPM of water required per ton at various temperature differences.

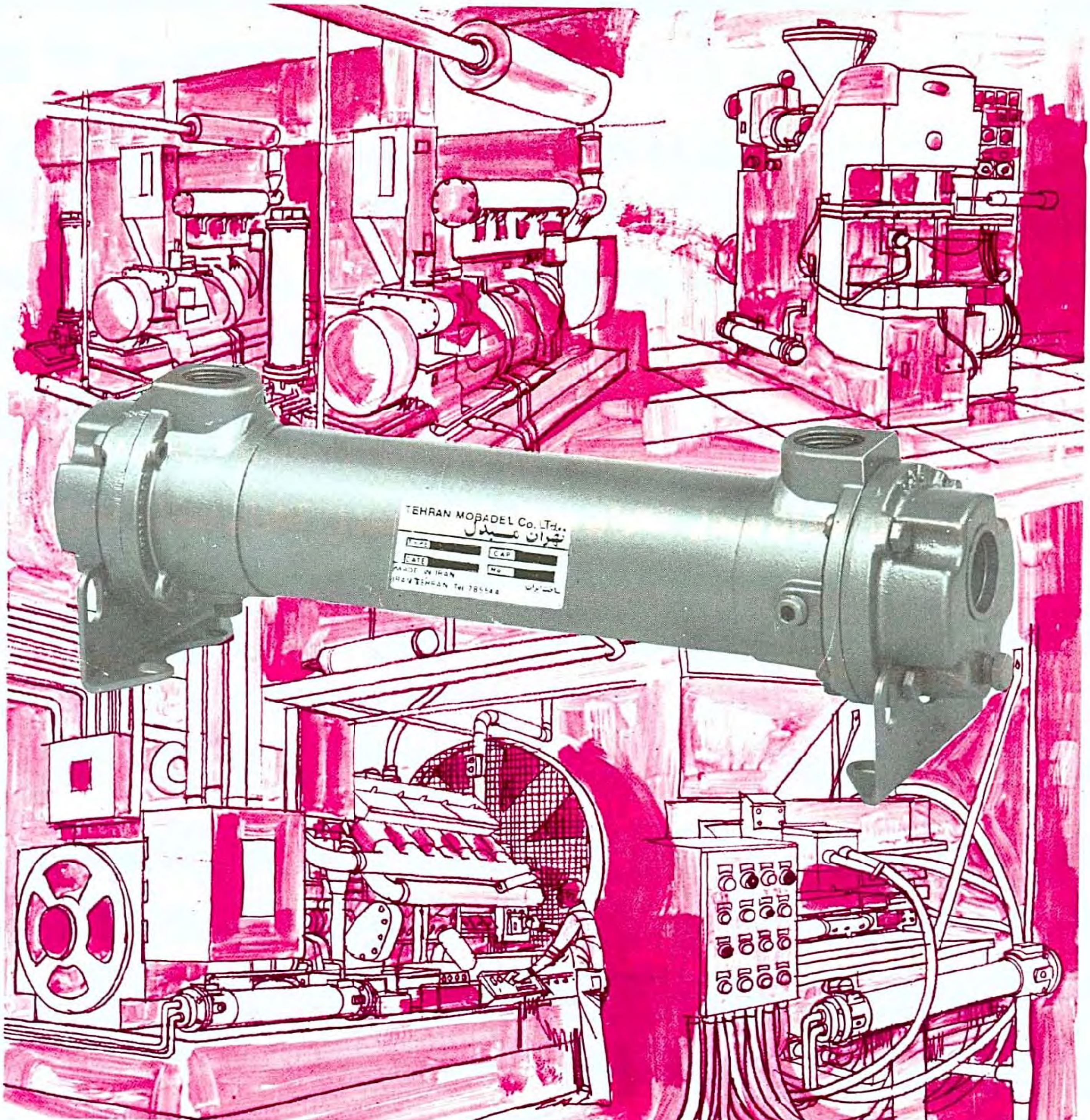


$$\frac{\text{GPM}}{\text{TON}} = \frac{24}{\Delta T}$$

Chart B —Water pressure drop



Note: Do not extrapolate Pressure Drop Curves to higher flows.
Damaging vibration or accelerated erosion may result from higher liquid velocities.



FIXED TUBE BUNDLE
HEAT EXCHANGERS

Compressed Air Aftercoolers

مبدل حرارتی "خنك کننده روغن ماشین آلات سنگین"

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IRAN TEHRAN