

2007  
—  
2008

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# Product Catalog



WATER COOLED CONDENSERS  
CHILLER BARRELS  
LIQUID RECEIVERS  
SUCTION ACCUMULATORS  
REFRIGERANT SUBCOOLERS  
VALVES, BRACKETS AND ACCESSORIES  
LOW SIDE CHILLER BUILDER KITS



**Standard**  
Refrigeration Company

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# Pressure Vessel Fabrication & Codes

## Size of Vessel

## Construction and Certification generally acceptable, furnished unless otherwise specified

Under six inches ID	UL Listing
Six inches or greater ID, but less than 1.5 cubic feet net internal volume	ASME Code Construction with UM Certification and UL Recognition
Six inches or greater ID, with over 1.5 cubic feet net internal volume	ASME Code Construction with U Certification and National Board Registration

## Notes

**UL Listing** may be obtained for a vessel, typical samples of which can withstand five times the marked working pressure without failure for the gas side and three times the marked working pressure without failure for the fluid side. Initial tests are made at Underwriters Laboratory and reexamination tests are made under UL supervision, at the manufacturer's plant.

**ASME Code** Construction is the same whether UM or U certified. Essentially, the vessel must have a calculated design strength capable of withstanding the maximum allowable working pressure (MAWP) and tested pneumatically to 1.1 time the MAWP or hydrostatically to 1.3 times the MAWP. Certain details of construction must be observed, and chemical and physical test certification for all material must be on file. Welding procedures, equipment, and personnel must be qualified by performance tests. UM Certification means that the manufacturer's personnel have performed the necessary inspection and tests. The letters UM appear in the ASME cloverleaf stamp on the tag. Only when requested, a certificate (Form U-3) is furnished, signed by the manufacturer.

**UL Recognition of UM vessels.** Their testing, and reexamination procedure is identical to that for listing. This recognition requirement comes about because UL takes the position that someone other than the manufacturer should check the construction. The recognition list is not published—as is the listing—the records are kept by UL and generally used only when granting listing to an assembly that includes the vessel.

**National Board Registration** means that in addition to the ASME construction, an independent, licensed inspector has monitored the procedures, fabrication and testing of the vessel. The letter U appears in the ASME cloverleaf stamp on the tag. We recommend referring to Nat. Bd., rather than U-stamp, to avoid confusion between U and UM.

Underwriters Laboratory will automatically accept a National Board registered vessel when listing an assembly, because it has been inspected by an independent agent, to specifications more strict than their own.

A National Board certified vessel is accepted by all state and municipal codes in the United States. Most other countries will accept them also.

Certain government or military requirements essentially parallel the ASME code, but may specify approval and/or certification by inspectors from a government agency in addition to, or in place of ASME code, or UL requirements.

## International Code Stamps

CRN Canadian registration is available on cataloged models. CRN or special code requests should be made at time of order.

Other international codes possibly available upon request include New Zealand, Australia, Japan, China and Europe (CE).

# Condensers



HSE



SST



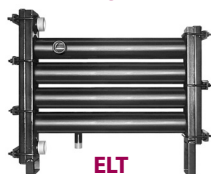
HP



CA



VSE



ELT



KHX



MSE



SCH/SCS

## design features & ratings

### Nominal Horsepower Rating Basis

15,000 Btu per hour @ 85°F inlet water, 0.00025 additive fouling factor and 105°F condensing temperature, with a three gallon per minute (gpm) water flow and refrigerant 22.

### Sizing by Nominal Horsepower

A condenser is properly sized when its capacity to transfer heat from the system is equal to the cooling load, plus the extra heat generated by the work of compressing the gas. This total is called the Total Heat of Rejection. For air-conditioning or a high back pressure system, it's safe and convenient to size by nominal horsepower. However, matching nominal HP can result in over-sizing for low and very low temperature applications. When your application varies from nominal-air conditioning or normal operating conditions utilize Standard Refrigeration's condenser selection software or condenser performance tables, which can be obtained at [www.stan-ref.com](http://www.stan-ref.com) or from customer service.

### Pumpdown Capacity

Pumpdown figures have been compensated to provide capacity for R-22 based on 80% of condenser volume filled with liquid at 90°F.

Pumpdown requirements relate to the amount of refrigerant storage available in a condenser during operation or servicing. A pumpdown capacity of three pounds of refrigerant per ton will be sufficient for high back-pressure air conditioning, five pounds per ton for medium back-pressure air conditioning and up to seven pounds per ton for commercial refrigeration/low back-pressure systems.

### Operating Charge

Approximately 10% of the pumpdown capacity is required for shell & tube models and 5% for shell & coil models for proper operation.

### Nominal Water Pressure Drop

Nominal pressure drops (psi) given are at nominal flow rates. To determine nominal flow rates multiply nominal horsepower (hp) by 3.0. Water pressure drops provided do not include any external fittings or valves.

Pressure drop is defined as the loss of pressure due to friction and is the pressure difference between entering and leaving water sides.

### Water Flow

Velocities of eight feet per second or higher risk premature impingement corrosion and tube failure. Operation below minimum flow rates may result in excessive fouling and poor heat transfer. All values in this catalog section are limited to flows below eight feet per second.

### Custom Designs

Standard Refrigeration is always happy to design and build customized condensers if an application calls for special materials, additional valves, water or refrigerant fittings, mounting brackets or other accessories. Contact customer service for a quotation.transfer.

### Note on Refrigerant R410a Applications

Due to the high working pressures of Refrigerant R410a. Any condenser product in our catalog must be customized to conform to ASME construction. Please contact customer service for quotation.

## selecting the right condenser

### Sizing a Condenser

A condenser is properly sized when its capacity to transfer heat from the system is equal to the cooling load, plus the extra heat generated by the work of compressing the gas. This total is called the Total Heat of Rejection.

There are some proven rules of thumb for sizing that can get you in the ball park. For air-conditioning or a high back pressure system, it's safe and convenient to size by nominal horsepower.

### High Back Pressure System (air conditioning)

size by nominal horsepower

1 HP = 12,000 Btu per ton  
plus 3,000 Btu for  
heat of compression  
= 15,000 Btu

### Sizing by Nominal hp

In the condenser specification section of the catalog, you'll note that most Standard condensers are rated by nominal horsepower in a fouled condition. An SST-750A for example will provide 7.5 hp after being in use for some time and fouled. It will provide 12 hp when new. This means that there is additional condensing or total heat rejection capacity, available when new.

It is often possible to size a condenser by matching nominal horsepower to compressor horsepower in commercial or high temperature systems when manufacturer's information is not available. You can estimate the total heat of rejection by multiplying motor horsepower by (3000) to find the heat of compression, and then adding the load. In the following example, the nominal horsepower of the compressor will match the nominal tonnage of the air-conditioning system and the Total Heat of Rejection.

A 15 hp compressor in a 15 ton system, produces 225,000 Btu per hour total heat of rejection, That's 3,000 Btu for heat of compression, plus 12,000 Btu of load for each ton.

Heat of Compression:	15 hp x 3000 Btu/hp	=	45,000 Btu
Evaporating Capacity:	15 ton x 12,000 Btu/hr	=	180,000 Btu
Estimated Total Heat Rejection:	(45,000) + (180,000)	=	225,000 Btu

Once you have determined the total heat of rejection and the corresponding condenser capacity, you are ready to refer to the Standard performance data to make the proper selection.

In looking at the capacity data for the SST you will note that total heat of rejection, gpm, and pressure drop in psi are provided for various Initial Temperature Differentials from 15°F to 40°F. You can now look for a Total Heat of Rejection that exceeds the 225,000 Btu requirement, and read the corresponding flows and gpm. An SST-1500A (2 pass) will provide the desired performance with 44 gpm and an ITD of 20°F or, 24 gpm and an ITD of 30°F. You will notice that models through an SST-4505A would also perform well. However, they will cost much more. An SST-1500A, 15 hp condenser, is the ideal choice since the Total Heat of Rejection required falls in the middle of its performance window.

City Water = 75°  
Condensing Temp. = 105°

However, matching nominal horsepower can result in over sizing for low and very low temperature applications, and over sizing costs more. While sizing by matching nominal compressor horsepower to condenser horsepower is often accurate, the best practice is to begin by calculating the actual total heat of rejection.

### *Sizing by Total Heat of Rejection*

For example, total heat of rejection for a system with the following performance characteristics would be calculated like this:

Compressor Performance from manufactures published data.

110°F condensing temperature

10°F evaporating temperature

75°F incoming water temperature

Refrigerant R-22

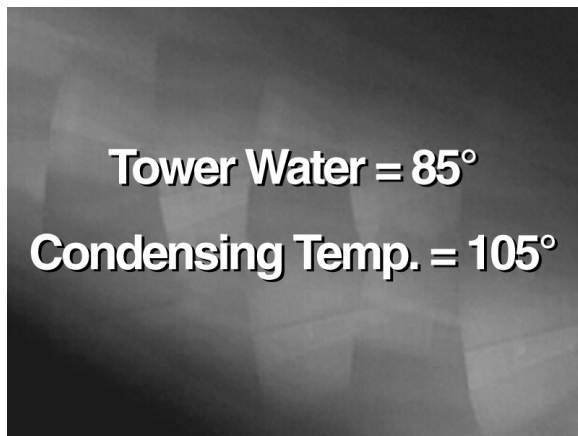
Evaporating Watts = 6500

Evaporating Load: 40,200 Btu

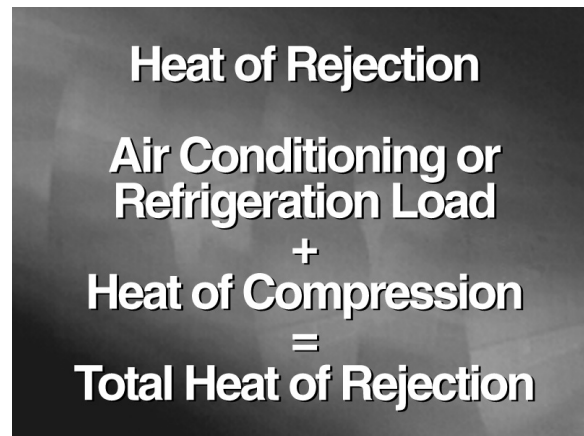
Watts x 3.4 = Heat of Compression

Heat of Compression + Evaporating Load = Total Heat of Rejection

$$\begin{array}{r} 6500 \text{ watts} \times 3.4 = 22,100 \text{ Btu} \\ \text{Heat of Compression} = 22,100 \text{ Btu} \\ \text{Evaporating Load} = 40,200 \text{ Btu} \\ \hline \text{Total Heat of Rejection} = 62,300 \text{ Btu} \end{array}$$



Although the refrigerant is R-22, the condensing temperature is not the same as the ARI standard of 105°F which means that the Standard catalog can not be used to make your selection. In this case, you can call your local representative or one of Standard's sales engineers for a computer generated selection. In this case, a SST-200A (4 Pass) will perform with 7.27 gpm and a pressure drop of 1.75 psi. The 62,300 Btu load would normally require a 5 hp (SST-500A) at the usual ARI rating point of 85°F, 105°F condensing, and R-22. The SST-500A would work in this application although it is three times larger than necessary.



You should always compare performance data when your application conditions vary from normal operating conditions, in order to arrive at the best match for your application.

### *Other Considerations*

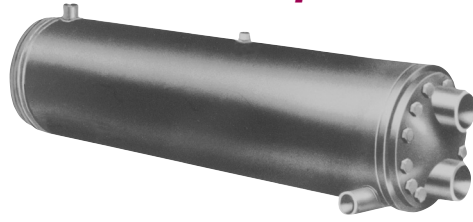
Remember to consider all of the factors that affect performance; not just flow rates, TD, fouling, pressure drop, and types of fluid, but also the pull-down factor and pumpdown capacity. Higher loads under pull-down conditions call for an additional ten percent capacity if a very short pull-down time is required, or if slight increases in head pressure or water flow are unacceptable. In a 66,000 Btu system, you must add an additional 6,600 Btu for a total condenser sizing requirement of 72,600 Btu. Pumpdown requirements relate to the amount of refrigerant storage available in a condenser during operation or servicing. A pumpdown capacity of three pounds of refrigerant per ton of capacity will be sufficient for most systems. However, commercial refrigeration systems may require up to seven pounds per ton because of long refrigerant lines. Standard rates its condenser pumpdown capacities at 80% of volume.

In addition to selection tables, you can also utilize Standard's computerized selection service. Just complete the information in our heat exchanger specification form and mail or fax it to our sales engineering department, or sales representative's office.

**Standard Refrigeration is always happy to build customized condensers if an application calls for a modified condenser with additional valves, water or refrigerant fittings, special mounting brackets, or other accessories.**

# HSE

## Horizontal Super Efficient Water Cooled Condensers



**super efficient  
shell & tube condensers**

Cleanable. For general applications

### design features & ratings

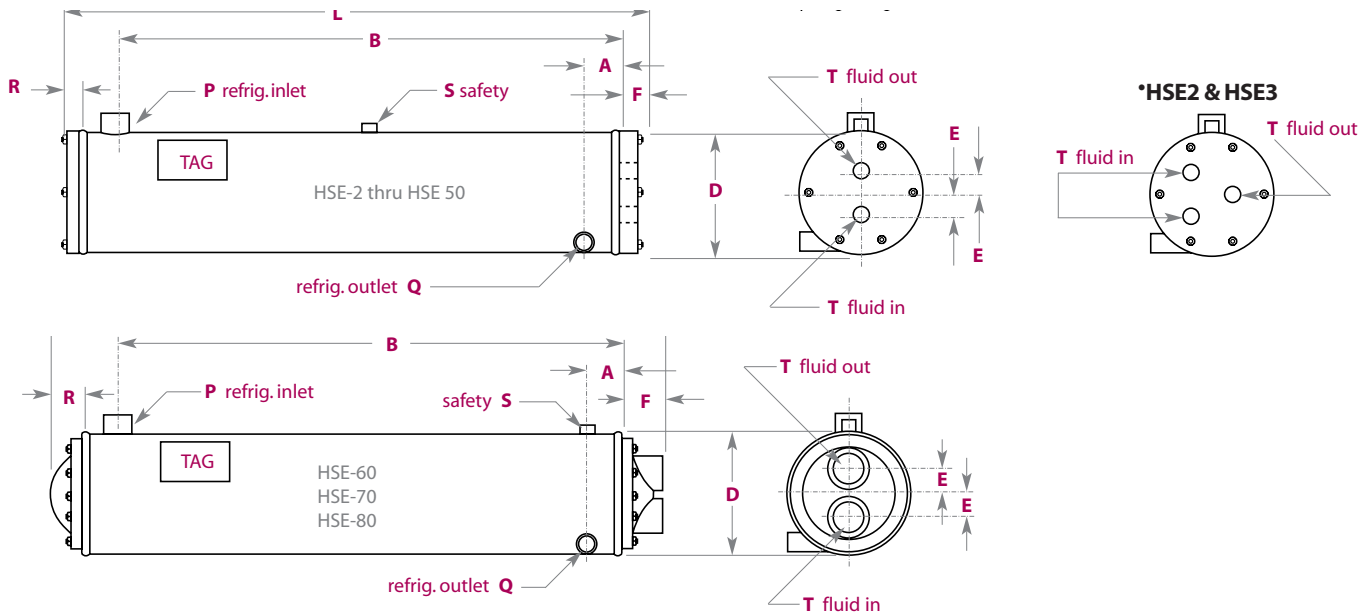
MODELS	Nominal hp		Dimensions (inches)							Connections (inches)			
	clean	fouled	D	L	A	B	E	F	R	P (ids)	Q (ids)	S (fpt)	T (fpt)
HSE-2	3.3	2.1	5	27 1/8	2	22	1 5/8	1 3/4	1 3/8	5/8	1/2	3/8	3/4*
HSE-3	4.3	3.7	6	27 1/8	2	22	1 7/8	1 3/4	1 3/8	7/8	5/8	3/8	3/8*
HSE-5	8.3	5.1	6 5/8	27 7/8	2 1/2	21 1/2	2	2 1/8	1 3/4	1 1/8	5/8	1/2	1
HSE-7	8.8	7.4	6 5/8	33 3/8	2 1/2	27 1/2	2	2 1/8	1 3/4	1 3/8	7/8	1/2	1 1/4
HSE-10	11.4	9.8	6 5/8	33 3/8	2 1/2	27 1/2	2	2 1/8	1 3/4	1 3/8	7/8	1/2	1 1/4
HSE-15	17.6	14.8	8 5/8	33 3/8	3	27	2 1/8	1 3/4	1 3/8	1 5/8	1 1/8	1/2	2
HSE-20A	33.0	20.2	8 5/8	51 1/8	3	45	2 1/8	1 3/4	1 3/8	1 5/8	1 1/8	1/2	2
HSE-25A	34.5	23.1	8 5/8	51 1/8	3	45	2 1/8	1 3/4	1 3/8	2 1/8	1 3/8	1/2	2
HSE-30A	41.7	29.0	10 3/4	53 3/8	3	45	2 1/8	2 1/8	1 3/4	2 1/8	1 3/8	1/2	2 1/2
HSE-40A	48.1	40.2	10 3/4	64 3/8	3	57	2 1/8	2 1/8	1 3/4	2 1/8	1 3/8	1/2	3
HSE-50A	63.2	52.4	10 3/4	64 3/8	3	57	2 1/8	2 1/8	1 3/4	2 5/8	1 5/8	1/2	3
HSE-60	82.5	60.3	12 3/4	66 3/4	3 1/2	56 1/2	2 3/4	4 1/4	2 3/8	2 5/8	1 5/8	1/2	4
HSE-70	95.1	70.3	12 3/4	66 3/4	3 1/2	56 1/2	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
HSE-80	110.1	82.2	12 3/4	66 3/4	3 1/2	56 1/2	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
HSE-100	151.7	99.0	12 3/4	109 5/8	3 1/2	92 1/2	5 1/16	—	6 5/8	3 1/8	2 1/8	3/4	5
HSE-125	162.8	124.2	12 3/4	109 5/8	3 1/2	92 1/2	5 1/16	—	6 5/8	3 5/8	2 1/8	3/4	5
HSE-150	231.7	162.6	14	113 3/4	5 3/8	90 5/8	10 7/8	—	8 7/8	3 5/8	2 5/8	3/4	6 flange
HSE-200	280.7	203.7	16	114	5 3/8	90 5/8	11 7/8	—	9	4 1/8	3 1/8	3/4	8 flange
HSE-250	393.1	265.1	18	116	5 3/8	90 5/8	12 7/8	—	10	4 1/8	3 1/8	3/4	8 flange
HSE-300	463.4	325.3	20	116	5 3/4	90 1/4	13 7/8	—	10	4 1/8	3 5/8	3/4	10 flange
HSE-350	529.6	344.0	20	116	5 3/4	90 1/4	13 7/8	—	10	5 1/8	3 5/8	3/4	10 flange
HSE-400	594.7	418.2	24	123	5 7/8	90 1/8	15 7/8	—	13 1/2	5 1/8	4 1/8	3/4	12 flange
HSE-500	805.4	510.7	24	123	5 7/8	90 1/8	15 7/8	—	13 1/2	6 1/8	4 1/8	3/4	12 flange

Clean ratings: As tested per ARI Standard 450-99

Fouled ratings: Include a additive fouling coefficient of 0.00025 as calculated per ARI Standard 450-99

† Tubing has high performance extended surface

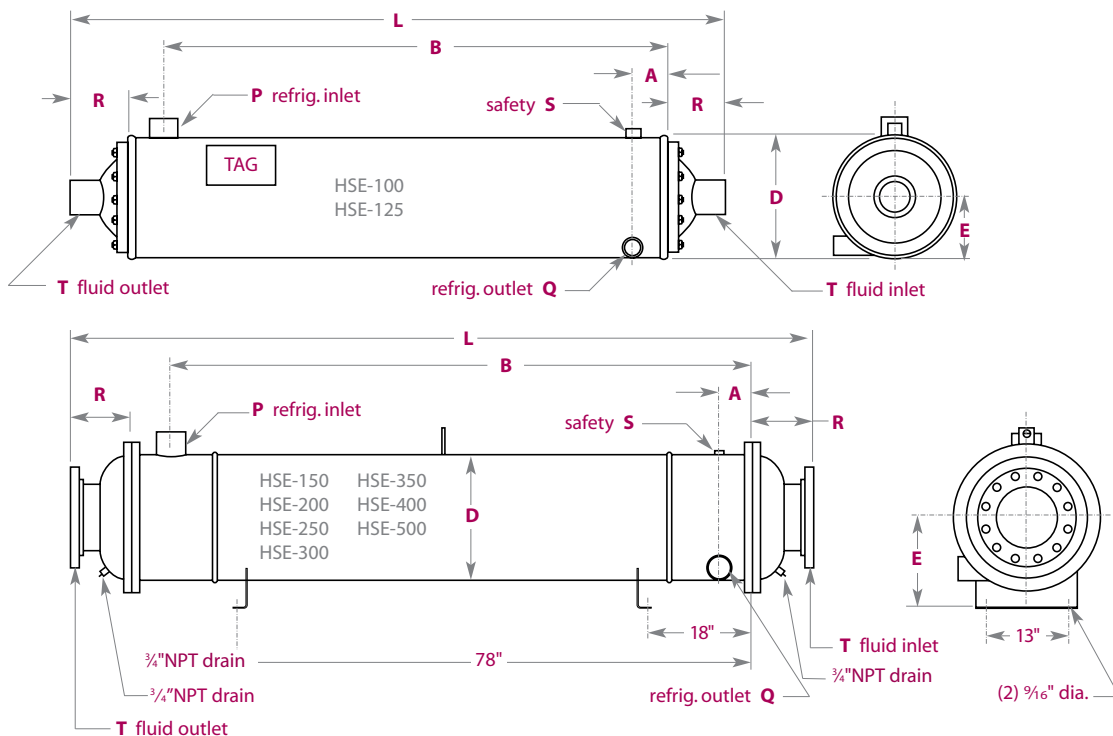
• Constructed with three water fittings. Parallel outer fittings for nominal flow. HSE-3 has 1/2" center fitting





- Horizontal, cleanable shell and tube design
- New high tech enhanced copper tube geometry
- Smaller foot-print equals less space requirement
- Removable, epoxy coated, water plates to facilitate cleaning
- Epoxy coated tube sheets to prevent pitting caused by galvanic action
- Custom models available thru 800 horsepower
- 23 HSE models, 2 thru 500 horsepower

MODELS	Pumpdown Capacity (lbs)	Waterflow (gpm)		Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.			Shell Side	Tube Side
HSE-2	12	1.3	13	2.0	36	400	150
HSE-3	16	1.3	13	6.7	48	400	150
HSE-5	20	2.7	27	3.1	66	400	150
HSE-7	24	2.4	23	6.8	96	400	150
HSE-10	23	3.4	34	6.6	89	400	150
HSE-15	40	4.7	47	8.3	123	400	150
HSE-20A	63	10.7	107	3.2	184	400	150
HSE-25A	61	12.1	121	4.6	193	400	150
HSE-30A	102	15	154	4.0	291	400	150
HSE-40A	127	15	154	6.5	348	400	150
HSE-50A	118	19	188	7.0	355	400	150
HSE-60	176	22	221	4.6	461	400	150
HSE-70	167	25	255	4.4	480	400	150
HSE-80	157	29	295	4.6	518	400	150
HSE-100	268	51	509	1.8	751	400	150
HSE-125	239	64	643	1.6	812	400	150
HSE-150	271	86	858	1.3	1300	400	150
HSE-200	356	114	1139	1.3	1600	400	150
HSE-250	449	143	1434	1.35	2000	400	150
HSE-300	601	170	1702	1.25	2600	350	150
HSE-350	550	194	1944	1.36	2800	350	150
HSE-400	914	228	2279	1.34	3300	350	150
HSE-500	791	286	2855	1.34	3700	350	150



**HSE**  
**Btu/hr capacities**  
**R-22 & water**

**HSE-2**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
1.34	0.11	7918	10458	12931	15349	17697	19968
2.00	0.24	10989	14504	17920	21255	24491	27614
4.00	0.93	18372	24237	29932	35489	40877	46077
6.00	2.03	23847	31469	38877	46113	53137	59925
8.00	3.55	28111	37114	45876	54444	62774	70838
10.00	5.47	31546	41670	51536	61196	70601	79723
13.41	9.65	36102	47726	59079	70214	81081	91647

**HSE-3**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
1.34	0.17	9047	12003	14912	17781	20600	23360
2.00	0.37	12901	17094	21212	25265	29237	33115
4.00	1.39	22730	30074	37260	44316	51210	57920
6.00	3.05	30463	40292	49903	59335	68545	77505
8.00	5.32	36718	48566	60153	71527	82638	93452
10.00	8.20	41891	55418	68654	81653	94359	106736
13.41	14.48	48921	64745	80248	95489	110406	124959

**HSE-5**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
2.68	0.11	15922	21211	26490	31755	37005	42256
5.00	0.38	26573	35378	44149	52881	61567	70256
7.50	0.82	36095	48024	59889	71681	83385	95094
10.00	1.43	44139	58695	73154	87501	101716	115937
12.50	2.20	51060	67868	84544	101068	117414	133770
15.00	3.13	57099	75863	94462	112870	131055	149251
17.50	4.22	62426	82912	103199	123256	143046	162851
20.00	5.47	67169	89183	110966	132484	153690	174915
22.50	6.87	71426	94808	117928	140747	163215	185704
25.00	8.43	75271	99887	124211	148200	171799	195422
26.81	9.65	77834	103269	128393	153159	177508	201883

**HSE-7**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
2.35	0.14	15895	21183	26465	31738	37002	42267
2.50	0.15	16844	22447	28042	33628	39204	44780
5.00	0.57	30914	41171	51396	61586	71734	81884
7.50	1.24	42899	57097	71232	85294	99268	113247
10.00	2.15	53247	70832	88317	105683	122910	140144
12.50	3.30	62284	82815	103204	123428	143458	163498
15.00	4.68	70253	93373	116308	139031	161503	183988
17.50	6.29	77341	102755	127943	152870	177492	202130
20.00	8.13	83691	111154	138352	165241	191770	218320
23.46	11.05	91467	121434	151079	180354	209197	238065

**HSE-10**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
3.35	0.14	22708	30262	37807	45340	52861	60382
5.00	0.29	32512	43315	54096	64851	75577	86303
10.00	1.09	58065	77291	96437	115490	134433	153380
15.00	2.36	78786	104796	130650	156322	181780	207248
20.00	4.10	95972	127576	158941	190029	220792	251571
25.00	6.29	110487	146793	182776	218386	253560	288757
33.51	11.05	130668	173477	215827	257649	298853	340093

**HSE-15**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
4.69	0.14	31791	42367	52929	63476	74005	84534
5.00	0.15	33688	44894	56084	67256	78407	89559
10.00	0.57	61829	82341	102792	123172	143468	163768
15.00	1.24	85798	114194	142464	170587	198536	226493
20.00	2.15	106494	141665	176633	211366	245821	280289
25.00	3.30	124568	165630	206409	246856	286916	326996
30.00	4.68	140507	186746	232617	278061	323006	367976
35.00	6.29	154682	205510	255886	305741	354983	404260
40.00	8.13	167381	222309	276703	330482	383540	436639
46.92	11.05	182935	242868	302158	360708	418394	476131

**HSE**  
**Btu/hr capacities**  
**R-22 & water**

**HSE-20A**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
10.72	0.12	63687	84845	105958	127020	148020	169023
20.00	0.41	106294	141511	176595	211524	246269	281023
30.00	0.89	144379	192095	239557	286722	333540	380374
40.00	1.54	176555	234780	292617	350004	406863	463749
50.00	2.36	204241	271470	338175	404272	469656	535079
60.00	3.34	228395	303453	377849	451482	524219	597005
70.00	4.49	249704	331647	412795	493026	572184	651405
80.00	5.81	268677	356733	443866	529934	614759	699659
90.00	7.28	285703	379231	471713	562989	652859	742816
100.00	8.91	301085	399546	496843	592800	687195	781688
107.24	10.19	311335	413077	513573	612636	710030	807530

**HSE-25A**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
12.06	0.12	71648	95450	119203	142897	166522	190150
20.00	0.33	108926	145037	181025	216871	252547	288231
40.00	1.23	183240	243724	303840	363528	422713	481923
60.00	2.67	239227	317928	395988	473304	549750	626243
80.00	4.63	283409	376399	468478	559507	649307	739179
100.00	7.11	319385	423952	527356	629422	729926	830526
120.65	10.19	350252	464712	577770	689216	798784	908472

**HSE-30A**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
15.42	0.12	91550	121964	152315	182591	212779	242970
20.00	0.20	113989	151822	189552	227162	264632	302107
40.00	0.77	196454	261414	326047	390302	454111	517940
60.00	1.67	261138	347227	432725	517537	601543	685590
80.00	2.89	313775	416962	519283	620603	720749	820960
100.00	4.44	357692	475079	591332	706276	819689	933190
120.00	6.30	395030	524442	652465	778887	903439	1028103
154.16	10.19	447544	593799	738262	880665	1020668	1160825

### HSE-40A

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
15.42	0.14	99265	132268	165216	198102	230913	263727
20.00	0.22	124685	166103	207432	248657	289758	330863
40.00	0.83	220494	293489	366172	438492	510382	582291
60.00	1.80	297836	396153	493873	590903	687118	783372
80.00	3.11	361970	481168	599466	716720	832750	948843
100.00	4.76	416211	552989	688560	822735	955276	1087907
120.00	6.74	462806	614626	764941	913518	1060063	1206726
154.16	10.88	529026	702131	873252	1042089	1208260	1374596

### HSE-50A

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
18.77	0.14	120845	161022	201133	241168	281112	321059
20.00	0.15	127842	170337	212758	255092	297323	339559
40.00	0.57	229796	305959	381851	457426	532628	607846
60.00	1.23	314475	418438	521866	624672	726744	828851
80.00	2.14	386322	513756	640358	765998	890505	1015068
100.00	3.27	448253	595830	742270	887394	1030973	1174634
120.00	4.63	502311	667406	831058	993042	1153071	1313207
140.00	6.22	549991	730488	909241	1085982	1260368	1434889
160.00	8.02	592418	786580	978708	1168492	1355536	1542742
187.67	10.88	644031	854768	1063089	1268630	1470925	1673421

### HSE-60

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
22.12	0.09	142424	189775	237049	284233	331310	378391
40.00	0.27	236882	315460	393799	471860	549593	627338
60.00	0.59	327401	435758	543633	650945	757595	864274
80.00	1.01	405574	539533	672726	805031	936290	1067598
100.00	1.54	473971	630239	785442	939410	1091925	1244513
120.00	2.17	534443	710368	884919	1057882	1228980	1400175
140.00	2.91	588377	781779	973501	1163282	1350788	1538418
160.00	3.74	636841	845903	1052985	1257780	1459897	1662167
180.00	4.68	680670	903861	1124777	1343071	1558299	1773706
200.00	5.71	720535	956547	1190001	1420508	1647572	1874844
220.00	6.85	756977	1004685	1249562	1491179	1728993	1967042
221.18	6.92	759037	1007405	1252927	1495171	1733590	1972246

**HSE**  
**Btu/hr capacities**  
**R-22 & water**

**HSE-70**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
25.47	0.09	164003	218529	272966	327299	381509	435724
50.00	0.32	291775	388522	484951	581009	676628	772265
75.00	0.69	401323	534074	666188	797563	928064	1058605
100.00	1.18	495115	658544	820974	982247	1142157	1302133
125.00	1.80	576576	766540	955125	1142114	1327227	1512437
150.00	2.54	648145	861337	1072766	1282157	1489157	1696285
175.00	3.40	711626	945356	1176943	1406056	1632270	1858646
200.00	4.37	768391	1020434	1269965	1516596	1759836	2003273
225.00	5.47	819507	1088000	1353622	1615936	1874383	2133062
250.00	6.68	865820	1149183	1429332	1705777	1977903	2250294
254.70	6.92	874042	1160042	1442764	1721712	1996255	2271071

**HSE-80**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
29.49	0.09	189899	253034	316066	378978	441747	504522
50.00	0.24	299372	398709	497763	596488	694822	793172
75.00	0.52	415283	552782	689703	825952	961406	1096895
100.00	0.89	516044	686572	856177	1024710	1191980	1359309
125.00	1.36	604699	804176	1002359	1199041	1393958	1588962
150.00	1.92	683465	908574	1132006	1353496	1572707	1792035
175.00	2.57	754015	1002012	1247949	1491502	1732259	1973168
200.00	3.31	817648	1086234	1352379	1615704	1875726	2135932
225.00	4.14	875391	1162615	1447025	1728188	2005552	2283136
250.00	5.06	928071	1 232258	1533271	1830623	2123695	2417022
275.00	6.06	976358	1 296065	1612246	1924366	2231743	2539408
294.91	6.92	1012049	1 343207	1670569	1993561	2311454	2629662

**HSE-100**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
50.94	0.06	302512	403011	503300	603343	703094	802857
100.00	0.22	525533	699603	872985	1045564	1217198	1388873
150.00	0.46	711591	946681	1180464	1412730	1643211	1873777
200.00	0.78	867918	1154024	1438150	1719984	1999123	2278400
250.00	1.19	1001811	1331428	1658379	1982247	2302500	2622947
300.00	1.67	1118171	1485464	1849414	2209502	2565068	2920888
350.00	2.23	1220480	1620795	2017109	2408806	2795105	3181720
400.00	2.86	1311305	1740855	2165770	2585345	2998683	3412399
450.00	3.57	1392598	1848248	2298660	2743042	3180388	3618171
500.00	4.35	1465870	1944995	2418304	2884928	3343759	3803086
509.39	4.50	1478842	1962117	2439473	2910023	3372642	3835769

## HSE-125

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
64.34	0.06	382120	509067	635747	762117	888119	1014135
100.00	0.14	551564	734478	916805	1098449	1279286	1460157
200.00	0.51	934071	242541	1549223	1853828	2155990	2458270
300.00	1.08	1225444	628822	2029050	2425633	2817938	3210472
400.00	1.85	1457296	935743	2409684	2878427	3341083	3804088
500.00	2.81	1647315	186988	2720871	3248085	3767507	4287398
643.44	4.50	1868011	478464	3081440	3675819	4260180	4845182

## HSE-150

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
85.79	0.07	509494	678756	847663	1016156	1184158	1352180
100.00	0.09	580148	772778	964937	1156548	1347511	1538500
200.00	0.32	1009521	1343561	1676067	2006791	2335414	2664131
300.00	0.67	1351822	1797856	2241058	2680976	3117033	3553282
400.00	1.13	1633925	2171763	2705400	3234177	3757251	4280629
500.00	1.70	1871732	2486613	3095932	3698828	4294202	4890000
600.00	2.37	2075648	2756341	3430159	4096046	4752662	5409822
700.00	3.15	2252893	2990605	3720188	4440407	5149696	5859651
857.93	4.58	2490681	3304618	4108586	4901091	5680239	6460242

## HSE-200

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
113.94	0.07	676671	901473	1125803	1349582	1572710	1795864
200.00	0.19	1076645	1433474	1789024	2143086	2495391	2847770
300.00	0.40	1467715	1952983	2435787	2915728	3392296	3869021
400.00	0.67	1800210	2394171	2984350	3570144	4150781	4731674
500.00	1.01	2087824	2775429	3457885	4134380	4803878	5473743
600.00	1.41	2339897	3109288	3872160	4627495	5373997	6120983
700.00	1.87	2563157	3404764	4238503	5063163	5877192	6691828
800.00	2.39	2762634	3668586	4565365	5451565	6325399	7199961
900.00	2.97	2942189	3905918	4859216	5800493	6727735	7655826
1000.00	3.60	3104852	4120808	5125123	6116038	7091319	8067571
1100.00	4.29	3253039	4316480	5367123	6403048	7421812	8441666
1139.43	4.58	3307936	4388945	5456715	6509261	7544069	8580009

Consult [www.stanref.com](http://www.stanref.com) or customer service for performance data not shown.



**shell & tube condensers**  
High pumpdown. General service applications.

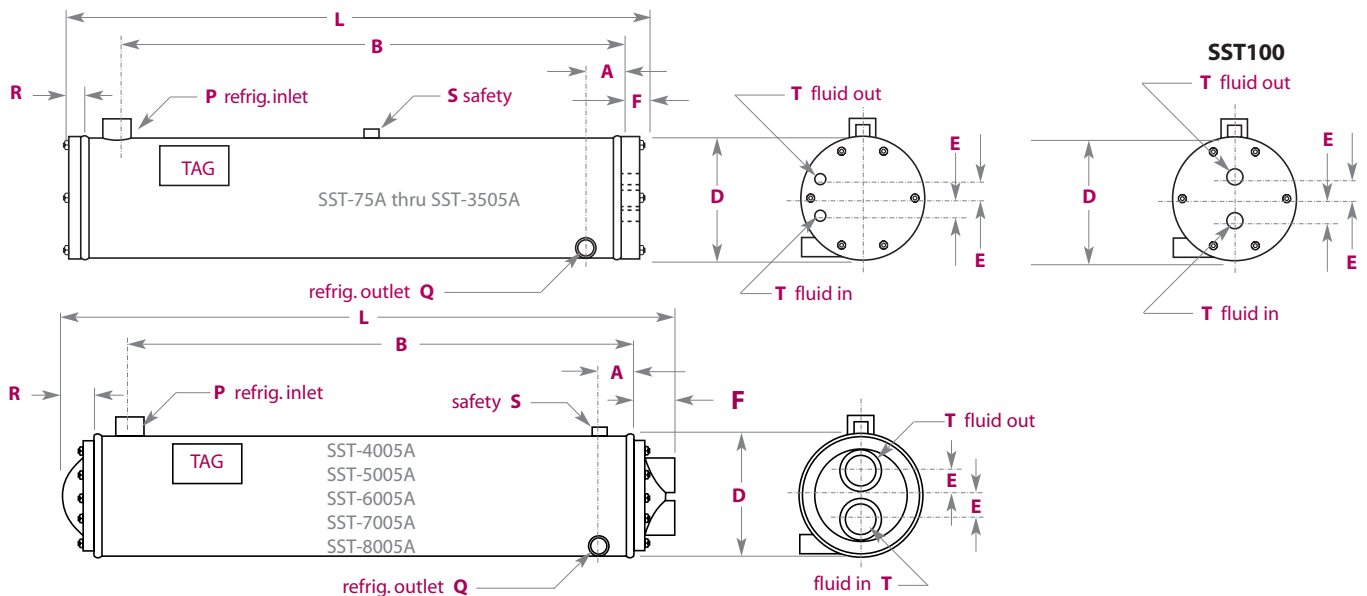
### design features & ratings

MODELS	Nominal hp		Dimensions (inches)							Connections (inches)			
	clean	fouled	D	L	A	B	E	F	R	P (ids)	Q (ids)	S (fpt)	T (fpt)
SST-75A	1.2	0.8	5	21 1/8	2	18	1 1/2	1 3/4	1 3/4	1/2	1/2	3/8	3/8
SST-100A	1.7	1.6	6	21 1/2	2 1/8	18	1 5/8	1 3/4	1 3/4	5/8	1/2	1/2	1/2
SST-200A	3.5	2.3	6 5/8	21 3/8	2 1/16	16	1	2	5/8	7/8	5/8	3/8	3/4
SST-300A	5.6	3.9	6 5/8	27 3/8	2 1/16	22	1	2	5/8	7/8	5/8	3/8	3/4
SST-500A	7.2	5.2	8 5/8	28	2 5/8	21 1/2	1 1/2	2 1/4	1	1 1/8	5/8	1/2	1 1/4
SST-750A	10.8	7.8	8 5/8	28 1/2	2 1/2	21 1/2	1 1/2	2 1/4	1	1 3/8	7/8	1/2	1 1/4
SST-755A	9.7	8.5	8 5/8	40 1/2	2 9/16	33 1/2	1 1/2	2 1/4	1	1 3/8	7/8	1/2	1 1/4
SST-1000A	16.0	10.3	8 5/8	46 1/2	2 9/16	39 1/2	2 1/8	2 1/4	1	1 3/8	7/8	1/2	1 1/4
SST-1500A	24.5	15.5	8 5/8	52	2 9/16	45 1/2	2 1/8	2 1/4	1	1 3/8	1 1/8	1/2	1 1/2
SST-1555A	24.5	15.5	10 3/4	53 1/4	3	44 3/4	2 1/2	3	1 3/8	1 5/8	1 1/8	1/2	1 1/2
SST-2005A	30.0	22.1	10 3/4	65 1/4	3	56 1/2	2 1/2	3	1 3/8	2 1/8	1 1/8	1/2	2
SST-2026A	30.0	22.1	12 3/4	65 1/4	3 1/4	56 1/2	2 1/2	3	1 3/8	2 1/8	1 1/8	1/2	2
SST-2505A	37.5	27.7	10 3/4	65 1/2	3	56 1/2	2 1/8	3 1/4	1 3/8	2 1/8	1 3/8	1/2	2 1/2
SST-2527A	37.5	27.7	12 3/4	65 1/2	3 1/4	56 1/2	2 1/8	3 1/4	1 3/8	2 1/8	1 3/8	1/2	2 1/2
SST-3005A	45.0	33.2	10 3/4	65 1/4	3	56 1/2	2 1/8	3 1/4	1 3/8	2 5/8	1 3/8	1/2	2 1/2
SST-3028A	45.0	33.2	12 3/4	65 1/2	3 1/4	56 1/2	2 1/8	3 1/4	1 3/8	2 5/8	1 3/8	1/2	2 1/2
SST-3505A	50.0	36.9	12 3/4	65 1/2	3 1/4	56 1/2	2 1/8	3 1/4	1 3/8	2 5/8	1 3/8	1/2	2 1/2
SST-4005A	55.0	40.6	14	66 7/8	3 1/4	56 1/2	2 3/4	4 1/4	2 3/8	2 5/8	1 3/8	1/2	3
SST-4505A	65.0	48.0	14	66 7/8	3 1/4	56 1/2	2 3/4	4 1/4	2 3/8	2 5/8	1 5/8	1/2	3
SST-5005A	70.0	51.7	14	66 7/8	3 1/4	56 1/2	2 3/4	4 1/4	2 3/8	2 5/8	1 5/8	1/2	4
SST-5505A	75.0	55.4	14	66 7/8	3 1/4	56	2 3/4	4 1/4	2 3/8	3 1/8	1 5/8	1/2	4
SST-6005A	82.5	60.9	14	66 7/8	3 1/4	56 3/4	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
SST-7005A	97.6	72.0	14	66 3/4	3 1/4	56	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
SST-8005A	110.1	81.2	14	66 3/4	3 1/4	56	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
SST-100-1408A	159.5	100.9	14	107 3/4	3 1/2	92	5 9/16	5 3/4	-	3 1/8	2 5/8	3/4	5
SST-120-1408A	196.4	124.2	14	107 3/4	3 1/2	92	5 9/16	5 3/4	-	3 5/8	2 5/8	3/4	5
SST-150-1410A	210.1	155.0	14	131 3/4	3 1/2	115 1/2	5 9/16	5 3/4	-	3 5/8	2 5/8	3/4	5
SST-200-1412A	268.6	222.1	14	159	4	139	5 9/16	7 1/2	-	4 1/8	3 1/8	3/4	6 flange

Clean ratings: As tested per ARI Standard 450-99

† Tubing has high performance extended surface

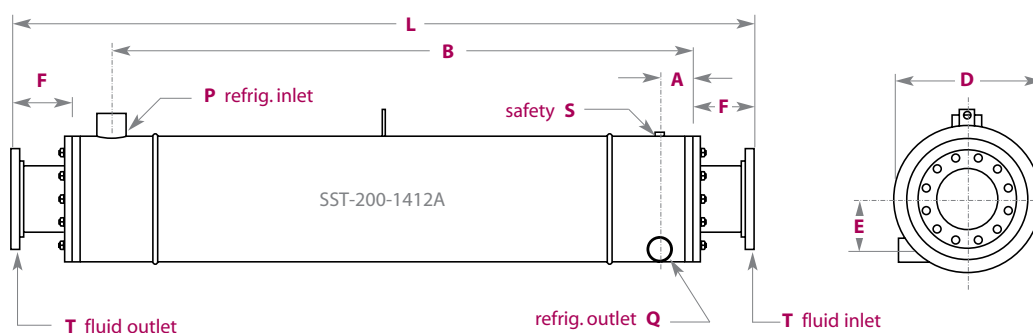
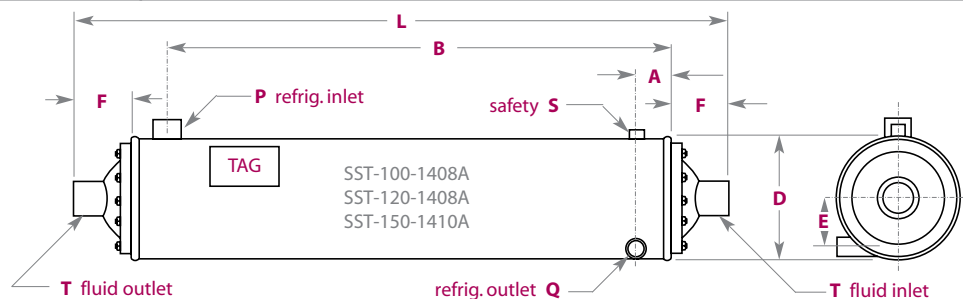
Fouled ratings: Include a additive fouling coefficient of 0.00025 as calculated per ARI Standard 450-99





- Industry's most widely used and trusted model
- Heavy duty, horizontal, shell and tube design
- Nominal ratings and sizes to handle the most demanding requirements
- Removable, epoxy coated, water plates to facilitate cleaning
- All copper, heavy wall, straight tube water channels
- Epoxy coated tube sheets to prevent pitting caused by galvanic action
- Generous pumpdown capacities
- Custom models available thru 800 horsepower
- 28 SST models, ¾ thru 200 horsepower

MODELS	Pumpdown Capacity (lbs)	Waterflow (gpm)		Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.			Shell Side	Tube Side
SST-75A	9	0.7	2.3	3.4	28	450	150
SST-100A	17	0.7	4.7	2.7	39	450	150
SST-200A	15	2.0	18.0	1.7	52	450	150
SST-300A	21	2.0	16.0	1.7	71	450	150
SST-500A	35	2.7	26.8	3.5	90	450	150
SST-750A	32	4.0	30.0	2.4	109	450	150
SST-755A	53	3.4	20.0	3.3	144	450	150
SST-1000A	59	6.7	67.0	0.9	159	450	150
SST-1500A	65	8.0	70.0	1.5	180	450	150
SST-1555A	111	8.0	80.4	2.0	272	450	150
SST-2005A	138	8.0	80.4	3.5	313	450	150
SST-2026A	208	8.0	80.4	2.8	428	450	150
SST-2505A	135	10.1	100.5	4.0	345	450	150
SST-2527A	205	10.1	100.5	3.2	413	450	150
SST-3005A	128	12.1	100.1	4.0	350	450	150
SST-3028A	198	12.1	100.1	3.1	448	450	150
SST-3505A	199	13.4	111.2	5.5	400	450	150
SST-4005A	244	14.8	122.3	4.7	489	450	150
SST-4505A	237	17.4	144.6	4.3	519	450	150
SST-5005A	233	18.8	187.7	4.7	527	450	150
SST-5505A	230	20.1	201.1	4.8	521	450	150
SST-6005A	224	22.1	221.2	4.6	542	450	150
SST-7005A	214	26.1	261.4	4.7	548	450	150
SST-8005A	205	29.5	294.9	4.8	596	450	150
SST-100-1408A	342	52.3	522.8	4.7	1136	450	150
SST-120-1408A	316	64.3	643.4	4.7	1176	450	150
SST-150-1410A	416	56.3	563.0	6.7	1298	450	150
SST-200-1412A	474	64.3	643.4	4.8	1505	450	150



**SST**  
**Btu/hr capacities**  
**R-22 & water**

**SST-75A (4 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
1.00	0.61	4783	6367	7946	9518	11081	12645
2.00	2.48	7891	10494	13081	15647	18191	20736
3.00	5.67	10201	13555	16881	20174	23428	26684
4.00	10.19	12013	15952	19852	23706	27507	31311

**SST-100A (6 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
1.00	0.35	5858	7802	9740	11672	13597	15522
2.00	1.51	10098	13435	16756	20056	23332	26609
3.00	3.56	13398	17813	22196	26542	30846	35151
4.00	6.56	16063	21342	26575	31755	36872	41993
5.00	10.54	18271	24263	30195	36057	41838	47623

**SST-200A (4 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
2.01	0.16	10445	13912	17370	20817	24251	27685
4.00	0.57	17813	23705	29569	35401	41193	46988
6.00	1.22	23673	31483	39241	46942	54573	62208
8.00	2.09	28491	37869	47172	56390	65508	74631
10.00	3.17	32552	43246	53842	64327	74681	85042
12.00	4.45	36038	47857	59557	71119	82521	93933
14.00	5.94	39073	51868	64523	77017	89322	101639
16.00	7.62	41744	55397	68890	82199	95293	108400
18.00	9.49	44119	58533	72767	86796	100585	114389

**SST-300A** (4 pass)

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
4.00	0.61	20959	27901	34815	41697	48540	55385
6.00	1.30	28356	37723	47038	56291	65473	74658
8.00	2.22	34562	45954	57267	68487	79599	90717
10.00	3.37	39871	52988	65998	78884	91625	104374
12.00	4.73	44480	59089	73564	87884	102023	116172
14.00	6.30	48529	64445	80200	95770	111124	126491
16.00	8.08	52121	69192	86078	102750	119173	135610
18.00	10.06	55334	73436	91329	108981	126351	143739

**SST-500A** (4 pass)

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
7.50	1.49	36095	48024	59889	71681	83385	95094
10.00	2.60	44139	58695	73154	87501	101716	115937
12.50	4.01	51060	67868	84544	101068	117414	133770
15.00	5.71	57099	75863	94462	112870	131055	149251
17.50	7.69	62426	82912	103199	123256	143046	162851
20.00	9.96	67169	89183	110966	132484	153690	174915
22.50	12.52	71426	94808	117928	140747	163215	185704

**SST-750A** (4 pass)

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
10.00	1.19	49661	66087	82433	98686	114831	130980
15.00	2.60	66208	88043	109731	131252	152574	173906
20.00	4.54	79742	105976	131996	157768	183250	208748
25.00	7.00	91081	120984	150605	179902	208818	237756
30.00	9.96	100754	133775	166450	198725	230535	262372

**SST**  
**Btu/hr capacities**  
**R-22 & water**

**SST-755A (4 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
10.00	1.85	58065	77291	96437	115490	134433	153380
15.00	4.03	78786	104796	130650	156322	181780	207248
20.00	7.02	95972	127576	158941	190029	220792	251571
25.00	10.79	110487	146793	182776	218386	253560	288757

**SST-1000A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
20.00	0.96	87204	115991	144605	173017	201193	229380
30.00	2.10	113763	151196	188329	225114	261491	297890
40.00	3.65	134800	179042	222857	266182	308932	351715
50.00	5.60	151994	201774	251009	299619	347498	395422
67.03	9.84	175168	232373	288854	344503	399184	453928

**SST-1500A & SST-1555A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
20.00	0.71	99322	132173	164865	197372	229661	261960
30.00	1.54	132416	176085	219463	262503	305147	347812
40.00	2.67	159485	211952	263992	315536	366500	417495
50.00	4.09	182162	241968	301211	359803	417635	475511
60.00	5.81	201508	267550	332899	397451	461069	524744
70.00	7.80	218250	289671	360277	429945	498519	567161
80.43	10.19	233501	309808	385180	459477	532523	605648

**SST-2005A & SST-2026A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
30.00	1.22	150769	200555	250050	299206	347963	396740
40.00	2.10	183673	244181	304245	363796	422744	481722
50.00	3.19	211620	281192	350167	418452	485928	553448
60.00	4.50	235711	313066	389675	465421	540158	614952
70.00	6.03	256732	340858	424091	506297	587301	668377
80.43	7.84	276013	366329	455610	543698	630396	717180

**SST-2505A & SST-2527A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
30.00	0.80	160007	212929	265595	317963	369979	422010
40.00	1.38	197268	262376	327082	391322	455013	518731
50.00	2.10	229592	305226	380306	454745	528430	602153
60.00	2.96	257961	342801	426932	510245	592598	675003
70.00	3.95	283101	376072	468184	559303	649259	739281
80.00	5.09	305564	405780	504989	603037	699725	796492
90.00	6.36	325778	432497	538067	642311	745008	847798
100.00	7.76	344080	456675	567983	677809	785906	894110
100.54	7.84	345017	457911	569512	679623	787996	896476

**SST-3005A & SST-3028A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
40.00	0.98	207661	276294	344563	412409	479755	547125
60.00	2.10	275510	366271	456368	545694	634115	722583
80.00	3.61	330051	438492	545962	652309	757342	862448
100.00	5.50	375040	497993	619678	739904	858422	977041
120.65	7.84	414020	549494	683414	815548	945595	1075771

**SST**  
**Btu/hr capacities**  
**R-22 & water**

**SST-3505A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
20.00	0.22	122203	162775	203245	243597	283809	324026
40.00	0.80	213342	283906	354127	423951	493305	562680
60.00	1.72	285305	379378	472814	565512	657343	749217
80.00	2.96	343948	457067	569243	680327	790131	900004
100.00	4.50	392851	521777	649458	775701	900263	1024920
134.05	7.84	460022	610549	759349	906164	1050661	1195301

**SST-4005A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
40.00	0.59	218268	290506	362422	433964	505063	576183
60.00	1.26	293911	390898	487275	582946	677785	772665
80.00	2.17	356295	473579	589946	705255	819320	933450
100.00	3.31	408824	543117	676190	807852	937863	1067966
120.00	4.68	453780	602574	749852	895381	1038866	1182470
147.46	6.92	506024	671603	835284	996780	1155727	1314831

**SST-4505A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
40.00	0.43	226397	301402	376120	450505	524495	598502
60.00	0.92	308350	410234	511559	612235	712147	812095
80.00	1.58	377303	501683	625206	747734	869092	990510
100.00	2.42	436321	579874	722260	863298	1002754	1142295
120.00	3.41	487532	647656	806310	963267	1118235	1273314
140.00	4.57	532470	707088	879941	1050758	1219193	1387768
174.27	6.92	598029	793713	987154	1178013	1365859	1553891

**SST-5005A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
18.77	0.09	120845	161022	201133	241168	281112	321059
20.00	0.10	127842	170337	212758	255092	297323	339559
40.00	0.37	229796	305959	381851	457426	532628	607846
60.00	0.80	314475	418438	521866	624672	726744	828851
80.00	1.38	386322	513756	640358	765998	890505	1015068
100.00	2.10	448253	595830	742270	887394	1030973	1174634
120.00	2.96	502311	667406	831058	993042	1153071	1313207
140.00	3.97	549991	730488	909241	1085982	1260368	1434889
160.00	5.11	592418	786580	978708	1168492	1355536	1542742
187.67	6.92	644031	854768	1063089	1268630	1470925	1673421

**SST-5505A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
20.11	0.09	129476	172523	215500	258394	301191	343992
40.00	0.33	232847	310049	386995	463640	539930	616236
60.00	0.70	320014	425859	531191	635926	739957	844020
80.00	1.21	394536	524752	654164	782644	910026	1037462
100.00	1.84	459184	610452	760613	909490	1056859	1204306
120.00	2.60	515922	685601	853864	1020491	1185197	1350007
140.00	3.48	566202	752145	936368	1118606	1298518	1478562
160.00	4.48	611128	811561	1009979	1206073	1399449	1592984
180.00	5.61	651555	864994	1076134	1284623	1490016	1695595
200.00	6.85	688161	913350	1135965	1355618	1571812	1788220
201.08	6.92	690033	915823	1139024	1359246	1575991	1792951

**SST-6005A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
22.12	0.09	142424	189775	237049	284233	331310	378391
40.00	0.27	236882	315460	393799	471860	549593	627338
60.00	0.59	327401	435758	543633	650945	757595	864274
80.00	1.01	405574	539533	672726	805031	936290	1067598
100.00	1.54	473971	630239	785442	939410	1091925	1244513
120.00	2.17	534443	710368	884919	1057882	1228980	1400175
140.00	2.91	588377	781779	973501	1163282	1350788	1538418
160.00	3.74	636841	845903	1052985	1257780	1459897	1662167
180.00	4.68	680670	903861	1124777	1343071	1558299	1773706
200.00	5.71	720535	956547	1190001	1420508	1647572	1874844
220.00	6.85	756977	1004685	1249562	1491179	1728993	1967042
221.18	6.92	759037	1007405	1252927	1495171	1733590	1972246

**SST**  
**Btu/hr capacities**  
**R-22 & water**

**SST-7005A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
26.14	0.09	168319	224280	280149	335912	391549	447190
50.00	0.30	293165	390387	487296	583842	679957	776091
75.00	0.65	403864	537478	670466	802727	934128	1065568
100.00	1.12	498904	663617	827345	989930	1151169	1312473
125.00	1.71	581643	773319	963631	1152363	1339239	1526208
150.00	2.42	654482	869810	1083390	1294947	1504131	1713442
175.00	3.23	719203	955480	1189629	1421316	1650122	1879088
200.00	4.16	777166	1032153	1284638	1534236	1780456	2026871
225.00	5.21	829433	1101249	1370202	1635855	1897651	2159677
250.00	6.36	876846	1163894	1447731	1727870	2003693	2279780
261.40	6.92	897043	1190570	1480731	1767020	2048788	2330836

**SST-8005A (2 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
29.49	0.09	189899	253034	316066	378978	441747	504522
50.00	0.24	299372	398709	497763	596488	694822	793172
75.00	0.52	415283	552782	689703	825952	961406	1096895
100.00	0.89	516044	686572	856177	1024710	1191980	1359309
125.00	1.36	604699	804176	1002359	1199041	1393958	1588962
150.00	1.92	683465	908574	1132006	1353496	1572707	1792035
175.00	2.57	754015	1002012	1247949	1491502	1732259	1973168
200.00	3.31	817648	1086234	1352379	1615704	1875726	2135932
225.00	4.14	875391	1162615	1447025	1728188	2005552	2283136
250.00	5.06	928071	1232258	1533271	1830623	2123695	2417022
275.00	6.06	976358	1296065	1612246	1924366	2231743	2539408
294.91	6.92	1012049	1343207	1670569	1993561	2311454	2629662

**SST-100-1408A (1 pass)**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
52.28	0.06	310473	413617	516545	619220	721596	823985
100.00	0.21	528554	703650	878068	1051699	1224399	1397140
150.00	0.44	716830	953694	1189268	1423346	1655660	1888058
200.00	0.75	875464	1164118	1450813	1735238	2016994	2298886
250.00	1.13	1011651	1344581	1674866	2002091	2325726	2649552
300.00	1.59	1130239	1501586	1869607	2233787	2593466	2953398
350.00	2.12	1234686	1639762	2040849	2437336	2828442	3219860
400.00	2.73	1327548	1762529	2192884	2617907	3036704	3445875
450.00	3.40	1410773	1872489	2328968	2779419	3222835	3666686
500.00	4.14	1485876	1971663	2451633	2924910	3390384	3856353
522.80	4.50	1517759	2013751	2503669	2986602	3461396	3936710



**SST-120-1408A** (1 pass)

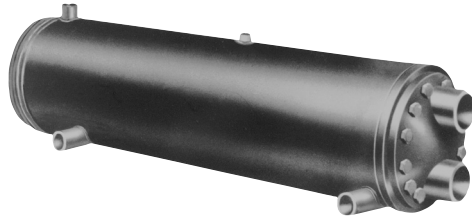
gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
100.00	0.14	551564	734478	916805	1098449	1279286	1460157
200.00	0.51	934071	1242541	1549223	1853828	2155990	2458270
300.00	1.08	1225444	1628822	2029050	2425633	2817938	3210472
400.00	1.85	1457296	1935743	2409684	2878427	3341083	3804088
500.00	2.81	1647315	2186988	2720871	3248085	3767507	4287398
643.44	4.50	1868011	2478464	3081440	3675819	4260180	4845182

**SST-150-1410A** (1 pass)

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
56.30	0.07	362534	483064	603399	723503	843336	963178
100.00	0.21	594054	791129	987617	1183419	1378410	1573434
150.00	0.45	821907	1093959	1364817	1634287	1902120	2170024
200.00	0.76	1019048	1355679	1690414	2022951	2352897	2682965
250.00	1.15	1191807	1584806	1975161	2362453	2746141	3130009
300.00	1.61	1344759	1787490	2226811	2662183	3092921	3523901
350.00	2.15	1481338	1968342	2451168	2929163	3401497	3874139
400.00	2.75	1604192	2130910	2652695	3168782	3678200	4187996
450.00	3.43	1715406	2277985	2834895	3385264	3927984	4471152
500.00	4.17	1816645	2411796	3000564	3581975	4154792	4728125
550.00	4.98	1909261	2534148	3151965	3761639	4361808	4962562
563.01	5.20	1932093	2564304	3189268	3805889	4412775	5020263

**SST-200-1412A** (1 pass)

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	35° ITD	40° ITD
100.00	0.19	646968	861902	1076383	1290337	1503665	1717015
200.00	0.68	1151125	1532180	1911585	2289067	2664278	3039587
300.00	1.43	1557252	2071179	2581909	3088928	3591578	4094437
400.00	2.44	1892316	2515224	3133272	3745694	4351511	4957672
500.00	3.69	2174084	2888194	3595780	4295831	4987053	5678766
643.44	5.90	2508821	3330756	4143883	4946859	5737973	6529794



*cupronickel marine  
service condensers*

### design features & ratings

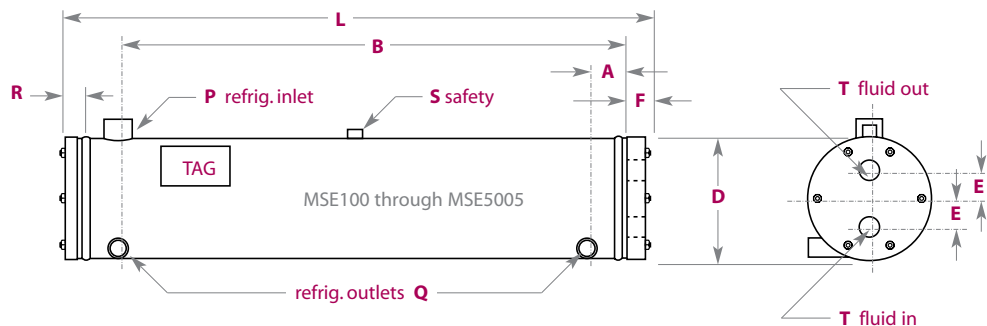
MODELS	Nominal hp		Dimensions (inches)							Connections (inches)			
	clean	fouled	D	L	A	B	E	F	R	P (ids)	Q (ids)	S (fpt)	T (fpt)
MSE-100	1.3	1.0	6	21 5/8	1 5/8	16 3/8	1 7/8	2	1 5/8	5/8	1/2	3/8	1/2
MSE-200	2.6	2.0	6	21 5/8	1 5/8	16 3/8	1 7/8	2	1 5/8	7/8	5/8	3/8	1/2
MSE-300	4.6	3.3	6 5/8	21 3/4	2	16	1	2	1 3/4	7/8	5/8	3/8	3/4
MSE-500	6.0	4.6	6 5/8	21 3/4	2 1/8	16	1	2	1 3/4	1 1/8	5/8	3/8	3/4
MSE-750	9.5	6.7	6 5/8	34 1/4	2	28	2	2 1/4	2	1 3/8	7/8	3/8	1 1/4
MSE-1005	11.7	9.5	6 5/8	40 1/4	2	33	2	2 1/4	2	1 3/8	7/8	3/8	1 1/4
MSE-1500	19.9	15.8	8 5/8	40 1/4	2 1/2	33 1/2	2 1/8	2	2 1/4	1 5/8	1 1/8	1/2	2
MSE-2005	26.7	20.2	8 5/8	64 1/2	3	57	2 1/8	2 1/4	2 1/4	2 1/8	1 1/8	1/2	2
MSE-2505	33.1	25.9	8 5/8	64 1/2	3	57	2 1/8	2 1/4	2 1/4	2 1/8	1 3/8	1/2	2
MSE-3006	39.7	31.6	8 5/8	76 1/2	3	69	2	2 1/4	2 1/4	2 5/8	1 3/8	1/2	2 1/2
MSE-3305	44.4	32.6	10 3/4	65	3	56 1/2	2 1/8	2 3/4	2 1/4	2 5/8	1 3/8	1/2	2 1/2
MSE-4005	45.8	33.6	10 3/4	65	3	56 1/2	2 1/8	2 3/4	2 1/4	2 5/8	1 5/8	1/2	2 1/2
MSE-4505	57.7	44.2	10 3/4	77	3	68 1/2	2 1/8	2 3/4	2 1/4	2 5/8	1 5/8	1/2	2 1/2
MSE-5005	59.6	45.7	10 3/4	77	3	68 1/2	2 1/8	2 3/4	2 1/4	2 5/8	1 5/8	1/2	2 1/2
MSE-6505	71.0	58.2	12 3/4	78 3/4	3 1/2	68 1/2	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
MSE-7505	84.8	66.1	12 3/4	78 3/4	3 1/2	68 1/2	2 3/4	4 1/4	2 3/8	3 1/8	2 1/8	1/2	4
MSE-100HP	132.2	99.8	12 3/4	133 1/2	3 1/2	116 1/2	—	6 5/8	6 5/8	3 1/8	2 1/8	1/2	5 mpt
MSE-120HP	137.2	103.6	12 3/4	133 1/2	3 1/2	115 3/4	—	6 5/8	6 5/8	3 5/8	2 1/8	1/2	5 mpt

† Tubing has high performance extended surface

**Zinc plates are available for all MSE models. Indicate by adding "Z" after model number (MSE-750Z)**

Clean ratings: As tested per ARI standard 450-99.

Fouled ratings: Include fouling factor coefficient of 0.00025 as calculated per ARI standard 450-99.



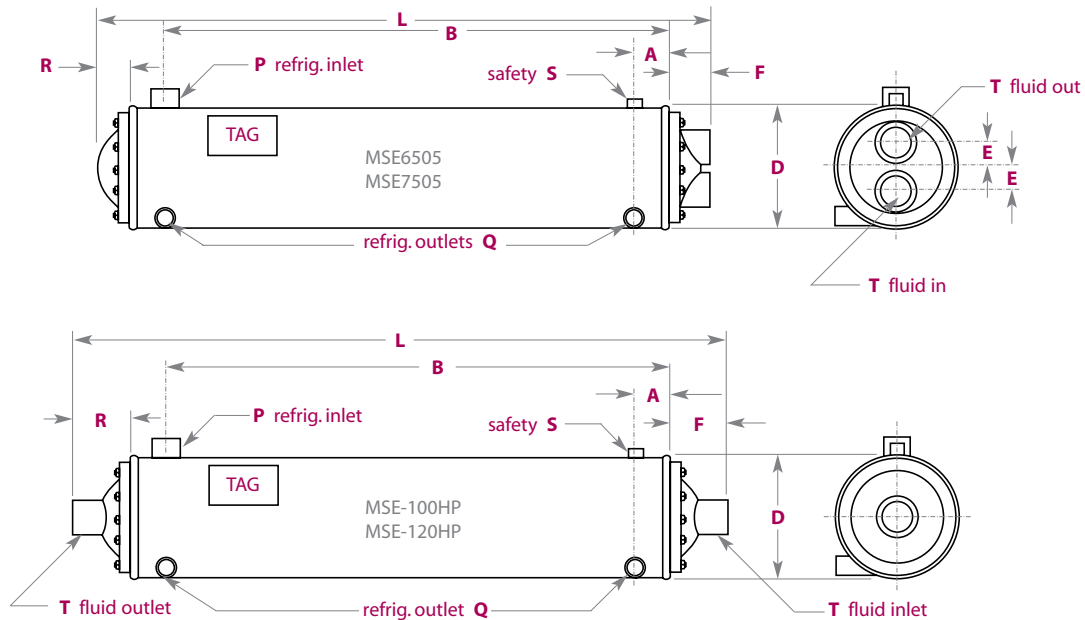
- Marine service
- Heavy duty, horizontal, shell and tube design
- Nominal ratings and sizes to handle the most demanding requirements
- Epoxy coated solid cupronickel tube sheets to prevent pitting caused by galvanic action
- Removable, solid cupronickel or solid brass water plates to facilitate cleaning

- All 90/10 cupronickel, heavy wall, straight tube water channels
- Sacrificial zinc anode available upon request
- Generous pumpdown capacities
- Dual refrigerant outlets, provides liquid seal in heavy seas
- Custom designs to 500 horsepower on request
- 18 MSE stock models, 1 to 125 horsepower

MODELS	Pumpdown Capacity (lbs)	Waterflow (gpm)		Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.			Shell Side	Tube Side
MSE-100	14	0.74	7.38	3.0	35	400	150
MSE-200	12	1.48	14.77	3.0	49	400	150
MSE-300	14	1.66	16.61	6.9	58	400	150
MSE-500	15	2.22	22.15	7.6	77	400	150
MSE-750	24	4.43	44.30	2.3	107	400	150
MSE-1005	29	4.43	44.30	5.4	121	400	150
MSE-1500	49	7.38	73.84	5.4	181	400	150
MSE-2005	86	13.29	123.90	2.5	254	400	150
MSE-2505	79	16.24	162.44	2.9	265	400	150
MSE-3006	99	14.77	147.67	5.7	286	400	150
MSE-3305	133	20.67	206.74	2.8	338	400	150
MSE-4005	129	22.15	221.51	2.5	343	400	150
MSE-4505	160	20.67	206.74	5.7	388	400	150
MSE-5005	155	22.15	221.51	5.0	394	400	150
MSE-6505	225	28.80	287.96	3.1	517	400	125
MSE-7505	215	32.49	324.88	3.2	533	400	125
MSE-100HP	358	64.98	500.00	1.3	1133	400	125
MSE-120HP	344	70.88	708.82	1.1	1158	400	125

† Tubing has high performance extended surface

Zinc plates are available for all MSE models. Indicate by adding "Z" after model number (MSE-750Z)



**MSE**  
**Btu/hr capacities**  
**R-22 & water**

**MSE-100**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
1.00	0.30	5256	6994	8722	10439	13849	17228
2.00	1.28	8651	11492	14307	17091	22590	28000
3.00	3.02	11099	14727	18310	21843	28794	35599
4.00	5.55	12967	17190	21352	25445	33474	41304
5.00	8.91	14448	19140	23756	28285	37151	45773
6.00	13.14	15656	20728	25711	30592	40130	49383

**MSE-200**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
2.00	0.30	10512	13987	17443	20878	27699	34456
4.00	1.28	17302	22984	28613	34181	45180	56000
6.00	3.02	22198	29453	36621	43686	57588	71197
8.00	5.55	25934	34380	42704	50889	66947	82609
10.00	8.91	28896	38279	47512	56571	74303	91547
12.00	13.14	31312	41455	51421	61185	80259	98765

**MSE-300**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
2.00	0.30	12152	16180	20193	24189	32142	40044
4.00	1.16	21047	27984	34872	41704	55236	68600
6.00	2.55	27886	37036	46097	55054	72734	90110
8.00	4.46	33329	44227	54993	65610	86503	106962
10.00	6.89	37778	50093	62239	74190	97656	120564
12.00	9.83	41490	54982	68269	81320	106895	131801
14.00	13.28	44640	59127	73375	87350	114689	141258

**MSE-500**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
4.00	0.66	22551	30003	37415	44780	59402	73882
6.00	1.46	30557	40616	50597	60487	80059	99362
8.00	2.55	37182	49382	61463	73406	96978	120147
10.00	3.93	42766	56760	70594	84242	111121	137464
12.00	5.61	47546	63067	78388	93479	123141	152140
14.00	7.58	51689	68528	85130	101457	133498	164758
16.00	9.83	55320	73310	91025	108427	142526	175734
18.00	12.37	58530	77534	96230	114574	150475	185382
20.00	15.19	61393	81298	100863	120042	157533	193935

**MSE-750**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
5.00	0.16	28612	38087	47524	56916	75596	94140
10.00	0.61	48726	64771	80694	96477	127719	158545
15.00	1.33	63956	84923	105675	126177	166616	206330
20.00	2.31	75978	100800	125312	149470	196982	243471
25.00	3.55	85755	113690	141228	168312	221459	273308
30.00	5.05	93886	124398	154432	183920	241675	297883
35.00	6.80	100772	133456	165588	197092	258694	318526

**MSE-1005**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
5.00	0.18	30681	40853	50991	61089	81194	101177
10.00	0.66	53508	71154	88683	106076	140549	174615
15.00	1.43	71269	94671	117856	140789	186079	230631
20.00	2.48	85532	113520	141187	168484	222241	274927
25.00	3.81	97272	129009	160326	191160	251742	310938
30.00	5.41	107124	141991	176345	210110	276322	340859
35.00	7.27	115526	153049	189973	226212	297156	366161

**MSE**  
**Btu/hr capacities**  
**R-22 & water**

**MSE-1500**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
10.00	0.25	59597	79334	98991	118554	157464	196090
20.00	0.94	101857	135387	168657	201623	266863	331208
30.00	2.03	133624	177407	220723	263500	347833	430600
40.00	3.52	158486	210223	261293	311596	410468	507135
50.00	5.41	178540	236652	293908	350184	460536	568098
60.00	7.67	195101	258447	320767	381914	501584	617938

**MSE-2005**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
20.00	0.30	108039	143745	179260	214554	284629	255896
40.00	1.14	177895	236296	294144	351354	464318	354041
60.00	2.47	227935	302399	375937	448408	590945	575415
80.00	4.27	265875	352412	437678	521485	685829	730412
100.00	6.54	295789	391783	486196	578802	759978	846023

**MSE-2505**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
20.00	0.21	112607	149877	186983	223896	297279	370085
40.00	0.78	189915	252397	314372	375759	497190	616888
60.00	1.68	247513	328574	408749	487903	643893	796919
80.00	2.91	292438	387870	482049	574790	757029	935140
100.00	4.46	328632	435565	540907	644426	847375	1045141
120.00	6.31	358515	474893	589372	701679	921440	1135072
140.00	8.47	383667	507960	630074	749701	983416	1210156

**MSE-3006**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
20.00	0.27	119194	158668	197981	237108	314927	392181
40.00	1.00	203714	270775	337313	403246	533726	662415
60.00	2.16	267248	354814	441445	527001	695667	861200
80.00	3.73	316972	420447	522587	623191	820937	1014270
100.00	5.70	357080	473303	587816	700368	921073	1136197
120.00	8.07	390203	516895	641535	763828	1003168	1235876
147.67	11.98	427634	566097	702086	835252	1095307	1347457

**MSE-3305**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
40.00	0.49	203368	270435	337055	403156	534166	663635
60.00	1.06	270184	358919	446835	533807	705597	874619
80.00	1.84	324026	430085	534949	638434	842283	1042140
100.00	2.81	368524	488812	607539	724472	954291	1178959
120.00	3.98	406027	538245	668557	796684	1048031	1293152
140.00	5.35	438135	580522	720682	858294	1127816	1390122
160.00	6.90	465983	617154	765804	911569	1196666	1473641
180.00	8.64	490398	649248	805300	958158	1256770	1546429
200.00	10.57	512004	677628	840201	999294	1309756	1610504

**MSE-4005**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
40.00	0.43	206995	275301	343178	410556	544166	676293
60.00	0.93	276436	367293	457355	546497	722684	896171
80.00	1.61	332895	441949	549829	656355	866335	1072382
100.00	2.47	379891	503999	626562	747347	984908	1217354
120.00	3.49	419732	556536	691442	824170	1084731	1339070
140.00	4.69	454010	601688	747138	890036	1170111	1442939
160.00	6.05	483862	640976	795553	947229	1244097	1532771
180.00	7.57	510131	675520	838085	997425	1308916	1611340
200.00	9.26	533450	706163	875787	1041884	1366237	1680719
220.00	11.11	554309	733558	909468	1081573	1417338	1742490

**MSE**  
**Btu/hr capacities**  
**R-22 & water**

**MSE-4505**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
40.00	0.53	222101	295452	368379	440814	584547	726806
60.00	1.14	299407	397895	495572	592308	783629	972177
80.00	1.97	362801	481745	599466	715774	945177	1170461
100.00	3.01	415852	551807	686130	818575	1079214	1334425
120.00	4.25	460986	611337	759664	905667	1192437	1472544
140.00	5.70	499913	662624	822942	980515	1289502	1590675
160.00	7.35	533874	707327	878040	1045616	1373750	1693004
180.00	9.20	563795	746681	926502	1102821	1447644	1782602
200.00	11.25	590381	781622	969498	1153531	1513045	1861782

**MSE-5005**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
40.00	0.46	225512	300034	374152	447801	594016	738824
60.00	1.00	305571	406162	505970	604869	800588	993623
80.00	1.73	371817	493819	614628	734058	969780	1201472
100.00	2.64	427660	567600	705935	842422	1111207	1374637
120.00	3.73	475457	630670	783880	934787	1231405	1521404
140.00	5.00	516891	685284	851295	1014571	1334977	1647576
160.00	6.45	553197	733095	910252	1084268	1425264	1757343
180.00	8.07	585304	775342	962302	1145741	1504752	1853815
200.00	9.86	613927	812977	1008634	1200415	1575333	1939346
220.00	11.82	639622	846741	1050173	1249395	1638473	2015757

**MSE-6505**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
50.00	0.29	284244	378205	471676	564576	749061	931836
75.00	0.63	386253	513455	639699	764832	1012550	1256977
100.00	1.07	471085	625731	778909	930389	1229482	1523605
125.00	1.63	542890	720624	896373	1069836	1411576	1746680
150.00	2.30	604559	802018	996991	1189104	1566873	1936406
175.00	3.08	658171	872703	1084268	1292426	1701077	2099983
200.00	3.96	705264	934735	1160784	1382908	1818356	2242646
225.00	4.94	747002	989668	1228482	1462885	1921830	2368296
250.00	6.03	784279	1038696	1288856	1534149	2013880	2479904
275.00	7.22	817801	1082755	1343073	1598098	2096363	2579776



**MSE-7505**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
50.00	0.23	291168	387507	483401	578775	768321	956302
100.00	0.86	490040	651131	810830	968917	1281408	1589157
150.00	1.84	635743	843711	1049260	1252020	1651225	2042360
200.00	3.15	747663	991324	1231588	1467955	1931921	2384744
250.00	4.80	836666	1108516	1376084	1638749	2153110	2653591

**MSE-100HP**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
100.00	0.17	537497	715103	891741	1067252	1415682	1760744
200.00	0.60	882542	1172197	1459065	1742714	2302684	2853247
300.00	1.28	1128583	1497177	1861120	2219714	2924830	3614563
400.00	2.18	1314530	1742261	2163630	2577705	3389501	4180566
500.00	3.30	1460790	1934727	2400777	2857809	3751754	4620297

**MSE-120HP**

gpm	pressure drop (psi)	Condensing Temperature minus Entering Water Temperature					
		15° ITD	20° ITD	25° ITD	30° ITD	40° ITD	50° ITD
100.00	0.14	547789	728918	909135	1088292	1444158	1796845
200.00	0.51	909170	1207855	1503845	1796719	2375363	2944872
300.00	1.09	1171407	1554406	1932828	2305980	3040371	3759553
400.00	1.85	1372071	1819034	2259654	2692998	3543340	4372926
500.00	2.81	1531392	2028801	2518274	2998663	3939141	4853944
600.00	3.94	1661415	2199775	2728773	3247078	4259886	5242689

## High Pressure/High Pumpdown Condensers



### shell & tube condensers

High pumpdown, high water pressure applications

### design features & ratings

- Ideal for high-rise building applications
- High Performance, horizontal, shell and tube design
- High Pressure, specially designed removable water plates and gaskets provide for a 300 psi waterside working pressure
- High Pumpdown, for containment of greater refrigerant charges
- New high tech enhanced heat transfer tube surface
- Epoxy coated tube sheets and water plates to prevent pitting caused by galvanic action
- 8 HP models, 10 thru 80 horsepower

MODELS	Nominal hp		Dimensions (inches)							Connections (inches)			
	clean	fouled	D	L	A	B	E	F	R	P (ids)	Q (ids)	S (fpt)	T (fpt)
HP-10	13	11	8 5/8	40 5/8	3 1/4	32 5/8	1 3/8	2 1/2	1 3/8	1 3/8	7/8	1/2	1 1/2
HP-15	16 1/2	14 1/2	8 5/8	52 5/8	3 1/4	44 5/8	1 5/8	2 1/2	1 3/8	1 3/8	7/8	1/2	1 1/2
HP-20	23	20	8 5/8	64 5/8	3 1/4	56 5/8	1 5/8	2 1/2	1 3/8	1 3/8	7/8	1/2	1 1/2
HP-30A	39	33	10 3/4	77	3 1/2	68 5/8	2 3/8	2 1/2	2 3/8	2 5/8	1 5/8	1/2	2
HP-40A	51	44	10 3/4	77	3 1/2	68 5/8	2 3/8	2 1/2	2 3/8	2 5/8	1 5/8	1/2	2
HP-50A	64	55	12 3/4	77 5/8	3 1/2	68 5/8	2 5/8	3 1/8	2 3/8	2 5/8	1 5/8	1/2	3
HP-60A	74	63	12 3/4	77 5/8	3 1/2	68 5/8	2 5/8	3 1/8	2 3/8	2 5/8	1 5/8	1/2	3
HP-80A	100	85	14	77 3/8	3 1/2	68 5/8	2 7/8	2 3/4	2 1/2	3 1/8	2 1/8	1/2	4

Clean ratings: As tested per ARI Standard 450-99

Fouled ratings: Include a additive fouling coefficient of 0.00025 as calculated per ARI Standard 450-99

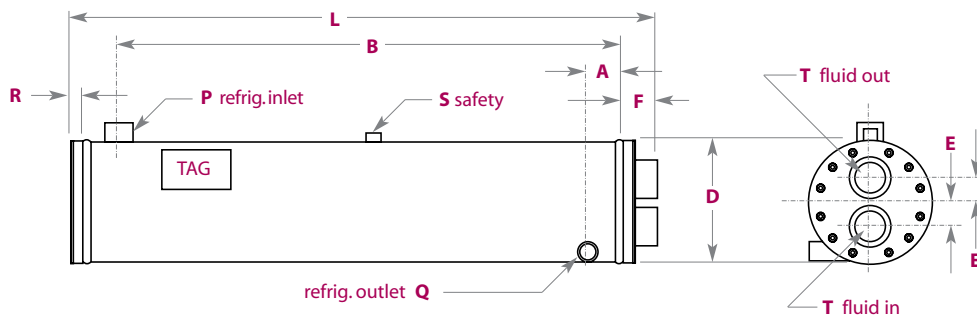
• Centerline on fittings is located 1 3/8" to the left of centerline on vessel

† Tubing has high performance extended surface

MODELS	Pumpdown Capacity (lbs)	Waterflow (gpm)		Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.			Shell Side	Tube Side
HP-10	51	4	40	6.3	125	350	300
HP-15	68	8	80	2.6	145	350	300
HP-20	86	8	80	4.0	205	350	300
HP-30A	160	12	121	4.4	375	350	300
HP-40A	148	16	161	4.4	435	350	300
HP-50A	217	20	201	4.4	555	350	300
HP-60A	213	21	214	5.5	575	350	300
HP-80A	243	29	295	5.2	755	350	300

Consult [www.stanref.com](http://www.stanref.com) or customer service for performance data not shown.

400 psi, shell side on request



# CA

## Stainless Steel/Corrosive Fluid Condensers



### shell & tube condensers

High sulfur content water and corrosive fluid applications.

### design features & ratings

- 316 stainless steel tubes
- 304 stainless tubesheets, water plates and waterside fittings for use with corrosive fluids. Especially suitable for pulp and paper mill applications
- Heavy duty, horizontal, shell and tube design
- Rolled tube to tube sheet joints
- Removable water plates to facilitate cleaning
- 6 CA models, 5 thru 30 horsepower

MODELS	Nominal hp		Dimensions (inches)							Connections (inches)			
	clean	fouled	D	L	A	B	E	F	R	P (ids)	Q (ids)	S (fpt)	T (fpt)
CA-050	5 1/2	5	6 5/8	39 1/4	4	32	1 1/8	2 3/8	7/8	1 1/8	7/8	1/2	3/4
CA-075	7 1/2	7	8 5/8	39 5/8	4	32	1 1/2	2 5/8	1	1 3/8	7/8	1/2	1 1/4
CA-100	10	9	8 5/8	39 3/8	4	32	1 1/2	2 5/8	1	1 3/8	7/8	1/2	1 1/4
CA-150	15	14	10 3/4	40 1/8	4	32	2 1/2	3 1/8	7/8	1 5/8	1 1/8	1/2	1 1/2
CA-200	20	18	8 5/8	76 1/8	4	68	2 1/8	3 1/8	1	2 1/8	1 1/8	1/2	1 1/2
CA-300	29	27	10 3/4	76 3/4	4	68	2 1/2	3 3/4	7/8	2 5/8	1 3/8	1/2	2 1/2

Clean ratings: As tested per ARI Standard 450-87

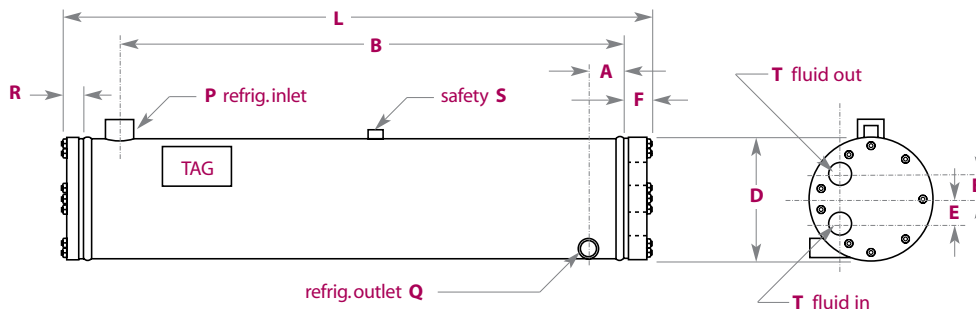
Fouled ratings: Include a additive fouling coefficient of 0.00025 as calculated per ARI Standard 450-87 (.0005 total)

† Tubing has high performance extended surface

MODELS	Pumpdown Capacity (lbs)	Waterflow (gpm)		Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.			Shell Side	Tube Side
CA-050	23	2.2	32.8	7.9	115	350	150
CA-075	44	2.9	43.7	9.2	175	350	150
CA-100	40	3.6	54.7	10.0	190	350	150
CA-150	63	5.5	82.0	10.0	265	350	150
CA-200	83	7.3	109.3	6.9	305	350	150
CA-300	131	10.9	164.0	6.9	450	350	150

Consult [www.stanref.com](http://www.stanref.com) or customer service for performance data not shown.

400 psi shell side on request



# VSE

## Vertical Shell & Coil Condensers



**vertical super efficient condenser**  
 Compact design, generous pumpdown.  
 Small package applications.

### design features & ratings

MODELS	Nominal hp		Dimensions (inches)					Connections (inches)				
	clean	fouled	D	H	A	B	C	P (ids)	Q (ids)	S (fpt)	W (fpt)	T (fpt)
VSE-1/2	—	1/2	6	5	1 1/4	3 1/4	1 1/2	1/2	1/2	3/8	—	1/2
VSE-1	—	1	6	5 1/2	1 1/2	3 5/8	1 1/2	5/8	1/2	3/8	—	1/2
VSE-1 1/2	—	1 1/2	8 5/8	6 3/8	2	4 3/8	2	5/8	1/2	3/8	—	3/4
VSE-2	—	2	9 3/4	7 1/4	2 1/8	4 3/4	2	5/8	5/8	1/2	—	3/4
VSE-3	3 1/2	3	6 5/8	13	1 5/8	1 5/8	11 1/8	7/8	5/8	3/8	3/4	—
VSE-5	6	5	8 5/8	13 1/2	1 3/4	4 5/8	11 1/2	1 1/8	5/8	1/2	1	—
VSE-7	9	8	10 3/4	16 1/4	2 5/8	6 1/2	13 3/8	1 3/8	7/8	1/2	1 1/4	—
VSE-10	13	11	16	18 3/4	4 1/2	9	13 3/4	1 3/8	7/8	1/2	1 1/4	—
VSE-10T	12	10	8 5/8	19 1/2	1 3/4	4 5/8	17 1/2	1 3/8	7/8	1/2	1	1 1/2
VSE-15T	19	16	10 3/4	22 1/4	2 5/8	6 1/2	19 3/8	1 5/8	1 1/8	1/2	1 1/4	1 1/2
VSE-20T	26	22	16	23 1/4	4 1/2	9	18 1/4	2 1/8	1 3/8	1/2	1 1/2	2

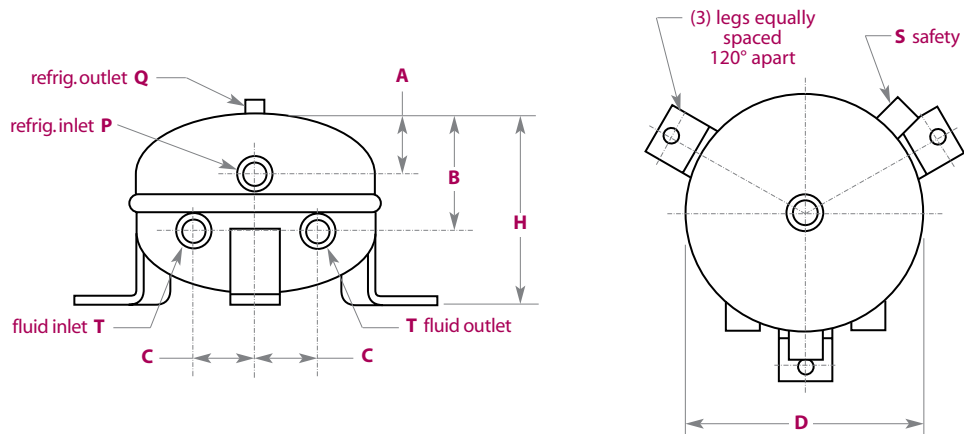
Clean ratings: As tested per ARI Standard 450-99

Fouled ratings: Include a additive fouling coefficient of 0.00025 as calculated per ARI Standard 450-99

† Tubing has high performance extended surface

Consult [www.stanref.com](http://www.stanref.com) or customer service for performance data not shown.

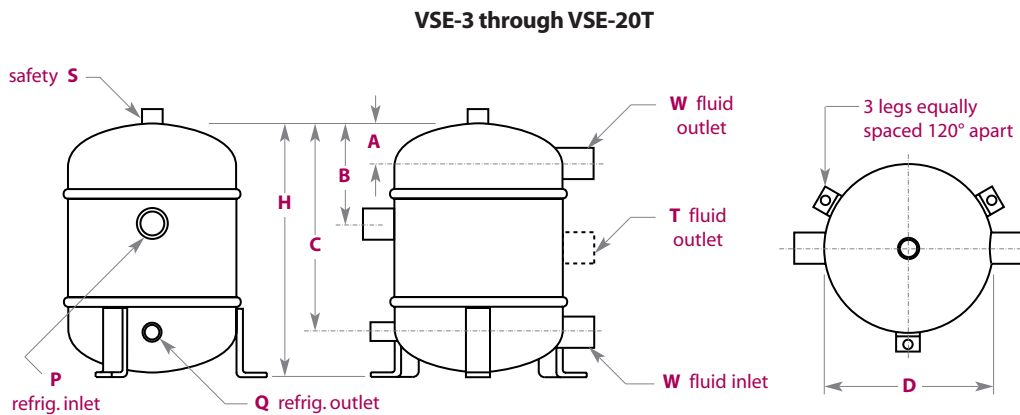
VSE-1/2 through VSE-2



- Sealed construction, vertical, shell and coil design
- Greatest refrigerant pumpdown capacity in a upright compact package
- Special "T" models have auxiliary connection for tower applications or to reduce pressure drops
- Size and efficiency make it ideal for use in small package units; ice makers, vending machines, self contained refrigeration cases
- 11 VSE models, 1/2 thru 20 horsepower

MODELS	Pumpdown Capacity (lbs)	Waterflow (gpm)		Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.			Shell Side	Tube Side
VSE-1/2	3	0.4	3.7	0.6	10	350	250
VSE-1	3.5	0.4	3.7	2.7	12	350	250
VSE-1 1/2	9	0.6	5.9	3.4	28	350	250
VSE-2	11	0.6	5.9	7.0	29	350	250
VSE-3	9	1.2	12	3.3	26	350	250
VSE-5	15	1.8	18	4.5	45	350	250
VSE-7	29	2.4	24	5.6	83	350	250
VSE-10	80	3.0	30	7.6	146	350	250
VSE-10T	20	3.6	36	3.9	69	350	250
VSE-15T	36	4.7	47	5.9	130	350	250
VSE-20T	96	5.9	60	7.1	204	350	250

400 psi shell side on request



## Compact Tube-in-Tube Condensers



**tube-in-tube condensers**

*Compact. Cleanable.*

### design features & ratings

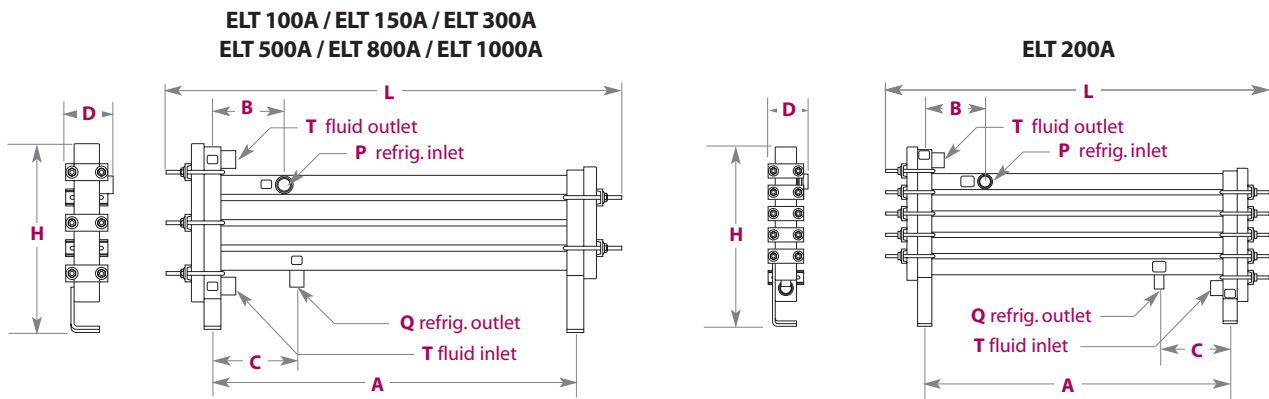
- Specially designed removable water plates and gaskets allow unsurpassed ease of servicing or cleaning without disconnecting water or refrigerant lines
- All copper water channels
- Rugged steel construction to resist tubing damage
- Our smallest horizontal, tube in tube design
- Exceptional heat transfer utilizing enhanced tube surfaces
- Highest water pressure ratings, and lowest water pressure drop offered in a cleanable tube in tube condenser design
- 7 ELT models, up to 10 horsepower

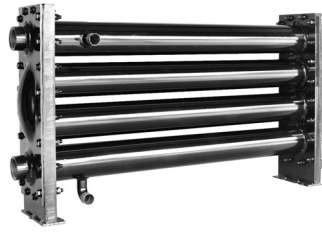
MODELS	Nominal hp	Dimensions (inches)						Connections (inches)		
		D	L	H	A	B	C	P (ids)	Q (ids)	T (ids)
ELT-100A	1	2 7/8	21 1/2	11	16	4 1/4	5	5/8	1/2	7/8
ELT-150A	1 1/2	2 7/8	27 1/2	11	21 1/2	4 1/4	5	7/8	1/2	7/8
ELT-200A	2	2 7/8	27	12 5/8	21 1/2	4 1/4	5	7/8	1/2	7/8
ELT-300A	3	4 1/4	27	17 3/4	21 1/2	4 1/4	6	7/8	5/8	1 3/8
ELT-500A	5	4 1/4	27	17 3/4	21 1/2	4 1/4	6	7/8	7/8	1 3/8
ELT-800A	8	5 1/2	27 1/2	22 1/4	21 1/2	4 1/4	6	1 3/8	7/8	1 3/8
ELT-1000A	10	5 1/2	27 1/2	22 1/4	21 1/2	4 1/4	6 1/4	1 3/8	7/8	1 5/8

Nominal HP: As tested per ARI standard 450-99

MODELS	Waterflow (gpm)		Nom'l. Water Pressure Drop (psi)	Shipping Weight (lbs)	Working Pressure (psi)	
	Min.	Max.			Shell Side	Tube Side
ELT-100A	0.7	6.7	1.25	21	380	200
ELT-150A	0.7	6.7	2.99	23	380	200
ELT-200A	0.7	6.7	6.40	27	380	200
ELT-300A	1.3	13.4	4.34	48	380	200
ELT-500A	2.0	20.1	5.49	50	380	200
ELT-800A	3.4	33.5	5.09	85	380	200
ELT-1000A	4.0	40.2	5.46	90	380	200

Consult [www.stanref.com](http://www.stanref.com) or customer service for performance data not shown.





**counterflow condensers**

*Compact. Cleanable.*

### design features & ratings

- Enhanced copper water tubes inside a series of four steel refrigerant tubes
- Ideal for replacement usage in narrow packages
- Threaded water connections for easy pipe fit-up
- Removable end plates allows access to remove mineral scale and sludge deposits
- 6 models, 1½ thru 10 horsepower

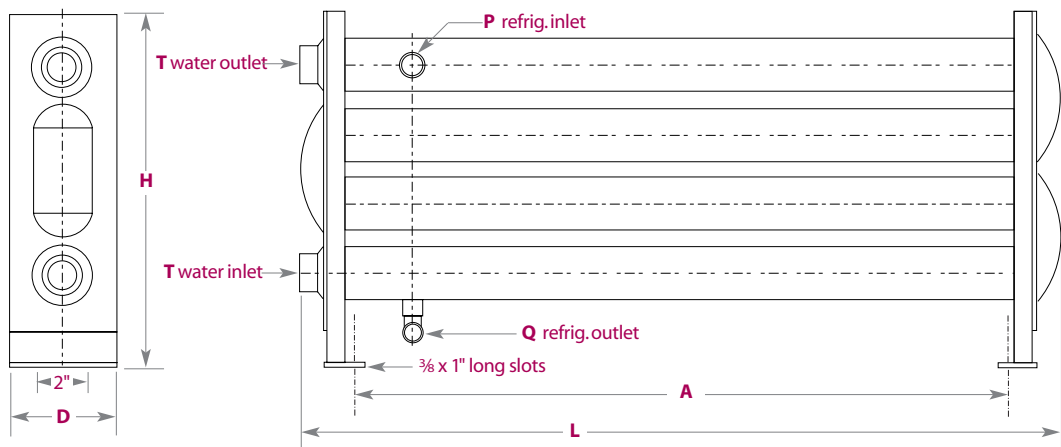
MODELS	Nominal hp	Dimensions (inches)				Connections (inches)		
		D	L	H	A	P (IDS)	Q (IDS)	T (FPT)
KH-1½X	1 ½	4 ¾	21 ¼	13 ½	16 ⅝	½	⅜	½
KH-2X	2	4 ¾	26 ¾	13 ½	21	½	⅜	¾
KH-3X	3	4 ¾	32 ¾	13 ½	27	⅝	½	¾
KH-5X	5 ½	5	32 ¾	16 ¼	27	⅞	⅝	1
KH-7½X	8	5 ½	35 ⅝	17 ¾	27	⅞	⅞	1 ¼
KH-10X	10 ½	5 ½	38 ⅝	17 ¾	33	1 ⅛	⅞	1 ¼

Nominal horsepower per ARI Standard 450-99

◊ Tubing has high performance extended surface

MODELS	Water Pressure Drop (psi)	Waterflow (gpm)		Shipping Weight (lbs)	Working Pressure (psi)	
		Min.	Max.		Shell Side	Tube Side
KH-1½X	1.0	2.5	13	45	420	150
KH-2X	2.2	2.5	13	50	420	150
KH-3X	5.0	5.5	13	60	420	150
KH-5X	7.0	6.0	20	90	420	150
KH-7½X	5.0	5.2	33	124	420	150
KH-10X	5.0	5.0	33	135	420	150

Consult [www.stanref.com](http://www.stanref.com) or customer service for performance data not shown.





### coaxial condensers

Compact Heat pump and water cooler applications.

### design features & ratings

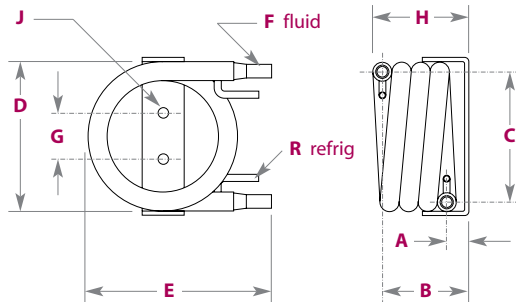
- High efficiency counterflow design
- Ideal for domestic heat pumps, and water coolers
- Replacement models for most manufactures
- Copper and 90/10 Cupronickel tube models stocked
- UL and CSA listed
- 18 coaxial models from, 1/3 to 7 hp

MODELS	Nom'l hp	Dimensions (inches)								Connections		Ship Wt. (lbs)
		A	B	C	D	E	G	H	J	Refrig. R (ods)	Fluid F (ods)	
SCH-04	.33	1.25	4.00	5.75	6.75	9.25	2.50	5.63	.375	.375	.625	5
SCH-06	.50	1.31	5.06	5.75	6.75	9.25	2.50	5.63	.375	.375	.625	8
SCH-09	.75	1.31	6.19	5.88	6.75	9.25	2.50	6.75	.375	.375	.625	9
SCH-12	1.00	1.41	7.28	5.88	6.75	9.25	2.50	7.94	.375	.375	.625	12
SCH-18	1.50	1.31	5.19	11.50	12.50	13.00	6.00	5.88	.500	.500	.625	16
SCS-24	2.00	4.75	3.38	10.00	12.75	14.00	6.00	5.50	.500	.500	.750	25
SCS-30	2.50	4.56	4.00	10.00	12.75	14.00	6.00	5.38	.500	.500	.750	31
SCS-36	3.00	5.00	4.75	11.25	14.50	15.38	6.00	6.50	.500	.625	.875	35
SCS-42	3.50	4.75	4.63	12.50	15.50	16.00	6.00	5.75	.500	.625	.875	37
SCS-48	4.00	6.00	5.13	14.50	17.75	18.50	6.00	6.88	.500	.875	1.125	55
SCS-60	5.00	6.75	5.75	14.63	18.00	19.00	6.00	7.63	.500	.875	1.125	59
SCS-84	7.00	8.13	6.00	15.50	20.50	22.50	6.00	9.63	.500	.875	1.375	75

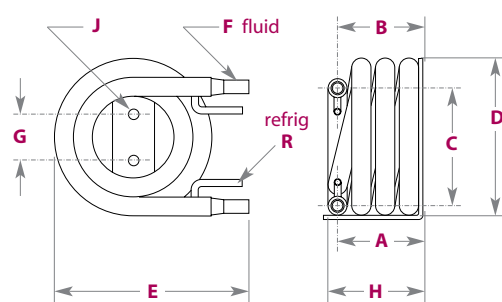
Cupronickel MODELS	Nom'l hp	Dimensions (inches)								Connections		Ship Wt. (lbs)	Working Pressure (psi)	
		A	B	C	D	E	G	H	J	Refrig. R (ods)	Fluid F (ods)		Shell	Tube
SCH-12CN	1.00	1.41	7.28	5.88	6.75	9.25	2.50	7.94	.375	.375	.625	12	450	350
SCH-18CN	1.50	1.31	5.19	11.50	12.50	13.00	6.00	5.88	.500	.500	.750	16	450	350
SCS-24CN	2.00	4.75	3.38	10.00	12.75	14.00	6.00	5.50	.500	.500	.750	25	450	350
SCS-36CN	3.00	5.00	4.75	11.25	14.50	15.38	6.00	6.50	.500	.625	.875	35	450	350
SCS-48CN	4.00	6.00	5.13	14.50	17.75	18.50	6.00	6.88	.500	.875	1.125	55	450	350
SCS-60CN	5.00	6.75	5.75	14.63	18.00	19.00	6.00	7.63	.500	.875	1.125	59	450	350

Nominal HP ratings as per ARI standard 450-99

Helix SCH models



Spiral SCS models





# Condenser Specification Data

Photo Copy and Fax to:  
Standard Sales Department  
708 345 3513  
or via the World Wide Web  
[www.stanref.com/quote.htm](http://www.stanref.com/quote.htm)

## Customer Information

Company \_\_\_\_\_

Contact Name \_\_\_\_\_ Date \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

## Performance

inlet fluid temperature \_\_\_\_\_ °F

condensing refrigerant temperature \_\_\_\_\_ °F

fouling factor (.00025 ARI standard) \_\_\_\_\_

THR \_\_\_\_\_ Btu/hr

refrigerant \_\_\_\_\_

pressure drop \_\_\_\_\_ psi

## Fluid Circulated

water \_\_\_\_\_ %

propylene glycol \_\_\_\_\_ %

sodium chloride (NaCl) \_\_\_\_\_ %

ethylene glycol \_\_\_\_\_ %

calcium chloride (CaCl<sub>2</sub>) \_\_\_\_\_ %

other \_\_\_\_\_ %

*If other, specify properties at inlet temperature*

specific gravity \_\_\_\_\_

thermal conductivity \_\_\_\_\_

viscosity (centipose) \_\_\_\_\_

specific heat \_\_\_\_\_

## Construction

size: width \_\_\_\_\_ length \_\_\_\_\_ height \_\_\_\_\_

materials: shell \_\_\_\_\_ tube \_\_\_\_\_

connections: refrigerant inlet \_\_\_\_\_ refrigerant outlet \_\_\_\_\_

specify ids, fpt,  
flange or flare

fluid inlet \_\_\_\_\_ fluid outlet \_\_\_\_\_

## Application

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# SCH SCS

## Coaxial Style Water Cooled Condensers



### coaxial condensers

Compact Heat pump and water cooler applications.

### design features & ratings

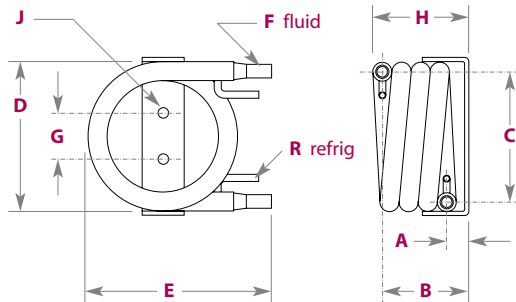
- High efficiency counterflow design
- Ideal for domestic heat pumps, and water coolers
- Replacement models for most manufactures
- Copper and 90/10 Cupronickel tube models stocked
- UL and CSA listed
- 18 coaxial models from, 1/3 to 7 hp

MODELS	Nom'l hp	Dimensions (inches)								Connections		Ship Wt. (lbs)
		A	B	C	D	E	G	H	J	Refrig. R (ods)	Fluid F (ods)	
SCH-04	.33	1.25	4.00	5.75	6.75	9.25	2.50	5.63	.375	.375	.625	5
SCH-06	.50	1.31	5.06	5.75	6.75	9.25	2.50	5.63	.375	.375	.625	8
SCH-09	.75	1.31	6.19	5.88	6.75	9.25	2.50	6.75	.375	.375	.625	9
SCH-12	1.00	1.41	7.28	5.88	6.75	9.25	2.50	7.94	.375	.375	.625	12
SCH-18	1.50	1.31	5.19	11.50	12.50	13.00	6.00	5.88	.500	.500	.625	16
SCS-24	2.00	4.75	3.38	10.00	12.75	14.00	6.00	5.50	.500	.500	.750	25
SCS-30	2.50	4.56	4.00	10.00	12.75	14.00	6.00	5.38	.500	.500	.750	31
SCS-36	3.00	5.00	4.75	11.25	14.50	15.38	6.00	6.50	.500	.625	.875	35
SCS-42	3.50	4.75	4.63	12.50	15.50	16.00	6.00	5.75	.500	.625	.875	37
SCS-48	4.00	6.00	5.13	14.50	17.75	18.50	6.00	6.88	.500	.875	1.125	55
SCS-60	5.00	6.75	5.75	14.63	18.00	19.00	6.00	7.63	.500	.875	1.125	59
SCS-84	7.00	8.13	6.00	15.50	20.50	22.50	6.00	9.63	.500	.875	1.375	75

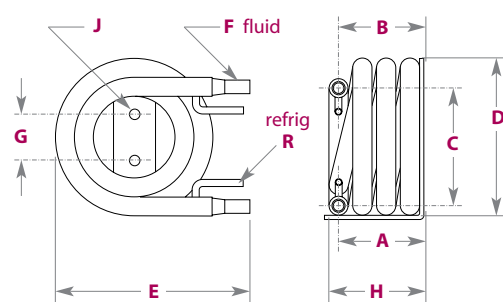
Cupronickel MODELS	Nom'l hp	Dimensions (inches)								Connections		Ship Wt. (lbs)	Working Pressure (psi)	
		A	B	C	D	E	G	H	J	Refrig. R (ods)	Fluid F (ods)		Shell	Tube
SCH-12CN	1.00	1.41	7.28	5.88	6.75	9.25	2.50	7.94	.375	.375	.625	12	450	350
SCH-18CN	1.50	1.31	5.19	11.50	12.50	13.00	6.00	5.88	.500	.500	.750	16	450	350
SCS-24CN	2.00	4.75	3.38	10.00	12.75	14.00	6.00	5.50	.500	.500	.750	25	450	350
SCS-36CN	3.00	5.00	4.75	11.25	14.50	15.38	6.00	6.50	.500	.625	.875	35	450	350
SCS-48CN	4.00	6.00	5.13	14.50	17.75	18.50	6.00	6.88	.500	.875	1.125	55	450	350
SCS-60CN	5.00	6.75	5.75	14.63	18.00	19.00	6.00	7.63	.500	.875	1.125	59	450	350

Nominal HP ratings as per ARI standard 450-99

#### Helix SCH models



#### Spiral SCS models



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## Customer Information

Company \_\_\_\_\_

Contact Name \_\_\_\_\_ Date \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

## Performance

inlet fluid temperature \_\_\_\_\_ °F

condensing refrigerant temperature \_\_\_\_\_ °F

fouling factor (.00025 ARI standard) \_\_\_\_\_

THR \_\_\_\_\_ Btu/hr

refrigerant \_\_\_\_\_

pressure drop \_\_\_\_\_ psi

## Fluid Circulated

water \_\_\_\_\_ %

propylene glycol \_\_\_\_\_ %

sodium chloride (NaCl) \_\_\_\_\_ %

ethylene glycol \_\_\_\_\_ %

calcium chloride (CaCl<sub>2</sub>) \_\_\_\_\_ %

other \_\_\_\_\_ %

*If other, specify properties at inlet temperature*

specific gravity \_\_\_\_\_

thermal conductivity \_\_\_\_\_

viscosity (centipose) \_\_\_\_\_

specific heat \_\_\_\_\_

## Construction

size: width \_\_\_\_\_ length \_\_\_\_\_ height \_\_\_\_\_

materials: shell \_\_\_\_\_ tube \_\_\_\_\_

connections: refrigerant inlet \_\_\_\_\_ refrigerant outlet \_\_\_\_\_

specify ids, fpt,  
flange or flare

fluid inlet \_\_\_\_\_ fluid outlet \_\_\_\_\_

## Application

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# Gasket & Endplates Cross Reference

Condenser	Front Gasket GASKE—	Rear Gasket GASKE—	Front Endplate ENDPL—	Rear Endplate ENDPL—
SST 75A	3156	346	4304	30
*SST 75	337	346	49	30
SST 100A	3163	3149	5040	5026
*SST 100	175	184	67	58
*SST 150	175	184	67	58
SST 200A	3101	3170	5819	76
*SST 200	193	201	85	76
SST 300A	3101	3170	5819	76
*SST 300	193	201	85	76
SST 500A	3118	2584	5938	4047
*SST 500	210	229	120	21
SST 750A	3118	2584	5938	4047
*SST 750	210	229	12	21
SST 755A	3118	2584	5938	4047
*SST 755	238	247	12	21
SST 1000A	1723	2953	6605	4047
*SST 1000	238	247	12	21
SST 1500A	1723	2953	5576	4047
*SST 1501	2977	2584	175	4047
SST 1555A	2591	2984	5907	4180
*SST 1555	256	265	193	184
SST 2005A	2591	2984	5914	4180
*SST 2005	256	265	148	184
SST 2026A	2591	2984	5914	4180
*SST 2026	256	265	148	184
SST 2505A	2591	2984	6205	4180
*SST 2505	256	265	148	184
SST 2527A	2591	2984	6205	4180
*SST 2527	256	265	148	184
SST 3005A	2591	2984	6205	4180
*SST 3005	256	265	148	184
SST 3028A	2591	2984	6205	4180
*SST 3028	256	265	148	184
*SST 30-460M	166	111	166	157
SST 3505A	2591	2984	6205	4180
*SST 35-520M	166	111	201	157
SST 4005A	111	120	210	238
*SST 40-610M	111	120	210	238
SST 4505A	111	120	210	238
*SST 45-680M	111	120	210	238
SST 5005A	111	120	247	238
*SST 50-760M	111	120	210	238
SST 5505A	111	120	247	238
*SST 55-850M	111	120	210	238
SST 6005A	111	120	247	238
*SST 60-940M	111	120	247	238
SST 7005A	111	120	247	238
*SST 70-1060M	111	120	247	238
SST 8005A	111	120	247	238
*SST 80-1200M	111	120	247	238
SST 100-1408A	120	120	2245	2245
*SST 100-1500M	111	120	247	238
SST 120-1408A	120	120	2245	2245
*SST 126-1905M	120	120	3994	3994

Condenser	Front Gasket GASKE—	Rear Gasket GASKE—	Front Endplate ENDPL—	Rear Endplate ENDPL—
SST 150-1410A	120	120	2245	2245
*SST 150-2250M	2254	2254	'H1039	'H1039
SST 200-1412A	120	120	4335	4335
*SST 200-3000M	2263	2263	'H1048	'H1048
*SST 250-3750M	1679	1679	'H1057	'H1057
*SST 300-4500M	1688	1688	'H1066	'H1066
*SST 350-5250M	1688	1688	'H1066	'H1066
*SST 400-6000M	2290	2290	'H1921	'H1921
*SST 500-7500M	2290	2290	'H1921	'H1921
HSE 2	337	346	6412	30
HSE 3	175	184	6717	5026
HSE 5	3718	3170	6229	76
HSE 7	3718	3170	5552	76
HSE 10	3718	3170	5552	76
HSE 15	445	247	5495	21
HSE 20A	2953	2584	5707	4047
*HSE 20	1723	1732	2227	21
HSE 25A	2953	2584	5707	4047
*HSE 25	1723	1732	2227	21
HSE 30A	1741	2984	5583	4180
*HSE 30	1741	1750	2236	4180
HSE 40A	1741	2984	5464	4180
*HSE 40	1741	1750	2236	4180
HSE 50A	1741	2984	5464	4180
*HSE 50	1741	1750	2236	4180
HSE 60	111	120	247	238
HSE 70	111	120	247	238
HSE 80	111	120	247	238
HSE 100	120	120	2245	2245
HSE 125	120	120	2245	2245
HSE 150	2254	2254	'H1039	'H1039
HSE 200	2263	2263	'H1048	'H1048
HSE 250	1679	1679	'H1057	'H1057
HSE 300	1688	1688	'H1066	'H1066
HSE 350	1688	1688	'H1066	'H1066
HSE 400	2290	2290	'H1921	'H1921
HSE 450	2290	2290	'H1921	'H1921
HSE 500	2290	2290	'H1921	'H1921
HP 10	Call Factory			
HP 15	Call Factory			
HP 20	Call Factory			
HP 30	Call Factory			
HP 40	Call Factory			
HP 50	Call Factory			
HP 60	Call Factory			
HP 80	Call Factory			
*CA 050	355	364	2876	2885
*CA 075	238	247	2911	2902
*CA 100	238	247	2911	2902
CA 150	256	265	2920	2948
CA 200	445	247	2894	2902
CA 300	373	265	2939	2948

This chart is to be used for reference purposes only.

For replacement parts contact customer service with your condenser model and serial numbers.

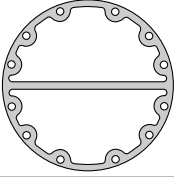
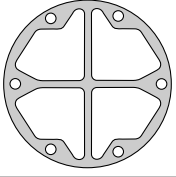
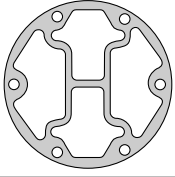
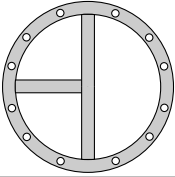
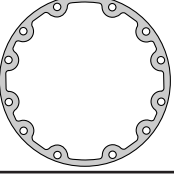
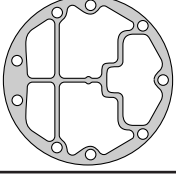
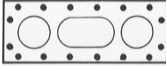
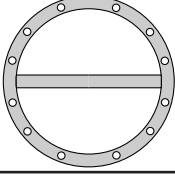
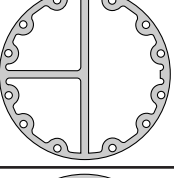
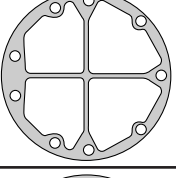

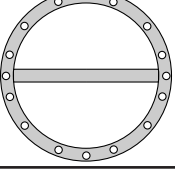
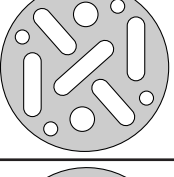
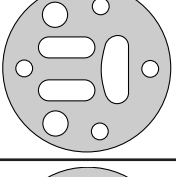
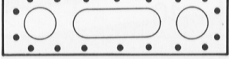
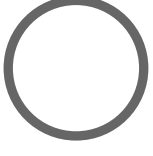
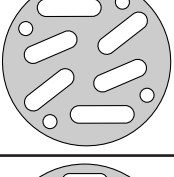
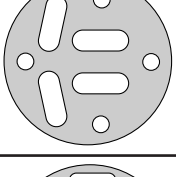

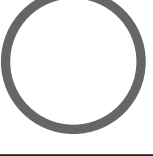
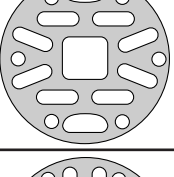
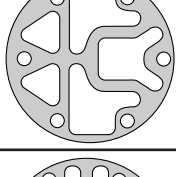
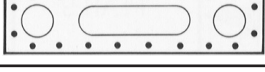
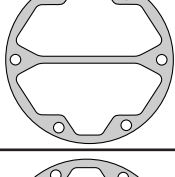
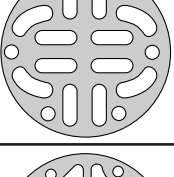
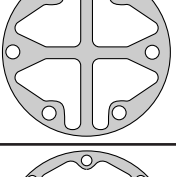

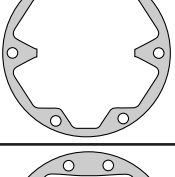
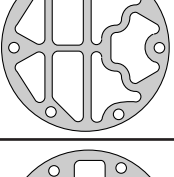
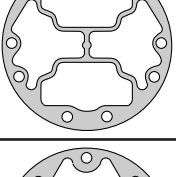
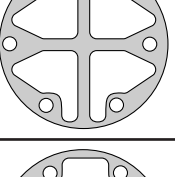
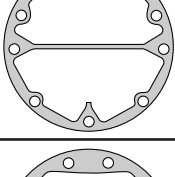
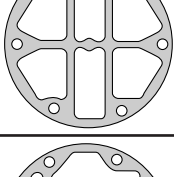
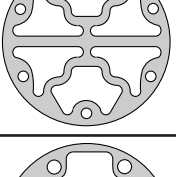
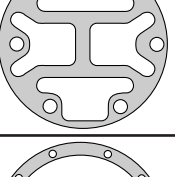
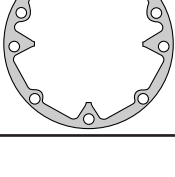
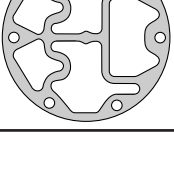
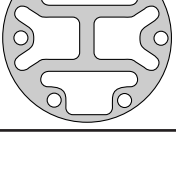
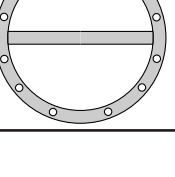
\*Indicates that model is obsolete and no longer manufactured.

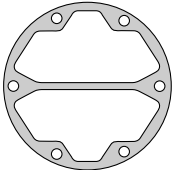
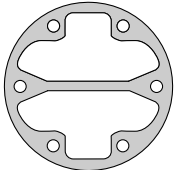

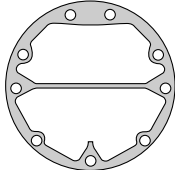
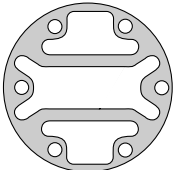

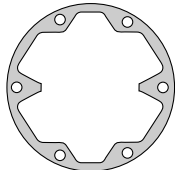
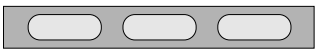
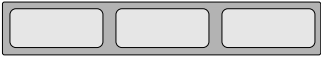
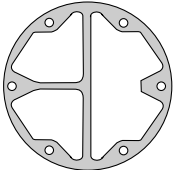

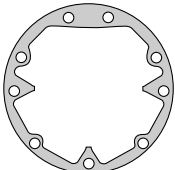
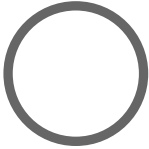
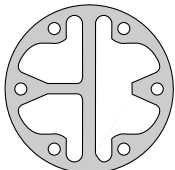
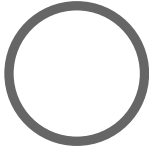
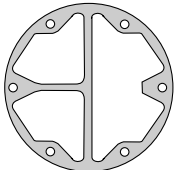
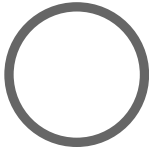
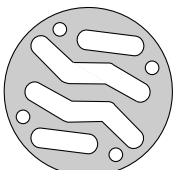

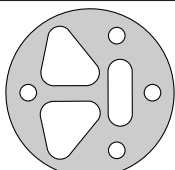

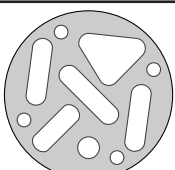
Condenser	Front Gasket GASKE—	Rear Gasket GASKE—	Front Endplate ENDPL—	Rear Endplate ENDPL—
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MSE 200	3163	3149	6436	300
MSE 300	355	364	6386	337
MSE 500	355	364	6386	337
MSE 750	436	364	6281	4461
MSE 1005	436	364	6281	4461
MSE 1500	445	2584	5752	4104
MSE 2005	1723	2953	5752	4104
MSE 2505	1723	2953	5752	4104
MSE 3006	1723	2953	6467	4104
MSE 3305	1741	2984	6481	5114
MSE 4005	1741	2984	6481	5114
MSE 4505	1741	2984	6481	5114
MSE 5005	1741	2984	6481	5114
MSE 6505	111	120	2542	5233
MSE 7505	111	120	2542	5233
MSE 100Hp	4092	4092	120	120
MSE 120Hp	4092	4092	120	120
*MS 100	175	184	328	300
*MS 150	175	184	328	300
*MS 200	355	364	2452	337
*MS 300	355	364	2452	337
*MS 500	382	229	2461	355
*MS 750	382	229	2470	355
*MS 755	445	247	3334	355
*MS 1000	445	247	3334	355
*MS 1500	445	247	2489	355
*MS 1501	1723	2953	2489	4104
*MS 1555	373	265	2498	373
*MS 2005	373	265	2506	373
*MS 2026	373	265	2506	373
*MS 2505	373	265	2506	373
*MS 2527	373	265	2506	373
*MS 3005	373	265	2506	373
*MS 3028	373	265	2506	373
*MS 30 460M	166	111	2524	2597
*MS 35 520M	166	111	2524	2597
*MS 40 610M	111	120	2533	2605
*MS 45 680M	111	120	2533	2605
*MS 50 760M	111	120	2533	2605
*MS 55 850M	111	120	2533	2605
*MS 60 940M	111	120	2533	2605
*MS 70 1060M	111	120	2542	2605
*MS 80 1200M	111	120	2542	2605
*MS 100 1500M	111	120	2542	2605
*MS 120 1901M	120	120	4092	4092
*MS 125 1900M	111	120	2542	2605

Condenser	Front Gasket GASKE—	Rear Gasket GASKE—	Front Endplate ENDPL—	Rear Endplate ENDPL—
(MS Units with Zinc Anode)				
*MS 100Z	175	184	328	4454
*MS 150Z	175	184	328	4454
*MS 200Z	355	364	2452	4461
*MS 300Z	355	364	2452	4461
*MS 500Z	382	229	2461	4478
*MS 750Z	382	229	2470	4478
*MS 755Z	445	247	3334	4478
*MS 1000Z	445	247	3334	4478
*MS 1501Z	1723	2953	2489	4485
*MS 1555Z	373	265	2498	4492
*MS 2005Z	373	265	2506	4492
*MS 2026Z	373	265	2506	4492
*MS 2505Z	373	265	2506	4492
*MS 2527Z	373	265	2506	4492
*MS 3005Z	373	265	2506	4492
*MS 3028Z	373	265	2506	4492
ELT 100A	5057	5064	3055	3073
ELT 150A	5057	5064	3055	3073
ELT 200A	5057	5057	3055	3154
ELT 300A	2191	2209	3253	3280
ELT 500A	2191	2209	3253	3280
ELT 800A	2461	2470	3451	3482
ELT 1000A	2461	2470	3451	3482
*ELT 50	2092	2100	3046	3064
*ELT 75	2092	2100	3046	3064
*ELT 100	2092	2100	3046	3064
*ELT 150	2092	2100	3046	3064
*ELT 200	2092	2092	3424	3424
*ELT 300	2191	2209	3262	3280
*ELT 500	2191	2209	3262	3280
*ELT 800	2461	2470	3475	3482
*ELT 1000	2461	2470	3475	3482
KH 1'/.X	698A	698B	1840	1796
KH 2X	698A	698B	1840	1796
KH 3X	698A	698B	1840	1796
KH 5X	706A	706B	1859	1813
KH 7'/.X	724A	724B	1868	1831
KH 10X	724A	724B	1868	1831

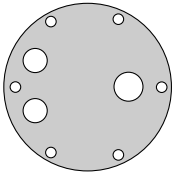
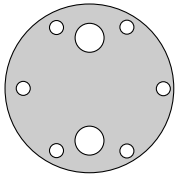
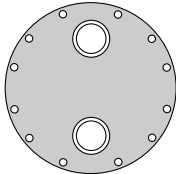
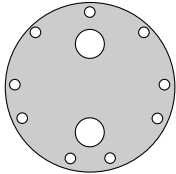
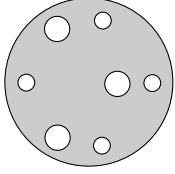
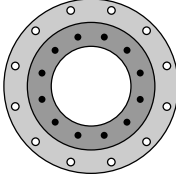
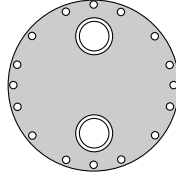
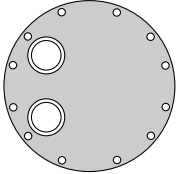
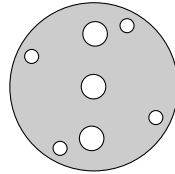
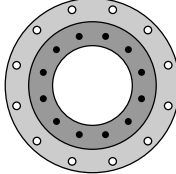
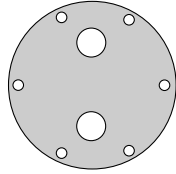
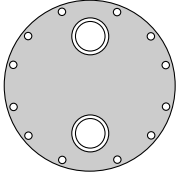
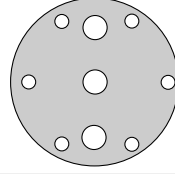
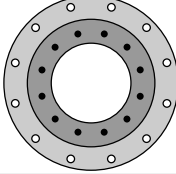
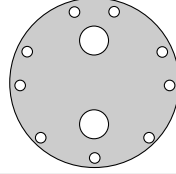
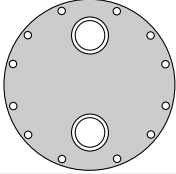
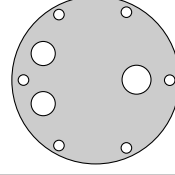
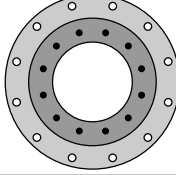
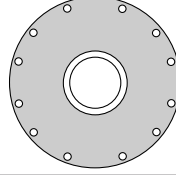
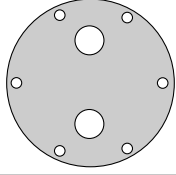
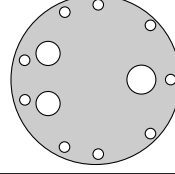
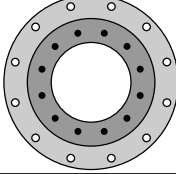
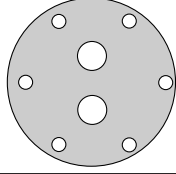
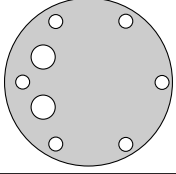
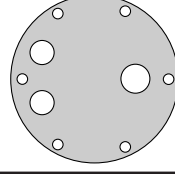
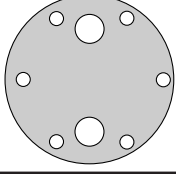
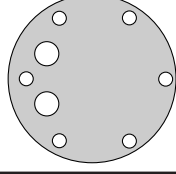
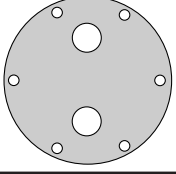
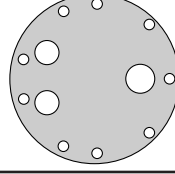
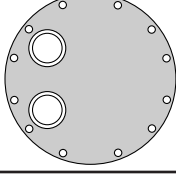
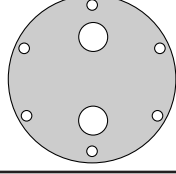
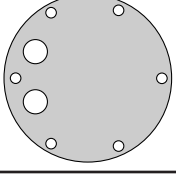
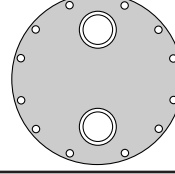
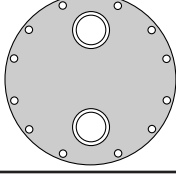
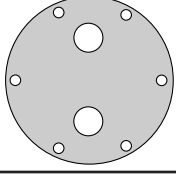
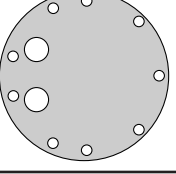
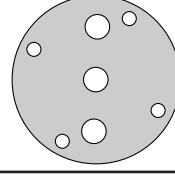
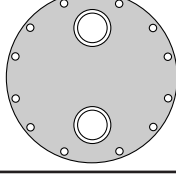
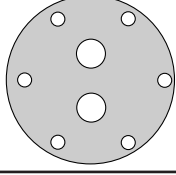
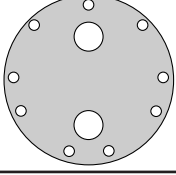
This chart is to be used for reference purposes only.  
 For replacement parts contact customer service with your condenser model and serial numbers.  
 \*Indicates that model is obsolete and no longer manufactured.

# Condenser Gasket ID

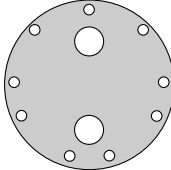
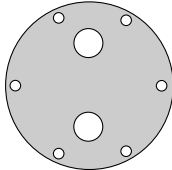
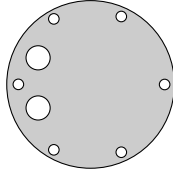
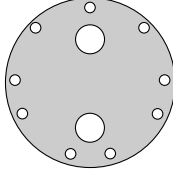
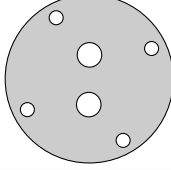
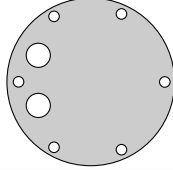
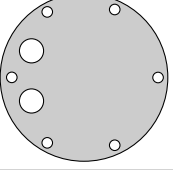
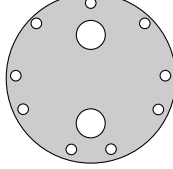
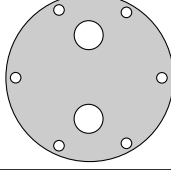
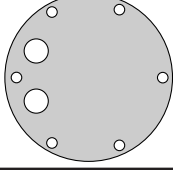
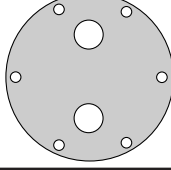
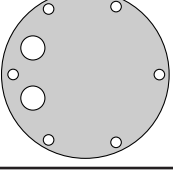
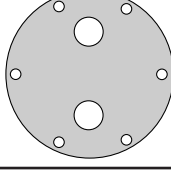
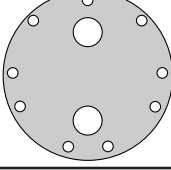
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<b>120</b> 12 3/4" Dia. 12 Studs 	<b>256</b> 10 3/4" Dia. 9 Studs 	<b>698A</b> 	<b>1480</b> 12 3/4" Dia. 12 Studs 
<b>166</b> 12 3/4" Dia. 12 Studs 	<b>265</b> 10 3/4" Dia. 9 Studs 	<b>698B</b> 	<b>1499</b> 14" Dia. 12 Studs 
<b>175</b> 6" Dia. 4 Studs 	<b>337</b> 5" Dia. 4 Studs 	<b>706A</b> 	<b>1679</b> 19 11/16" Dia. 
<b>184</b> 6" Dia. 4 Studs 	<b>346</b> 5" Dia. 4 Studs 	<b>706B</b> 	<b>1688</b> 21 11/16" Dia. 
<b>193</b> 6 5/8" Dia. 6 Studs 	<b>355</b> 6 5/8" Dia. 6 Studs 	<b>724A</b> 	<b>1723</b> 8 5/8" Dia. 6 Studs 
<b>201</b> 6 5/8" Dia. 6 Studs 	<b>364</b> 6 5/8" Dia. 6 Studs 	<b>724B</b> 	<b>1732</b> 8 5/8" Dia. 6 Studs 
<b>210</b> 8 5/8" Dia. 6 Studs 	<b>373</b> 10 3/4" Dia. 9 Studs 	<b>1057</b> 6 5/8" Dia. 6 Studs 	<b>1741</b> 10 3/4" Dia. 9 Studs 
<b>229</b> 8 5/8" Dia. 6 Studs 	<b>382</b> 8 5/8" Dia. 6 Studs 	<b>1066</b> 6 5/8" Dia. 6 Studs 	<b>1750</b> 10 3/4" Dia. 9 Studs 
<b>238</b> 8 5/8" Dia. 6 Studs 	<b>436</b> 6 5/8" Dia. 6 Studs 	<b>1462</b> 10 3/4" Dia. 12 Studs 	<b>2074</b> tube-in-tube gasket No picture available

<p><b>2083</b> tube-in-tube gasket No picture available</p>	<p><b>2584</b> 8 5/8" Dia. 6 Studs</p> 	<p><b>3170</b> 6 5/8" Dia. 6 Studs</p> 	
<p><b>2092</b> 1 3/16" x 9 1/16"</p> 	<p><b>2591</b> 10 3/4" Dia. 9 Studs</p> 	<p><b>3718</b> 6 5/8" Dia. 6 Studs</p> 	
<p><b>2100</b> 1 3/16" x 6 5/16"</p> 	<p><b>2953</b> 8 5/8" Dia. 6 Studs</p> 	<p><b>5057</b> 1 3/16" x 9 1/16"</p> 	
<p><b>2191</b> 2 9/16" x 15 3/4" Dia.</p> 	<p><b>2977</b> 8 5/8" Dia. 6 Studs</p> 		
<p><b>2209</b> 2 9/16" x 15 3/4" Dia.</p> 	<p><b>2984</b> 10 3/4" Dia. 9 Studs</p> 		
<p><b>2254</b> 14 11/16" Dia.</p> 	<p><b>3101</b> 6 5/8" Dia. 6 Studs</p> 		
<p><b>2263</b> 16 11/16" Dia.</p> 	<p><b>3118</b> 8 5/8" Dia. 6 Studs</p> 		
<p><b>2290</b> 25" Dia.</p> 	<p><b>3149</b> 6" Dia. 4 Studs</p> 		
<p><b>2461</b> 3 1/4" x 20 1/4" Dia.</p> 	<p><b>3156</b> 5" Dia. 4 Studs</p> 		
<p><b>2470</b> 3 1/4" x 13 1/2" Dia.</p> 	<p><b>3163</b> 6" Dia. 4 Studs</p> 		

# Condenser Front Endplate ID

<p><b>12</b></p> <p>8 1/2" Dia. 6 Studs</p> 	<p><b>706</b></p> <p>6 5/8" Dia. 6 Studs</p> 	<p><b>2137</b></p> <p>12 3/4" Dia. 12 Studs</p> 	<p><b>2506</b></p> <p>10 3/4" Dia. 9 Studs</p> 
<p><b>49</b></p> <p>5" Dia. 4 Studs</p> 	<p><b>H1039</b></p> <p>17 7/8" Dia.</p> 	<p><b>2155</b></p> <p>14" Dia. 16 Studs</p> 	<p><b>2524</b></p> <p>12 3/4" Dia. 12 Studs</p> 
<p><b>67</b></p> <p>6" Dia. 4 Studs</p> 	<p><b>H1048</b></p> <p>19 7/8" Dia.</p> 	<p><b>2227</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>2533</b></p> <p>12 3/4" Dia. 12 Studs</p> 
<p><b>85</b></p> <p>6 5/8" Dia. 6 Studs</p> 	<p><b>H1057</b></p> <p>22" Dia.</p> 	<p><b>2236</b></p> <p>10 3/4" Dia. 9 Studs</p> 	<p><b>2542</b></p> <p>12 3/4" Dia. 12 Studs</p> 
<p><b>120</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>H1066</b></p> <p>24" Dia.</p> 	<p><b>2245</b></p> <p>12 3/4" Dia. 12 Studs</p> 	<p><b>2678</b></p> <p>8 5/8" Dia. 6 Studs</p> 
<p><b>148</b></p> <p>10 3/4" Dia. 9 Studs</p> 	<p><b>H1921</b></p> <p>28" Dia.</p> 	<p><b>2263</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>2876</b></p> <p>6 5/8" Dia. 6 Studs</p> 
<p><b>175</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>1499</b></p> <p>6 5/8" Dia. 6 Studs</p> 	<p><b>2452</b></p> <p>6 5/8" Dia. 6 Studs</p> 	<p><b>2894</b></p> <p>8 5/8" Dia. 6 Studs</p> 
<p><b>193</b></p> <p>10 3/4" Dia. 9 Studs</p> 	<p><b>2065</b></p> <p>8 5/8" Dia. 12 Studs</p> 	<p><b>2461</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>2911</b></p> <p>8 5/8" Dia. 6 Studs</p> 
<p><b>247</b></p> <p>12 3/4" Dia. 12 Studs</p> 	<p><b>2092</b></p> <p>8 5/8" Dia. 12 Studs</p> 	<p><b>2470</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>2920</b></p> <p>10 3/4" Dia. 9 Studs</p> 
<p><b>328</b></p> <p>6" Dia. 4 Studs</p> 	<p><b>2119</b></p> <p>10 3/4" Dia. 12 Studs</p> 	<p><b>2489</b></p> <p>8 5/8" Dia. 6 Studs</p> 	<p><b>2939</b></p> <p>10 3/4" Dia. 9 Studs</p> 



<b>3334</b> 8 5/8" Dia. 6 Studs 	<b>4278</b> 10 3/4" Dia. 9 Studs 	<b>5752</b> 8-5/8" Dia. 6 Studs 	<b>6467</b> 8-5/8" Dia. 6 Studs 
<b>3868</b> 12 3/4" Dia. 12 Studs 	<b>4292</b> 10 3/4" Dia. 9 Studs 	<b>5819</b> 6-3/4" Dia. 6 Studs 	<b>6481</b> 10-3/4" Dia. 9 Studs 
<b>3901</b> 10 3/4" Dia. 9 Studs 	<b>4328</b> 6" Dia. 4 Studs 	<b>5907</b> 10-3/4" Dia. 9 Studs 	<b>6605</b> 8-5/8" Dia. 6 Studs 
<b>3918</b> 8 5/8" Dia. 6 Studs 	<b>5040</b> 6" Dia. 4 Studs 	<b>5938</b> 8-5/8" Dia. 6 Studs 	<b>6717</b> 6" Dia. 4 Studs 
<b>3956</b> 8 5/8" Dia. 6 Studs 	<b>5464</b> 10-3/4" Dia. 9 Studs 	<b>6205</b> 10-3/4" Dia. 9 Studs 	
<b>4092</b> 12 3/4" Dia. 12 Studs 	<b>5495</b> 8-5/8" Dia. 6 Studs 	<b>6229</b> 6-3/4" Dia. 6 Studs 	
<b>4230</b> 6 5/8" Dia. 6 Studs 	<b>5552</b> 6-3/4" Dia. 6 Studs 	<b>6281</b> 6-5/8" Dia. 6 Studs 	
<b>4247</b> 8 5/8" Dia. 6 Studs 	<b>5576</b> 8-5/8" Dia. 6 Studs 	<b>6386</b> 6-5/8" Dia. 6 Studs 	
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<b>4261</b> 10 3/4" Dia. 9 Studs 	<b>5707</b> 8-5/8" Dia. 6 Studs 	<b>6436</b> 6" Dia. 4 Studs 	

# Chiller Barrels



TX/TXC



ERS/ERD



TXG

## design features & ratings

### Conformance

Standard chiller barrels 6" and smaller OD shell are U.L. listed.

Models with 6 5/8" and larger shell are constructed to ASME Boiler and Pressure Vessel Code Section VIII, Div. 1.

ERS/ERD Models are rated at 300 psi tube side and 200 psi shell side (non-code). Each model is tested before shipment and ratings are developed through extensive laboratory testing and computer modeling.

### Nominal Tonnage Rating Basis

Nominal ratings are based on ARI standard 480, specific conditions being:

1 ton = 12,000 Btu/hr	100° F. liquid entering TXV
54° F. inlet water	7° superheat
44° F. outlet water	35° F R22 Saturated Suction
0.0001 ft <sup>2</sup> hr° F/Btu fouling factor	

### Sizing by Nominal Tons

Sizing by nominal tons is done according to ARI standards. Chillers can be selected on a nominal system tons basis, as shown in the catalog, or reflected in the model name. For example, a TXC50-2 is a nominal 50 ton dual-circuit barrel. This method is reasonably accurate for sizing air-conditioning systems. However, it is not recommended for evaporating temperature below 34° F, or when the fluids used are other than water and R-22. All heat exchangers have capacity limits and careless sizing of chiller barrels leads to needless performance problems. Undersizing can lead to insufficient cooling and inefficient compressor operation. Oversizing can lead to control valve hunting, poor performance, oil logging, and refrigerant slugging. When your application varies from nominal air-conditioning conditions, such as brine, low-temperature and process cooling applications, utilize Standard Refrigeration's selection software or evaporator performance tables, which can be obtained at [www.stanref.com](http://www.stanref.com) or from customer service.

### Limitations

1. For cooling water applications a minimum evaporating temperature of 32°F. should be maintained in the evaporator to prevent freezing.
2. Maximum water entering temperature of 70°F.
3. Minimum outgoing water temperature of 36°F.
4. Minimum approach 5° (for approaches 6° or less, system should be designed to insure proper oil return).

Note: For brine, low temperature and special design applications, please consult factory.

Note: Do not exceed maximum stated flow rate.

### Technical Assistance and Custom Designs

Standard offers custom design services and computer performance projections on all heat exchange products to help you match product and application accurately. You are invited to contact your nearest sales representative or our office headquarters for prompt assistance.

# Chiller Barrel Sizing

Selecting the proper chiller barrel for your application depends on four basic sizing considerations:

## Range

The desired temperature drop of the fluid measured as the difference between incoming and -outgoing fluid temperatures.

## Approach

The desired temperature difference between outgoing fluid and the refrigerant evaporating temperature.

## Pressure Drop

Acceptable level of fluid pressure drop through the chiller barrel at computed gallons per minute (gpm) flow rate.

## Capacity

Necessary heat removal (tonnage) at maximum operating load

After determining fluid temperature drop (Range), find the capacity table identified for the particular range. (If no table exists for that specific point, use the next lowest temperature range for which a table exists.) At the top of the table, various approach temperatures are given. Find the approach desired and read down the tons column until you reach a capacity adequate to do the job. The water pressure drop (psi) is listed next to the capacity figure. To determine gpm, multiply tons by the gpm factor, which is noted below each range chart.

Chiller barrels may be sized by other methods as well. Where the desired temperature range is known (difference between incoming and outgoing fluid), determine the Btu/hr capacity needed by multiplying the temperature range by gpm flow and convert to pounds of water per hour using the multiplier 500.

$$\text{Range} \times \text{gpm} \times 500 = \text{Btu/hr}$$

Another sizing method is by compressor capacity. Manufacturer curves showing compressor Btu/hr values serve as a simple guideline for selecting chiller barrels for a given system.

Also, Standard chiller barrels are rated to ARI standards and can be selected on a nominal system tons basis using the capacity charts in this catalog. This method, however, is recommended only for high temperature (air conditioning) systems.

## Fluid Nozzle Location

The standard fluid nozzle location is on the right as you are facing the refrigerant connections. Special top, and left side connections can be ordered.

TX2 through TX20 have top side nozzle location as standard.

## Technical Assistance and Custom Designs

Standard offers custom design services and computer performance projections on all heat exchange products to help you match product and application accurately. You are invited to contact your nearest sales representative or our office headquarters for prompt assistance.

## Note on Refrigerant R410a Applications

Due to the high working pressures of Refrigerant R410a. Any Chiller Barrel product in our catalog must be customized to conform to ASME construction. Please contact customer service for quotation.

# selecting the right evaporator

## Sizing the right Evaporator (Chiller Barrel)

### Sizing by Nominal Tons

There are three basic selection methods you can use to size a chiller barrel. The first and easiest is to size by nominal system tons. The second method is to use compressor capacity. The third and recommended method is sizing by range, flow and approach.

Sizing by nominal tons is done according to ARI standards. Chiller barrels can be selected on a nominal system ton basis, as shown in the catalog model specifications, or it can be reflected in the model name. For example, a TXC50-2 is a nominal 50 ton dual-circuit chiller barrel.

Nominal ton ratings are based on the conditions of ARI Standard 480 utilizing R-22, which are:

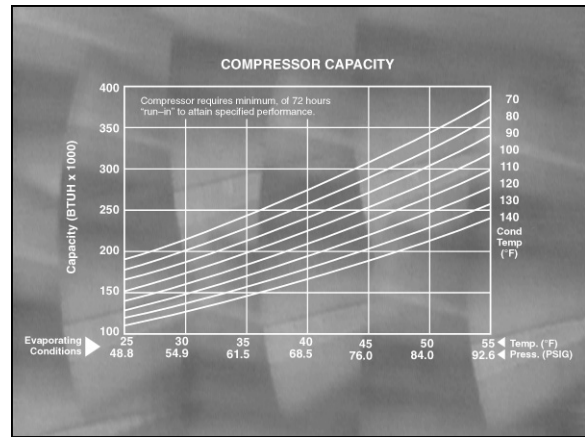
- 54 degrees F water in
- 44 degrees F water out
- 35 degrees F refrigerant evaporating temperature
- 7 degrees superheat
- 0.0001 additive fouling factor
- 100 degrees F liquid refrigerant entering the flow control

This method is reasonably accurate for sizing air-conditioning systems, or high back pressure systems. However, it is not recommended for evaporating temperatures below 34 degrees F, or when the fluids used are other than water and R-22.

**ARI standard**

- 54°F water inlet
- 44°F water outlet
- 35°F refrigerant
- 7° superheat
- 0.0001 additive fouling
- 100°F liquid refrigerant

## Sizing by Compressor Capacity



You may also size by compressor capacity. Compressor manufacturer performance data of Btu per hour can be used to select chiller barrels for a given system. By reading the performance curves of the compressor at the conditions that you require, you can determine the maximum capacity chiller barrel you will need.

### Sizing by Range and Flow

The most precise way to size a chiller barrel when water is used is by the range and flow rate as seen in the formula:

$$\text{Btu/hr capacity} = \text{Range} \times \text{gpm} \times 500$$

**Btu/hr capacity**  
**=**  
**Range x gpm x 500**

To obtain the Btu per hour capacity, just multiply the Range or Temperature Drop by gpm flow, and convert to pounds of water per hour by multiplying by 500. The Btu's can then be divided by 12,000 to yield the tons of load.

With an incoming water temperature of 55° F., outgoing water temperature of 45° F., and a 479 gpm water flow. Btu capacity can be calculated like this:

$$(55^\circ - 45^\circ) \times 479 \text{ gpm} \times 500 = 2,395,000 \text{ Btu/hr}$$
$$2,395,000 \text{ Btu/hr (divided by) } 12,000 \text{ Btu/ton} = 199.5 \text{ tons}$$

Standard's sales catalog is designed to make your selection job easy after you have determined the cooling load. Once fluid range has been determined, locate the table for that range. If no table exists, use the next lowest range.

Next, locate an acceptable approach at the top of the table and read down the tons column to the capacity that is adequate for the job.

The water pressure drop in psi is listed to the right. To determine gpm multiply tons by the gpm factor at the bottom of each range chart. To determine gpm multi-

ply tons by the gpm factor at the bottom of each range chart.

In cases where the fluid being cooled is other than water, capacity can be determined by adding the specific heat and specific gravity into the equation:

$$\text{Btu/hr} = \text{Range} \times \text{gpm} \times 500 \times \text{Sp Heat} \times \text{Sp Gravity}$$

This equation will give you the capacity required, but chiller selection should be made by your factory representative since the fluid is not water.

All of Standard's rating data is based on ARI standards, a suction temperature 35° F, using water as the fluid. Contact via email at [customer\\_service@stanref.com](mailto:customer_service@stanref.com) or phone 708-345-5400 for a Standard representative for special fluid conditions.

All heat exchangers have capacity limits. Careless sizing of chiller barrels leads to needless performance problems.

Undersizing can lead to insufficient cooling and inefficient compressor operation.

Oversizing can lead to control valve hunting, poor performance, oil logging, and refrigerant slugging.

# TX/TXC

## Compact Serviceable Chiller Barrels



compact serviceable  
chiller barrels

### design features & ratings

MODELS	Circuits	Nominal Tons**		Connections				Specifications				Working Pressure (psig)		
		clean	fouled	Ref. In (ids)	Ref. Out (ids)	W Fluid Conn.	T (ft)	Fluid Volume (gal)	Tube Length (inches)	Shell Diameter (inches)	Shipping Weight (lbs)	Shell Side	Tube Side	
<b>1-CIRCUIT</b>														
TX2-1	1	2.8	2.2	5/8	7/8	1 <sub>FPT</sub>	3/8	0.4	24	2 3/4	46	225	225	
TX3-1	1	3.8	2.9	5/8	7/8	1 <sub>FPT</sub>	3/8	0.4	24	2 3/4	50	225	225	
TX5-1	1	6.0	4.8	5/8	1 1/8	1 1/4 <sub>FPT</sub>	1/2	1.6	36	4	62	225	225	
TX6-1	1	8.7	7.1	5/8	1 1/8	1 1/2 <sub>FPT</sub>	1/2	1.5	36	4	64	225	225	
TX7 1/2-1	1	9.5	7.8	7/8	1 5/8	1 1/2 <sub>FPT</sub>	1/2	1.4	36	4	66	225	225	
TX10-1	1	11.9	11.0	7/8	1 5/8	2 <sub>FPT</sub>	1/2	1.2	36	4	70	225	225	
TX12-1	1	15.8	13.0	7/8	1 5/8	2 <sub>FPT</sub>	1/2	3.4	36	6	120	225	225	
TX15-1	1	20.2	16.5	1 1/8	2 1/8	2 1/2 <sub>FPT</sub>	1/2	3.2	36	6	128	225	225	
TX20-1	1	23.9	19.7	1 1/8	2 1/8	3 <sub>FPT</sub>	1/2	2.9	36	6	136	225	225	
TX25-1	1	26.9	22.3	1 1/8	2 5/8	3 <sub>FPT</sub>	1/2	2.6	36	6	142	225	150	
TXC30-1	1	32.1	30.0	1 1/8	2 5/8	3 <sub>MPT</sub>	3/4	9.3	72	6 5/8	414	300	150	
TXC40-1	1	42.8	40.0	1 3/8	2 5/8	3 <sub>MPT</sub>	3/4	17.5	72	8 5/8	563	300	150	
TXC50-1	1	53.7	50.0	1 3/8	3 1/8	4" <sub>FLANGE</sub>	3/4	17.1	72	8 5/8	594	300	150	
TXC60-1	1	64.3	60.0	1 5/8	3 1/8	4" <sub>FLANGE</sub>	3/4	19.8	84	8 5/8	642	300	150	
TXC75-1	1	80.7	75.0	2 1/8	3 1/8	5" <sub>FLANGE</sub>	3/4	19.5	84	8 5/8	671	300	150	
TXC100-1	1	124.7	110.0	2 1/8	3 5/8	5" <sub>FLANGE</sub>	3/4	28.4	84	10 3/4	1070	225	150	
TXC120-1	1	136.8	120.0	2 1/8	3 5/8	6" <sub>FLANGE</sub>	3/4	26.9	84	12 3/4	1080	225	150	

### 2-CIRCUIT

TX10-2	2	11.9	11.0	5/8	1 1/8	2 <sub>FPT</sub>	1/2	1.2	36	4	70	225	225
TX12-2	2	15.8	13.0	5/8	1 1/8	2 <sub>FPT</sub>	1/2	3.4	36	6	120	225	225
TX15-2	2	20.2	16.5	7/8	1 5/8	2 1/2 <sub>FPT</sub>	1/2	3.2	36	6	128	225	225
TX20-2	2	23.9	19.7	7/8	1 5/8	3 <sub>FPT</sub>	1/2	2.9	36	6	136	225	225
TX25-2	2	26.9	22.3	7/8	1 5/8	3 <sub>FPT</sub>	1/2	2.6	36	6	142	225	225
TXC30-2	2	32.1	30.0	7/8	1 5/8	3 <sub>MPT</sub>	3/4	9.3	72	6 5/8	404	300	150
TXC40-2	2	42.8	40.0	1 1/8	2 1/8	3 <sub>MPT</sub>	3/4	17.5	72	8 5/8	556	300	150
TXC50-2	2	53.7	50.0	1 1/8	2 1/8	4" <sub>FLANGE</sub>	3/4	17.1	72	8 5/8	581	300	150
TXC60-2	2	64.3	60.0	1 1/8	2 5/8	4" <sub>FLANGE</sub>	3/4	19.8	84	8 5/8	634	300	150
TXC75-2	2	80.7	75.0	1 3/8	2 5/8	5" <sub>FLANGE</sub>	3/4	19.5	84	8 5/8	662	300	150
TXC100-2	2	124.7	110.0	1 3/8	3 1/8	5" <sub>FLANGE</sub>	3/4	28.4	84	10 3/4	1070	225	150
TXC120-2	2	136.8	120.0	1 3/8	3 1/8	6" <sub>FLANGE</sub>	3/4	26.9	84	12 3/4	1080	225	150
TXC150-2	2	173.0	152.3	1 3/8	2 5/8	6" <sub>FLANGE</sub>	3/4	34.0	84	14	1600	225	150
TXC175-2	2	198.0	174.5	1 3/8	2 5/8	6" <sub>FLANGE</sub>	3/4	31.0	84	14	1700	225	150
TXC200-2	2	242.0	212.9	1 3/8	3 1/8	8" <sub>FLANGE</sub>	3/4	42.0	84	16	2100	225	150
TXC250-2	2	284.0	251.1	1 3/8	3 1/8	8" <sub>FLANGE</sub>	3/4	39.0	84	16	2200	225	150
TXC275-2	2	309.0	273.5	2 1/8	4 1/8	8" <sub>FLANGE</sub>	3/4	54.0	84	18	2600	225	150
TXC300-2	2	361.0	319.7	2 1/8	3 5/8	8" <sub>FLANGE</sub>	3/4	73.0	84	20	2800	225	150
TXC500-2	2	573.0	505.5	2 1/8	4 1/8	10" <sub>FLANGE</sub>	3/4	101.0	84	24	3600	225	150

### MULTI-CIRCUIT

TX15-3	3	22.1	18.1	5/8	1 1/8	2 1/2 <sub>FPT</sub>	1/2	8.4	72	6	145	225	225
TX20-4	4	26.7	24.6	5/8	1 1/8	3 <sub>FPT</sub>	1/2	8.1	72	6	155	225	225

\*\*Clean ratings: As tested per ARI standard 480-01

Fouled ratings: Include a additive fouling coefficient of 0.0001 ft<sup>2</sup> hr<sup>2</sup> F/Btu over clean rating per ARI standard 480-01

- Serviceable
- 30% - 50% smaller than comparable models
- Easier to handle and position
- New advanced design
- UL listed or ASME

- 3/4" insulation
- Single and dual circuit designs
- 3 and 4 circuit designs available
- 21 TX/TXC models from 2 thru 500 tons
- Ideal for OEM replacements

### MODELS

#### 1-CIRCUIT

	Dimensions (Inches)															
	D	H	L	A	B	C	E	F	G	I	J	K	M	N	O	Fig.
TX2-1	4	6 1/16	28 1/4	2 1/8	21 7/8	3 1/2	23 5/8	3/8	2 1/2	2 1/2	3 7/8	3/4	11/16	-	-	A
TX3-1	4	6 1/16	28 1/4	2 1/8	21 7/8	3 1/2	23 5/8	3/8	2 1/2	2 1/2	3 7/8	3/4	11/16	-	-	A
TX5-1	5 1/2	8	40 1/4	2 5/16	33 11/16	3 1/2	35 5/8	3/8	3	3 1/2	5	15/16	3/4	-	-	A
TX6-1	5 1/2	8	40 1/4	2 7/16	33 9/16	3 1/2	35 5/8	3/8	3	3 1/2	5	15/16	3/4	-	-	A
TX7 1/2-1	5 1/2	8	40 1/4	2 7/16	33 9/16	3 1/2	35 5/8	3/8	3	3 1/2	5	1 1/16	15/16	-	-	A
TX10-1	5 1/2	8	40 1/4	2 13/16	33 3/16	3 1/2	35 5/8	3/8	3	3 1/2	5	1 1/16	15/16	-	-	A
TX12-1	7 3/4	10	41 1/4	2 15/16	33 1/16	4 1/2	35 1/2	1/2	3	5 3/4	6	1 3/16	15/16	-	-	A
TX15-1	7 3/4	11	41 1/4	3 3/16	32 13/16	4 1/2	35 1/2	1/2	3	5 3/4	6	1 1/2	1	-	-	A
TX20-1	7 3/4	11	41 1/4	3 1/2	32 1/2	4 1/2	35 1/2	1/2	3	5 3/4	6	1 1/2	1	-	-	A
TX25-1	7 3/4	11	41 1/4	3 1/2	32 1/2	4 1/2	35 1/2	1/2	3	5 3/4	6	1 1/2	1 1/4	-	-	A
TXC30-1	10 3/8	13 1/2	81 3/4	4 1/4	67 3/4	8	54	18	3	5 1/4	-	1 3/4	1 3/4	-	-	B
TXC40-1	11 5/8	15 1/2	81 3/4	4 1/2	67 1/2	8	54	18	3	7 1/8	-	2 1/8	1 2/3	-	-	B
TXC50-1	11 5/8	15 1/2	81 3/4	4 3/4	67 1/4	8	54	18	3	7 1/8	-	2 1/4	2 3/8	-	-	B
TXC60-1	11 5/8	15 1/2	93 3/4	4 3/4	79 1/4	8	63	21	3	7 1/8	-	2 1/4	2 3/8	-	-	B
TXC75-1	11 5/8	15 1/2	93 3/4	5 1/2	78 1/2	8	63	21	3	7 1/8	-	2 1/4	2 3/8	-	-	B
TXC100-1	16 5/8	19 5/8	94 7/8	5 3/4	78 1/4	8 3/8	63	21	5	11 1/4	-	2 4/9	2 3/4	-	-	B
TXC120-1	16 5/8	19 5/8	94 7/8	6 3/8	77 5/8	8 3/8	63	21	5	11 1/4	-	2 4/9	2 3/4	-	-	B

#### 2-CIRCUIT

TX10-2	5 1/2	8	40 1/4	2 13/16	33 3/16	3 1/2	35 5/8	3/8	3	3 1/2	5	11/16	15/16	3/4	1	C
TX12-2	7 3/4	10	41 1/4	2 15/16	33 1/16	4 1/2	35 1/2	1/2	3	5 3/4	6	1	3/4	1 1/8	1 1/8	C
TX15-2	7 3/4	11	41 1/4	3 3/16	32 13/16	4 1/2	35 1/2	1/2	3	5 3/4	6	1 3/16	7/8	1 1/4	1 1/4	C
TX20-2	7 3/4	11	41 1/4	3 1/2	32 1/2	4 1/2	35 1/2	1/2	3	5 3/4	6	1 3/16	7/8	1 1/4	1 1/4	C
TX25-2	7 3/4	11	41 1/4	3 1/2	32 1/2	4 1/2	35 1/2	1/2	3	5 3/4	6	1 3/16	7/8	1 1/4	1 1/4	C
TXC30-2	10 3/8	13 1/2	81 3/4	4 1/4	67 3/4	8	54	18	3	5 1/4	-	1 1/2	1 1/2	1 3/4	1 3/4	D
TXC40-2	11 5/8	15 1/2	81 3/4	4 1/2	67 1/2	8	54	18	3	7 1/8	-	1 3/4	1 5/8	2	2	D
TXC50-2	11 5/8	15 1/2	81 3/4	4 3/4	67 1/4	8	54	18	3	7 1/8	-	1 3/4	1 5/8	2	2	D
TXC60-2	11 5/8	15 1/2	93 3/4	4 3/4	79 1/4	8	63	21	3	7 1/8	-	1 3/4	1 5/8	2	2	D
TXC75-2	11 5/8	15 1/2	93 3/4	5 1/2	78 1/2	8	63	21	3	7 1/8	-	1 3/4	1 5/8	2	2	D
TXC100-2	16 5/8	19 5/8	94 7/8	5 3/4	78 1/4	8 3/8	63	21	3	11 1/4	-	2 3/8	2 2/3	2 1/4	3 1/8	D
TXC120-2	16 5/8	19 5/8	94 7/8	6 3/8	77 5/8	8 3/8	63	21	3	11 1/4	-	2 3/8	2 2/3	2 1/4	3 1/2	D
TXC150-2	18 5/8	20 7/8	96 5/8	6 3/8	77 5/8	9 3/8	63	21	5 1/2	12	-	2 5/8	2 5/8	3	3	D
TXC175-2	18 5/8	20 7/8	96 5/8	6 3/8	77 5/8	9 3/8	63	21	5 1/2	12	-	2 5/8	2 5/8	3	3	D
TXC200-2	21	24 1/8	96 5/8	7 1/2	76 1/2	9 3/8	63	21	5 1/2	12	-	2 5/8	2 5/8	3 1/3	3 1/3	D
TXC250-2	21	24 1/8	96 5/8	7 1/2	76 1/2	9 3/8	63	21	5 1/2	12	-	2 5/8	2 5/8	3 1/3	3 1/3	D
TXC275-2	23	24 7/8	96 7/8	7 1/2	76 1/2	9 3/8	63	21	5 1/2	12	-	3	3	4	4	D
TXC300-2	25	26 7/8	96 7/8	7 1/2	76 1/2	9 3/8	63	21	5 1/2	12	-	3 3/4	3 3/4	4 1/4	4 1/4	D
TXC400-2	25	26 7/8	96 7/8	8 5/8	75 3/8	9 3/8	63	21	5 1/2	12	-	3 3/4	3 3/4	4 1/4	4 1/4	D
TXC500-2	29	31 1/8	97 1/8	8 5/8	75 3/8	9 3/8	63	21	5 1/2	12	-	3 1/2	3 1/2	4 5/8	4 5/8	D

#### MULTI-CIRCUIT

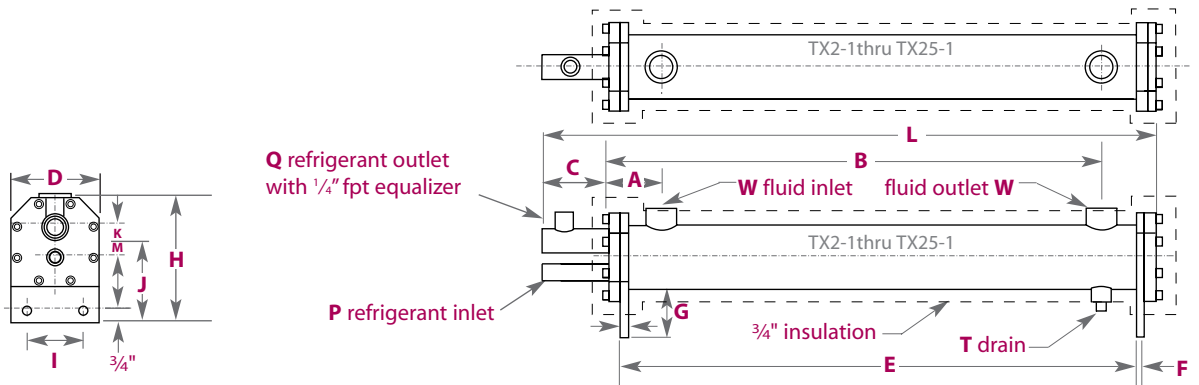
TX15-3	7 3/4	9 7/8	81	3 13/16	68 13/16	4 1/2	72	1/2	3	5 3/4	6	2 1/8	1 5/8	na	na	E
TX20-4	7 3/4	9 7/8	81	3 3/8	68 5/8	4 1/2	72	1/2	3	5 3/4	6	1 5/8	1	13/16	7/8	F

Other multi-circuit models available, consult with factory.

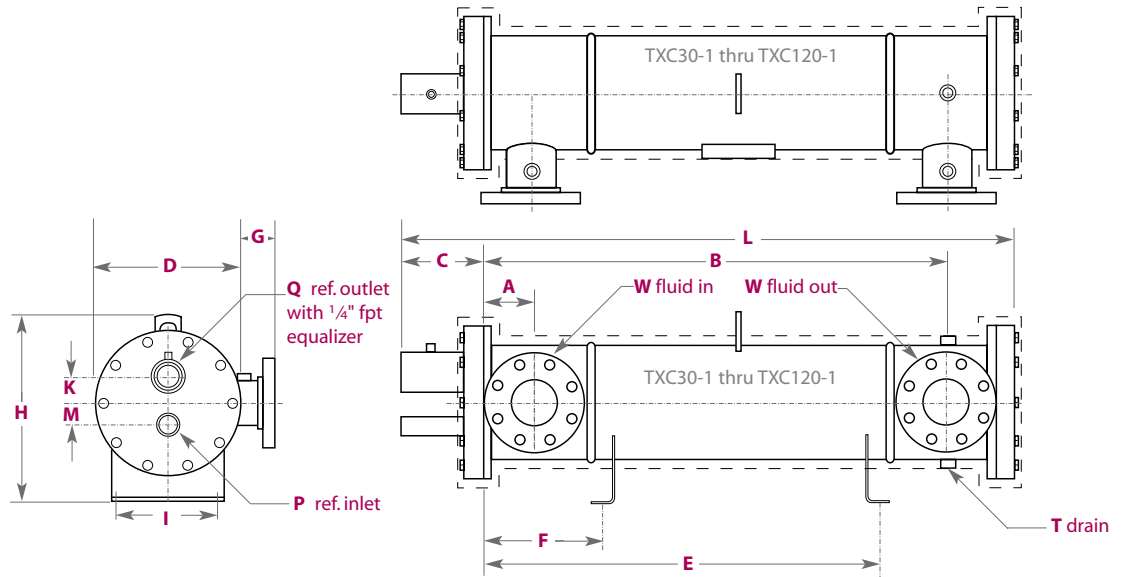
# TX/TXC

## Compact Serviceable Chiller Barrels

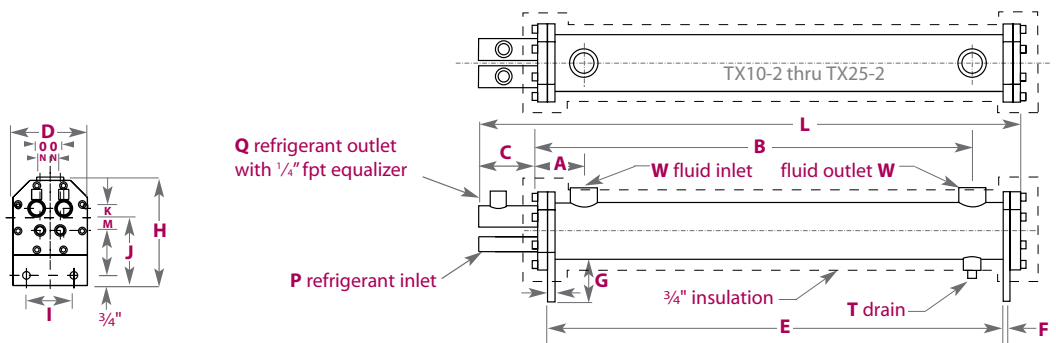
**Figure A**  
1-Circuit



**Figure B**  
1-Circuit



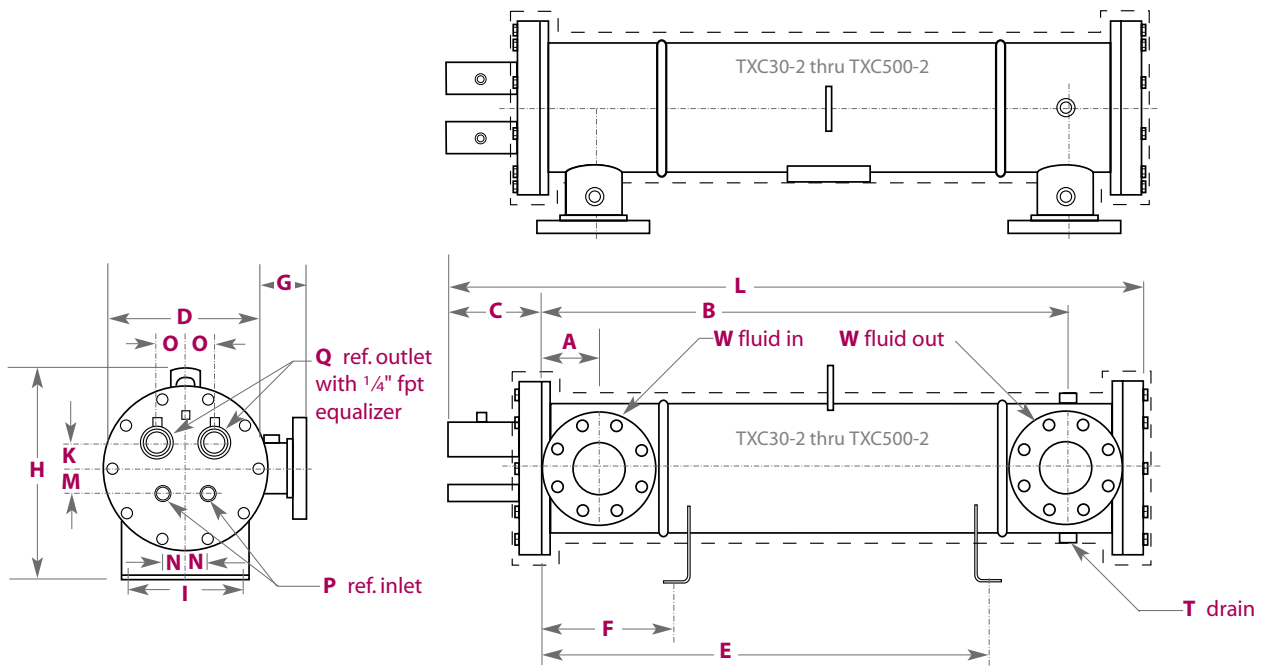
**Figure C**  
2-Circuit



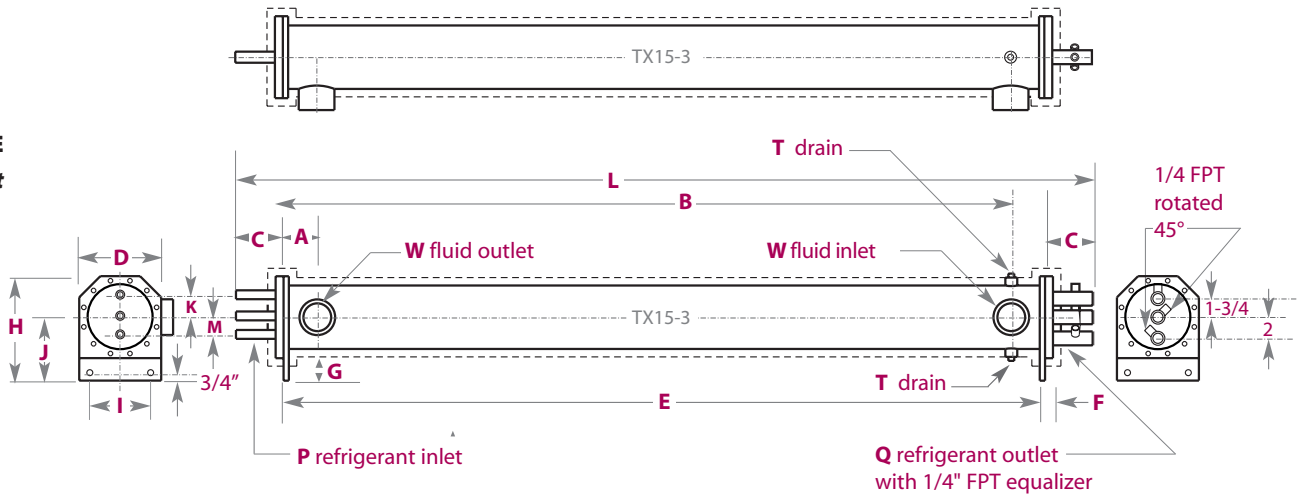
Dimensions shown do not include the 3/4" factory insulation.



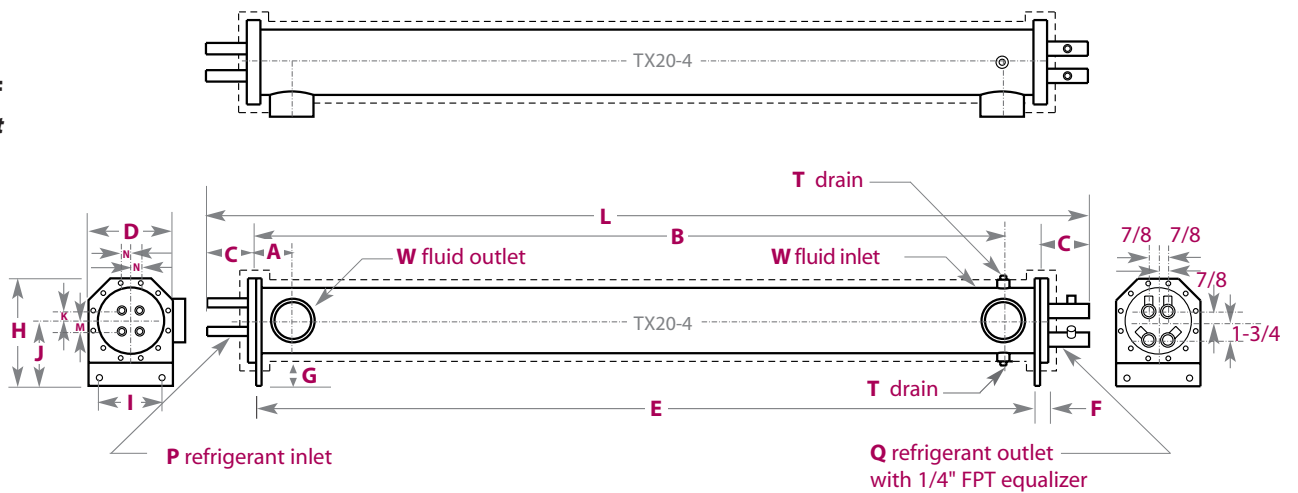
**Figure D**  
**2-Circuit**



**Figure E**  
**3-Circuit**



**Figure F**  
**4-Circuit**



# TX/TXC capacities R-22 & water

## 6° Range

0.0001 additive fouling

TX2  
TX3  
TX5  
TX6  
TX7½  
TX10  
TX12  
TX15\*  
TX20\*  
TX25

TXC30  
TXC40  
TXC50  
TXC60  
TXC75  
TXC100  
TXC120  
TXC150  
TXC175  
TXC200  
TXC250  
TXC275  
TXC300  
TXC400  
TXC500

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
0.4	0.4	0.8	1.5	1.5	4.8										
0.5	0.4	1.0	1.3	1.9	4.3										
0.9	0.6	3.4	8.2												
1.3	0.6														
1.7	0.8	5.5	6.9	6.5	9.4										
		7.0	11.6												
		9.3	4.9												
3.5	0.8	11.7	8.1												
		14.0	9.0	16.5	12.3										
		15.9	8.5	18.8	11.6										
13.0	3.0	19.2	6.2	23.8	9.3	27.4	12.1								
17.3	2.6	25.6	5.4	31.7	8.1	36.5	10.5	40.3	12.8						
23.1	3.1	32.6	5.8	39.8	8.5	45.7	11.1								
25.7	2.4	38.8	5.2	48.1	7.8	55.4	10.2								
33.2	2.7	48.3	5.4	59.5	8.0	68.5	10.4								
43.0	2.8	63.7	5.9	78.7	8.8	90.6	11.5								
51.1	2.7	76.7	5.8	95.2	8.7	109.6	11.4								
69.3	4.1	98.1	7.9	119.9	11.6										
77.8	3.1	114.6	6.4	141.5	9.5										
		127.7	5.5	158.6	8.3	182.8	10.9								
119.7	5.3	165.4	9.8												
136.0	6.0	184.3	10.6												
145.8	5.2	200.5	9.4												
194.4	5.2	268.9	9.5												
240.0	4.9	332.8	9.2												

to determine GPM multiply tons by 4.0

\*Consult factory for TX15-3 and TX20-4 performance data.

# TX/TXC capacities R-22 & water

## 8° Range

0.0001 additive fouling

TX2  
TX3  
TX5  
TX6  
TX7½  
TX10  
TX12  
TX15\*  
TX20\*  
TX25

TXC30  
TXC40  
TXC50  
TXC60  
TXC75  
TXC100  
TXC120  
TXC150  
TXC175  
TXC200  
TXC250  
TXC275  
TXC300  
TXC400  
TXC500

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
0.5	0.3	0.9	1.1	1.5	3.0										
0.6	0.3	1.2	1.0	2.0	2.7	2.9	5.4								
		3.5	5.0	4.1	6.7	4.7	8.7								
4.3	3.8	5.2	5.3	6.0	7.0										
		5.7	4.2	6.6	5.7	7.6	7.4	8.6	9.4						
		7.1	7.0	8.3	9.4	9.6	12.3								
5.8	1.2			11.0	3.9	12.7	5.1								
8.7	2.7	12.0	5.0	14.0	6.6	16.1	8.6								
		14.3	5.4	16.7	7.3	19.3	9.5	21.9	12.1						
		16.1	5.1	18.9	6.9	21.8	9.0	24.8	11.5	28.0	14.4				
13.8	1.9	19.4	3.7	23.8	5.4	27.2	7.0	30.1	8.5	32.6	9.8	34.7	11.0	36.2	12.0
		25.8	3.2	31.7	4.7	36.3	6.1	40.1	7.3	43.5	8.5	46.2	9.6	48.2	10.4
24.4	2.0	33.0	3.5	39.9	5.0	45.6	6.4	50.0	7.6	54.0	8.8	57.2	9.9	59.4	10.6
27.4	1.6	39.0	3.1	48.0	4.5	55.1	5.9	61.1	7.1	66.2	8.3	70.5	9.3	73.6	10.2
35.3	1.7	48.8	3.2	59.5	4.7	68.2	6.0	75.2	7.2	81.3	8.4	86.4	9.4	90.0	10.2
45.8	1.8	64.2	3.5	78.6	5.1	90.1	6.6	99.6	8.0	107.8	9.3	114.7	10.4	119.7	11.3
54.3	1.8	77.3	3.4	95.0	5.1	109.0	6.6	120.8	8.0	130.9	9.3	139.4	10.4	145.6	11.3
73.3	2.7	99.3	4.7	120.1	6.7	137.5	8.7	150.7	10.4	162.8	12.0				
82.8	2.0	115.6	3.8	141.4	5.5	162.1	7.1	179.0	8.6	193.8	10.0	206.1	11.2	214.8	12.2
89.6	1.6	128.4	3.2	157.9	4.8	181.5	6.2	201.6	7.6	218.4	8.8	232.8	10.0	243.4	10.9
127.0	3.5	168.1	5.9	201.5	8.3	229.8	10.6	250.9	12.6						
144.8	3.9	187.7	6.4	223.3	8.9	253.5	11.3								
154.9	3.4	203.8	5.7	243.8	7.9	277.8	10.1	303.2	12.0						
206.3	3.4	273.1	5.7	327.5	8.0	373.7	10.3	408.0	12.2						
254.7	3.2	337.9	5.5	405.6	7.8	463.0	10.0	505.6	11.8						

to determine GPM multiply tons by 3.0

\*Consult factory for TX15-3 and TX20-4 performance data.

# TX/TXC capacities R-22 & water

## 10° Range

0.0001 additive fouling

TX2  
TX3  
TX5  
TX6  
TX7-1/2  
TX10  
TX12  
TX15  
TX20  
TX25

TXC30  
TXC40  
TXC50  
TXC60  
TXC75  
TXC100  
TXC120  
TXC150  
TXC175  
TXC200  
TXC250  
TXC275  
TXC300  
TXC400  
TXC500

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
0.6	0.3	1.0	0.9	1.6	2.2	2.1	3.6	2.5	4.9						
0.7	0.3	1.3	0.8	2.1	1.9	2.9	3.6	3.4	4.8	3.9	6.4				
3.1	2.6	3.6	3.5	4.2	4.6	4.8	6.0	5.5	7.5	6.1	9.2				
4.5	2.7	5.3	3.7	6.2	4.8	7.0	6.2	7.9	7.8						
4.6	1.9	5.8	2.9	6.7	3.9	7.7	5.0	8.7	6.3	9.7	7.7	10.8	9.3		
4.6	2.0	7.2	4.7	8.5	6.3	9.7	8.2	11.0	10.4	12.3	12.7				
6.8	1.1	9.6	2.0	11.2	2.7	12.9	3.5	14.5	4.4	16.2	5.4				
10.0	2.3	12.3	3.4	14.3	4.5	16.4	5.9	18.5	7.4	20.7	9.0				
9.9	1.8	14.6	3.7	17.0	4.9	19.5	6.4	22.0	8.1	24.6	9.9	27.2	12.0	29.9	14.3
9.3	1.2	16.3	3.4	19.1	4.6	21.9	6.0	24.8	7.6	27.8	9.3	30.8	11.3	33.8	13.5
14.6	1.4	19.7	2.5	23.9	3.6	27.3	4.6	30.0	5.5	32.4	6.4	34.4	7.1	36.0	7.8
19.4	1.2	26.2	2.2	31.8	3.1	36.3	4.0	40.0	4.8	43.1	5.5	45.8	6.2	47.9	6.7
25.8	1.4	33.6	2.4	40.2	3.3	45.8	4.3	50.0	5.0	53.7	5.7	56.9	6.4	59.1	6.9
28.9	1.1	39.5	2.1	48.1	3.0	55.0	3.8	60.8	4.7	65.6	5.4	69.8	6.0	73.2	6.6
37.1	1.3	49.5	2.2	59.8	3.1	68.3	4.0	75.0	4.7	80.8	5.5	85.8	6.1	89.5	6.6
48.3	1.3	65.0	2.4	78.9	3.4	90.1	4.4	99.4	5.2	107.1	6.0	113.8	6.8	118.9	7.3
57.4	1.3	78.2	2.3	95.3	3.3	108.9	4.3	120.4	5.2	129.8	6.0	138.1	6.7	144.7	7.4
77.3	1.9	101.0	3.2	120.9	4.5	138.0	5.8	150.7	6.8	162.1	7.8	171.6	8.7	178.4	9.4
87.1	1.5	117.2	2.5	141.9	3.7	162.2	4.7	178.6	5.6	192.5	6.5	204.4	7.3	213.6	7.9
94.7	1.2	129.9	2.2	158.4	3.2	181.3	4.1	200.8	5.0	216.7	5.7	230.6	6.4	241.8	7.0
133.9	2.5	171.3	4.0	203.2	5.5	230.8	7.0	251.2	8.3	269.5	9.4	285.0	10.5	295.2	11.2
150.5	2.8	191.5	4.4	225.7	5.9	254.9	7.5	277.1	8.8	296.7	10.0	312.7	11.0	323.6	11.7
162.7	2.4	207.8	3.9	246.1	5.3	279.0	6.7	303.7	7.9	325.6	9.0	344.0	10.0	356.2	10.7
217.6	2.4	278.5	3.9	330.4	5.4	375.2	6.8	408.4	8.0	438.2	9.2	463.4	10.2	480.0	10.9
268.9	2.3	344.5	3.7	409.0	5.2	464.8	6.6	506.1	7.7	543.1	8.8	574.4	9.8	595.2	10.5

to determine GPM multiply tons by 2.4

\*Consult factory for TX15-3 and TX20-4 performance data.

# TX/TXC Btu/hr capacities R-22 & water

## 12° Range

0.0001 additive fouling

TX2  
TX3  
TX5  
TX6  
TX7-1/2  
TX10  
TX12  
TX15  
TX20  
TX25

TXC30  
TXC40  
TXC50  
TXC60  
TXC75  
TXC100  
TXC120  
TXC150  
TXC175  
TXC200  
TXC250  
TXC275  
TXC300  
TXC400  
TXC500

APPROACH TEMPERATURE °F																
5		6		7		8		9		10		11		12		
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	
0.7	0.3	1.1	0.8	1.7	1.6	2.1	2.6	2.5	3.4	2.8	4.4					
0.8	0.2	1.4	0.7	2.1	1.4	2.9	2.5	3.3	3.4	3.8	4.4	4.4	5.6	4.8	6.8	
3.2	1.9	3.7	2.6	4.3	3.4	4.9	4.3	5.5	5.4	6.1	6.5	6.7	7.9	7.3	9.3	
4.6	2.0	5.5	2.7	6.3	3.6	7.1	4.5	8.0	5.6	8.9	6.8	9.8	8.2			
5.0	1.6	5.9	2.2	6.9	2.8	7.8	3.6	8.8	4.5	9.7	5.5	10.7	6.6	11.7	7.8	
5.2	1.8	7.4	3.5	8.6	4.6	9.7	5.9	10.9	7.3	12.2	9.0	13.5	10.8	14.8	12.8	
7.6	0.9	9.8	1.5	11.4	2.0	12.9	2.5	14.5	3.1	16.2	3.8	17.8	4.6	19.6	5.4	
10.7	1.9	12.6	2.5	14.6	3.3	16.6	4.2	18.6	5.3	20.6	6.4	22.8	7.7	24.9	9.1	
11.2	1.6	14.9	2.7	17.2	3.6	19.6	4.6	22.0	5.7	24.5	7.0	27.0	8.4	29.6	10.0	
10.8	1.1	16.6	2.5	19.3	3.3	21.9	4.3	24.7	5.3	27.5	6.5	30.4	7.9	33.4	9.4	
15.2	1.1	20.0	1.8	24.0	2.6	27.2	3.2	29.9	3.9	32.2	4.5	34.2	5.0	35.8	5.5	
20.3	1.0	26.6	1.6	31.9	2.2	36.2	2.8	39.8	3.4	42.8	3.9	45.5	4.3	47.7	4.7	
27.0	1.1	34.2	1.7	40.4	2.4	45.8	3.0	49.8	3.5	53.5	4.0	56.6	4.5	58.9	4.8	
30.2	0.9	40.0	1.5	48.3	2.1	54.8	2.7	60.5	3.3	65.1	3.8	69.3	4.2	72.8	4.6	
38.9	1.0	50.3	1.6	60.1	2.2	68.2	2.8	74.7	3.3	80.3	3.8	85.2	4.3	89.1	4.6	
50.5	1.0	66.1	1.7	79.3	2.4	89.9	3.1	98.8	3.7	106.4	4.2	113.0	4.7	118.3	5.2	
60.0	1.0	79.3	1.7	95.6	2.4	108.5	3.0	119.6	3.6	128.9	4.2	137.1	4.7	143.9	5.2	
81.1	1.5	102.9	2.4	121.8	3.2	137.9	4.1	150.1	4.8	161.3	5.5	170.7	6.1	177.7	6.6	
91.2	1.1	119.0	1.9	142.6	2.6	161.7	3.3	177.6	4.0	191.2	4.5	203.1	5.1	212.5	5.6	
99.1	0.9	131.7	1.6	159.1	2.3	180.6	2.9	199.4	3.5	215.0	4.0	228.9	4.5	240.4	4.9	
138.5	1.9	174.7	3.0	205.0	4.0	231.0	5.0	250.6	5.8	268.6	6.7	283.8	7.4	294.2	7.9	
156.1	2.1	195.5	3.2	228.0	4.3	255.4	5.3	276.7	6.2	295.9	7.0	312.0	7.8	322.7	8.3	
168.4	1.8	212.0	2.8	248.4	3.8	279.4	4.8	303.0	5.6	324.5	6.3	342.8	7.0	355.1	7.5	
225.1	1.9	283.8	2.9	333.3	3.9	375.5	4.9	407.3	5.7	436.7	6.5	461.5	7.2	478.4	7.7	
278.2	1.8	351.1	2.8	412.5	3.7	465.1	4.7	504.7	5.5	541.2	6.2	571.9	6.9	593.2	7.4	

to determine GPM multiply tons by 2.0

\*Consult factory for TX15-3 and TX20-4 performance data.

# TX/TXC Btu/hr capacities R-22 & water

## 15° Range

0.0001 additive fouling

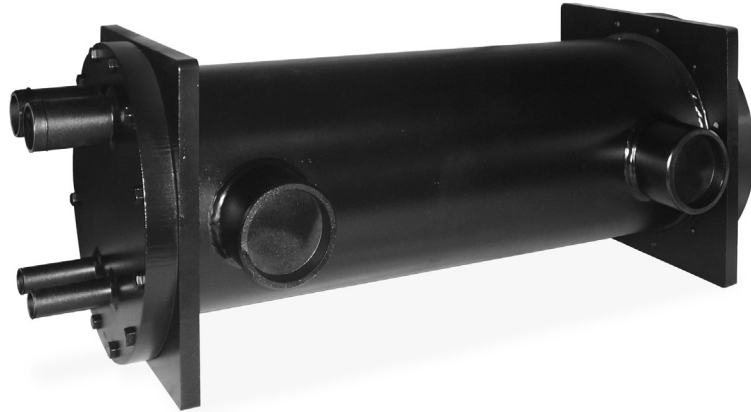
TX2  
TX3  
TX5  
TX6  
TX7½  
TX10  
TX12  
TX15\*  
TX20\*  
TX25

TXC30  
TXC40  
TXC50  
TXC60  
TXC75  
TXC100  
TXC120  
TXC150  
TXC175  
TXC200  
TXC250  
TXC275  
TXC300  
TXC400  
TXC500

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
0.8	0.3	1.2	0.6	1.7	1.1	2.1	1.7	2.4	2.2						
		1.5	0.5	2.2	1.0	2.8	1.6	3.3	2.2						
3.3	1.4	3.9	1.8	4.4	2.3	5.0	2.9	5.5	3.6						
4.8	1.4	5.6	1.9	6.4	2.5	7.2	3.1	8.1	3.8						
5.2	1.1	6.1	1.5	7.0	1.9	7.9	2.4	8.8	3.0						
5.8	1.5	7.5	2.4	8.6	3.1	9.8	3.9	10.9	4.8						
8.4	0.7	10.0	1.0	11.5	1.3	13.0	1.7	14.5	2.0						
11.1	1.3	12.9	1.8	14.8	2.3	16.7	2.8	18.7	3.5						
12.4	1.3	15.1	1.9	17.4	2.4	19.6	3.1	22.0	3.8						
12.1	0.9	16.8	1.7	19.3	2.2	21.9	2.8	24.6	3.5						
16.0	0.8	20.2	1.2	23.9	1.7	27.0	2.1	29.7	2.5						
		26.9	1.1	31.9	1.5	36.0	1.8	39.5	2.2						
28.0	0.8	34.7	1.2	40.5	1.6	45.7	2.0	49.6	2.3						
		40.4	1.0	48.2	1.4	54.4	1.8	60.0	2.1						
40.8	0.7	51.0	1.1	60.1	1.5	67.8	1.8	74.2	2.2						
53.0	0.8	66.8	1.2	79.2	1.6	89.4	2.0	98.1	2.4						
62.9	0.7	80.1	1.1	95.4	1.6	107.8	2.0	118.7	2.4						
84.0	1.1	104.3	1.6	122.0	2.1	137.5	2.7	149.4	3.1						
95.7	0.8	120.3	1.3	142.5	1.7	160.9	2.2	176.4	2.6						
		132.9	1.1	158.6	1.5	179.3	1.9	197.9	2.3						
144.0	1.4	177.4	2.0	205.8	2.7	230.9	3.3	249.9	3.8						
162.6	1.5	199.0	2.2	229.3	2.9	255.7	3.5	276.3	4.1						
175.2	1.3	215.4	1.9	249.5	2.5	279.4	3.1	302.2	3.6						
233.9	1.3	288.3	1.9	334.6	2.6	375.3	3.2	406.2	3.7						
289.0	1.3	356.6	1.9	414.0	2.5	464.8	3.1	503.2	3.6						

to determine GPM multiply tons by 1.6

\*Consult factory for TX15-3 and TX20-4 performance data.



## Finally, a Shell and Tube Evaporator that Can Go Toe-to-Toe with the Competition.

Standard's TXG shell and tube evaporator series boasts a mere 3 foot tube length through 130 nominal tons of capacity, and up to 190 tons at 3-1/2 foot tube length. They are designed tough and made in the USA. And, unlike some other heat exchanger companies ratings, TXG evaporators are tested in accordance with ARI standard 480-95.

### Durability

- Shell and tube design is more resistant to localized freeze-ups
- Shell and tube design resists process fluid residuals from clogging up the evaporator and premature failure
- Legendary ease of field servicing

### Flexibility

- Wide range of new, retrofit or replacement air conditioning and refrigeration applications
- Unique combination of compactness and full rated performance
- Circuit options and ease of mounting fit your new product designs or older models
- TXG evaporators can be matched with their new HSG water-cooled condensers – allowing the packaged chiller designer a modular water-cooled line of unprecedented compactness, without sacrificing ease of service or cleaning

### Performance

- Shell and tube evaporators can be optimized for a wide variety of application temperatures and fluid conditions
- TXG evaporators can be used with common refrigerants such as R22 and R134a and customized for use with other HFC's including R410A
- Shell and tube evaporators can be optimized to achieve approach temperatures as low as 5 degrees F, thus providing system designers improved kw/ton performance from their chiller packages

Get the facts! Compare “compact” heat exchanger geometry and efficiency before you buy another evaporator. You'll save space and increase performance with Standard's value-engineered shell and tube products. And be sure to check out our website for all the information you need on this and any other of our full-line of heat exchange and pressure vessel products at [www.stanref.com](http://www.stanref.com).



### design features & ratings

MODELS	Nom'l. Press.			Dimensions (inches)						Water In & Out (grooved)	Refrig. Inlet (ids)	Refrig. Outlet (ids)	Shipping Weight (lbs)	Working Pressure (psi)		
	Cap. Tons	Drop (psi)	Shell Dia	A	B	C	D	E	F					Shell Side	Tube Side	
<b>1-CIRCUIT</b>																
TXG30-1	30	6.0	8.625	42.69	27.50	7.81	7.81	5.94	11.88	3(fpt)	1.125	2.125	320	225	150	
TXG40-1	40	5.8	10.75	42.94	27.50	8.88	8.88	7.13	14.25	3(fpt)	1.375	2.625	440	225	150	
TXG50-1	50	6.9	10.75	42.56	26.50	8.88	8.88	7.13	14.25	4	1.375	2.625	460	225	150	
TXG60-1	60	5.8	12.75	43.50	26.50	9.88	9.88	8.44	16.88	4	1.625	3.125	610	225	150	
TXG70-1	70	6.3	12.75	43.19	26.00	9.88	9.88	8.44	16.88	5	1.625	3.125	620	225	150	
TXG85-1	85	4.9	14	43.25	26.00	11.50	11.50	8.94	17.88	5	1.625	3.125	840	225	150	
TXG100-1	100	5.5	16	43.94	25.50	12.50	12.50	10.06	20.12	5	2.125	3.625	1190	225	150	
TXG115-1	115	5.9	16	43.31	24.38	12.50	12.50	10.06	20.12	6	2.125	3.625	1210	225	150	
TXG130-1	130	6.4	18	43.87	24.38	13.50	13.50	11.13	22.25	6	1.625	3.625	1540	225	150	
TXG150-1	150	6.4	18	50.94	30.38	13.50	13.50	11.12	22.25	6	1.625	3.625	1610	225	150	
TXG190-1	190	4.0	20	51.69	35.19	14.50	14.50	12.13	24.25	8	1.625	4.125	1920	225	150	

TXG30-2	30	6.0	8.625	42.69	27.50	7.81	7.81	5.94	11.88	3 (fpt)	0.875	1.625	323	225	150
TXG40-2	40	5.8	10.75	42.94	27.50	8.88	8.88	7.13	14.25	3 (fpt)	0.875	1.625	444	225	150
TXG50-2	50	6.9	10.75	42.56	26.50	8.88	8.88	7.13	14.25	4	1.125	2.125	464	225	150
TXG60-2	60	5.8	12.75	43.50	26.50	9.88	9.88	8.44	16.88	4	1.125	2.125	616	225	150
TXG70-2	70	6.3	12.75	43.19	26.00	9.88	9.88	8.44	16.88	5	1.125	2.625	626	225	150
TXG85-2	85	4.9	14	43.25	26.00	11.50	11.50	8.94	17.88	5	1.375	2.625	848	225	150
TXG100-2	100	5.5	16	43.94	25.50	12.50	12.50	10.06	20.12	5	1.375	2.625	1201	225	150
TXG115-2	115	5.9	16	43.31	24.38	12.50	12.50	10.06	20.12	6	1.375	3.125	1221	225	150
TXG130-2	130	6.4	18	43.87	24.38	13.50	13.50	11.13	22.25	6	1.625	3.125	1555	225	150
TXG150-2	150	6.4	18	50.94	30.38	13.50	13.50	11.12	22.25	6	1.625	3.125	1625	225	150
TXG190-2	190	4.0	20	51.69	35.19	14.50	14.50	12.13	24.25	8	1.625	3.625	1938	225	150

\*Flanged Connections Available Upon Request

Insulation Available Upon Request

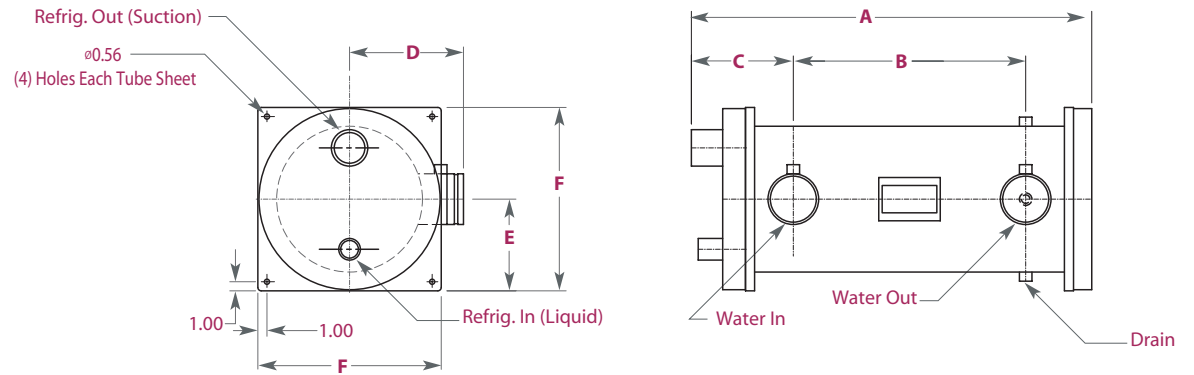
Ratings in accordance with ARI standard 480-95



- Rivals Brazed Plates for Compactness
- Accurate ratings to ARI 480-95
- More resistant to localized freeze-ups
- Design resists clogging and premature failure

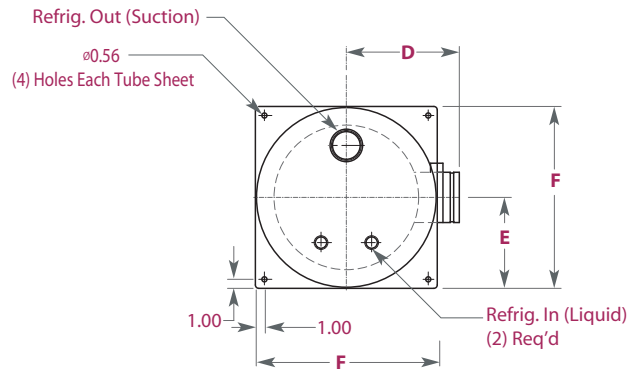
- Single and dual circuit designs
- 22 TXG models from 30 to 190 tons
- Ideal for OEM replacements
- Serviceable

### 1-Circuit

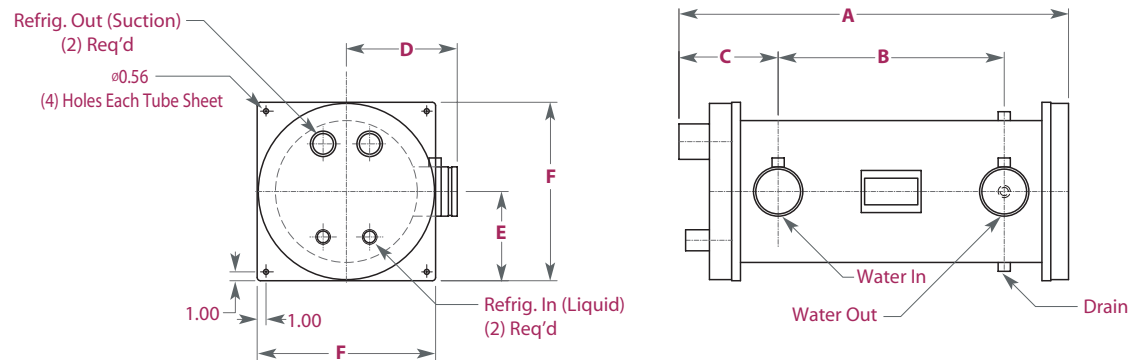


### 1-Circuit Models

**TXG 130-1, TXG 150-1 & TXG190-1 Only**



### 2-Circuit



# TXG capacities R-22 & water

## 6° Range

0.0001 additive fouling

TXG30  
TXG40  
TXG50  
TXG60  
TXG70  
TXG85  
TXG100  
TXG115  
TXG130  
TXG150  
TXG190

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
10.5	1.8	14.6	3.4	18.1	5.0	22.7	7.9	27.1	10.9	31.4	14.7	34.6	17.6	40.3	23.9
3.8	1.9	19.0	3.6	24.1	5.7	31.0	9.2	36.9	13.0	42.1	16.6	47.1	20.6	54.2	26.9
17.5	2.4	24.9	4.8	30.6	7.0	37.9	10.7	45.2	14.8	52.4	19.9	57.7	23.8	66.4	31.3
20.3	1.9	29.2	3.8	36.2	5.6	45.9	8.9	55.3	13.0	63.0	16.6	70.5	20.6	81.0	26.9
24.4	2.2	34.1	4.2	42.2	6.2	52.9	9.8	64.5	14.3	73.4	18.3	82.0	22.7	94.2	29.7
28.8	1.4	40.6	2.6	50.4	4.0	63.6	6.3	76.8	9.0	89.0	12.1	98.1	14.5	114.2	19.7
33.8	1.8	47.7	3.5	60.2	5.5	74.9	8.4	92.1	12.6	104.9	16.0	117.4	19.9	134.9	26.1
40.1	2.0	56.0	3.7	68.7	5.6	86.1	8.6	103.9	12.2	120.3	16.4	132.7	19.6	152.7	25.7
45.3	2.3	63.3	4.4	76.4	6.3	97.2	10.0	117.2	14.2	133.6	18.2	149.6	22.8	172.2	29.9
59.8	3.0	79.0	5.0	94.0	7.0	116.2	10.6	138.5	15.0	156.7	19.1	172.3	22.8	194.8	28.8
73.8	1.7	99.9	2.9	118.9	4.1	147.2	6.2	175.7	8.7	198.9	11.1	218.8	13.2	247.5	16.8

## 8° Range

0.0001 additive fouling

TXG30  
TXG40  
TXG50  
TXG60  
TXG70  
TXG85  
TXG100  
TXG115  
TXG130  
TXG150  
TXG190

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
12.8	1.5	16.5	2.4	19.5	3.4	24.1	5.0	28.5	7.0	32.3	8.8	36.0	10.9	40.3	13.7
16.5	1.6	21.9	2.8	26.0	3.8	32.1	5.7	38.0	7.9	43.8	10.4	48.2	12.3	54.5	15.9
21.3	2.0	27.6	3.3	32.6	4.5	41.1	7.2	47.5	9.4	53.8	12.0	60.0	14.8	67.2	18.6
25.5	1.7	33.0	2.8	39.1	3.8	49.3	6.0	57.1	7.9	64.7	10.0	72.1	12.3	80.9	15.5
29.8	1.9	38.5	3.0	45.6	4.2	57.5	6.6	66.5	8.7	75.4	11.0	84.0	13.6	94.2	17.0
36.1	1.2	46.7	2.0	55.3	2.8	68.3	4.1	80.7	5.8	91.4	7.3	101.9	9.0	114.3	11.3
42.4	1.6	54.9	2.7	65.0	3.7	80.3	5.5	95.0	7.6	107.7	9.7	120.1	11.9	134.8	15.0
48.9	1.7	63.3	2.7	74.9	3.7	92.4	5.6	109.2	7.8	123.7	9.9	137.8	12.2	154.5	15.3
53.7	1.8	71.6	3.2	84.7	4.4	103.6	6.5	123.4	9.1	138.6	11.3	155.5	14.2	172.4	17.2
69.5	2.3	88.1	3.6	103.1	4.9	121.9	6.7	142.8	9.1	157.4	11.0	176.4	13.6	195.1	16.6
87.7	1.3	109.7	2.0	128.8	2.7	152.7	3.8	181.0	5.3	199.6	6.4	223.8	7.9	247.6	9.6

**TXG**  
**Btu/hr capacities**  
**R-22 & water**

**10° Range**

0.0001 additive fouling

TXG30  
 TXG40  
 TXG50  
 TXG60  
 TXG70  
 TXG85  
 TXG100  
 TXG115  
 TXG130  
 TXG150  
 TXG190

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
15.0	1.3	18.7	2.0	21.1	2.5	26.2	3.9	30.0	5.0	33.0	6.0	37.4	7.7	41.3	9.3
19.0	1.4	24.1	2.1	28.0	2.9	34.1	4.1	40.0	5.7	44.4	6.9	50.0	8.7	55.9	10.8
25.0	1.8	31.3	2.7	36.1	3.6	43.6	5.2	50.0	6.8	55.0	8.1	62.4	10.4	68.8	12.5
29.9	1.5	37.4	2.3	42.1	2.9	52.3	4.4	60.0	5.6	66.0	6.8	75.0	8.7	83.7	10.8
34.9	1.7	43.8	2.5	49.2	3.1	61.0	4.8	70.0	6.2	77.0	7.5	87.4	9.6	96.4	11.5
42.3	1.1	51.9	1.6	59.7	2.1	72.6	3.0	85.0	4.1	93.4	5.0	106.0	6.4	117.0	7.6
48.7	1.4	61.4	2.1	70.1	2.8	85.3	4.0	100.0	5.5	110.0	6.6	124.9	8.4	139.4	10.5
57.4	1.5	70.3	2.2	80.8	2.8	100.3	4.3	115.0	5.6	126.4	6.7	143.5	8.6	158.3	10.3
63.3	1.7	78.3	2.5	91.4	3.3	110.2	4.8	130.0	6.5	142.8	7.8	162.0	10.0	178.7	12.0
79.0	1.9	97.0	2.9	109.3	3.5	127.9	4.8	150.0	6.5	164.5	7.8	182.3	9.4	202.0	11.6
99.7	1.1	119.2	1.6	138.2	2.1	161.9	2.8	190.0	3.8	208.4	4.6	231.1	5.5	256.2	6.7

**12° Range**

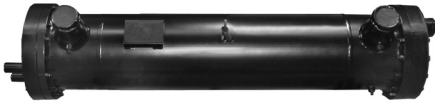
0.0001 additive fouling

TXG30  
 TXG40  
 TXG50  
 TXG60  
 TXG70  
 TXG85  
 TXG100  
 TXG115  
 TXG130  
 TXG150  
 TXG190

APPROACH TEMPERATURE °F															
5		6		7		8		9		10		11		12	
tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi	tons	psi
16.5	1.1	20.3	1.7	23.2	2.2	27.0	2.9	31.6	3.9	34.5	4.6	37.7	5.4	42.0	6.7
21.5	1.2	26.9	1.9	30.1	2.3	35.9	3.3	42.0	4.4	46.0	5.2	50.9	6.4	56.8	7.9
27.6	1.5	34.9	2.4	38.7	2.9	45.0	3.9	52.7	5.2	57.6	6.2	63.6	7.6	70.0	9.1
33.0	1.3	40.6	1.9	46.3	2.5	54.0	3.3	63.2	4.4	69.1	5.2	76.4	6.3	84.6	7.7
38.6	1.4	47.5	2.1	54.1	2.7	63.0	3.6	73.7	4.8	80.6	5.7	89.1	7.0	98.0	8.4
46.8	0.9	57.6	1.4	65.7	1.8	76.4	2.4	89.4	3.2	97.8	3.8	106.7	4.5	119.0	5.6
54.9	1.2	67.6	1.8	75.3	2.2	89.8	3.2	105.2	4.2	115.1	5.0	127.3	6.2	140.2	7.4
63.5	1.3	78.3	1.9	89.0	2.4	103.5	3.2	121.1	4.3	132.4	5.2	144.5	6.1	161.0	7.5
71.8	1.5	87.6	2.2	100.6	2.8	117.1	3.8	136.9	5.1	149.7	6.0	163.2	7.1	181.9	8.8
88.2	1.7	104.8	2.3	119.6	3.0	135.6	3.8	154.0	4.8	172.0	6.0	187.1	7.1	203.2	8.2
109.6	0.9	132.3	1.4	147.9	1.7	171.5	2.2	196.5	2.9	217.9	3.5	237.1	4.1	257.6	4.8

# ERS/ERD

## One-Pass or Three-Pass Replacement Evaporators



### design features & ratings

#### Water Flow Rates

There is one baffle configuration per ER model. As a result, the water flow rate at the job site will need to be adjusted to obtain the design water flow rate. At a range of 10°F, the water flow rate should be 2.4 gpm/ton.

#### Construction Materials

ER evaporator shells are constructed with ASME grade carbon steel. Enhanced copper tubing is mechanically expanded for a superior seal into machined carbon steel

tubesheets. Tubing wall thickness is 0.018". Removable endplates, refrigerant and water connections are constructed from carbon steel. All baffles are made from corrosion resistant materials.

#### Refrigerant Connections

The refrigerant side configuration for the ER evaporators is 3-Pass with nozzles at opposite ends. As a result, the refrigerant nozzles are on the same ends, but may not be in the same locations as the other OEM Single Pass evaporators.

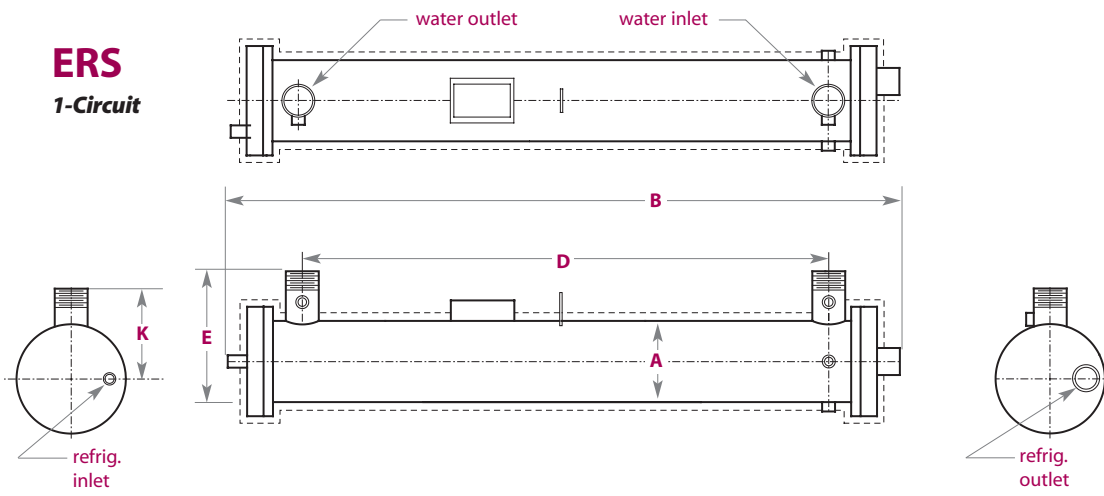
MODELS	Nom. Cap. Tons.	Pressure Drop (psi)						Water In & Out (mpt)	Refrig. Inlet (ids)	Refrig. Outlet (ids)	Working Pressure (psi)	
			A	B	D	E	K				Shell Side	Tube Side
ERS00336	4.0	2.1	4	49.13	34.63	10.50	8.50	1 1/8*	5/8	1 1/8	225	225
ERS00424	3.9	3.5	4	37.13	22.12	10.88	8.88	1 3/8*	7/8	1 3/8	225	225
ERS00436	7.1	2.4	4	49.13	34.13	10.88	8.88	1 3/8*	7/8	1 3/8	225	225
ERS00448	9.7	4.6	4	61.13	46.13	10.88	8.88	1 3/8*	7/8	1 3/8	225	225
ERS00536	9.8	2.7	6	49.13	33.63	12.06	9.06	1 5/8*	7/8	2 1/8	225	225
ERS00548	14.0	2.7	5	60.94	45.62	12.06	9.06	1 5/8*	7/8	2 1/8	225	225
ERS00560	18.2	3.8	6 5/8	73.13	57.63	12.69	9.38	1 5/8*	7/8	2 1/8	200	300
ERS00636	16.0	5.1	6 5/8	45.63	32.00	11.38	8.06	3	1 1/8	2 1/8	200	300
ERS00648	21.4	2.7	6 5/8	57.63	44.00	11.38	8.06	3	1 1/8	2 1/8	200	300
ERS00660	27.7	4.8	8 5/8	69.63	56.00	11.38	8.06	3	1 1/8	2 1/8	200	300
ERS00736	27.5	4.3	8 5/8	47.13	32.13	14.06	10.13	3	1 1/8	2 5/8	200	300
ERS00748	34.6	3.7	8 5/8	59.13	44.13	14.06	10.13	3	1 1/8	2 5/8	200	300
ERS00760	40.9	3.8	8 5/8	71.13	56.13	14.06	10.13	3	1 1/8	2 5/8	200	300
ERS00848	44.9	5.9	10 3/4	59.88	41.50	15.19	10.69	3	1 1/8	2 5/8	200	300
ERS00860	53.9	4.2	10 3/4	71.88	53.50	15.19	10.69	3	1 1/8	2 5/8	200	300
ERS01048	54.2	3.6	10 3/4	60.50	41.50	16.56	11.50	4	1 3/8	3 1/8	200	300
ERS01060	68.4	4.5	10 3/4	72.50	53.50	16.56	11.50	4	1 3/8	3 1/8	200	300
ERS01160	84.6	4.9	12 3/4	73.00	53.50	17.69	12.06	4	1 3/8	3 1/8	200	300
ERS01260	93.3	6.0	12 3/4	73.63	53.50	18.94	12.75	4	1 5/8	3 1/8	200	300
ERS01360	111.4	5.9	14	74.25	53.50	20.06	13.31	4	1 5/8	3 1/8	200	300

\*ids

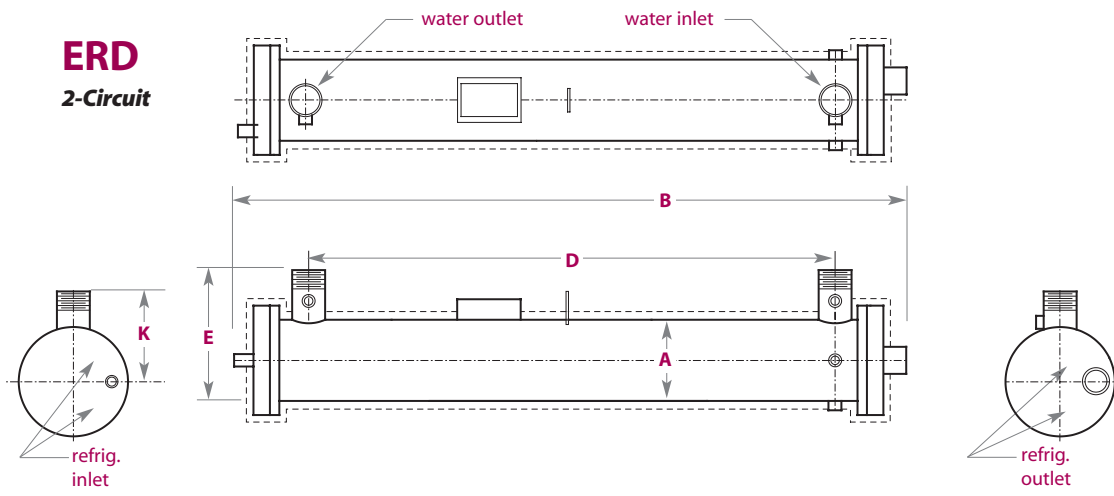
#### 2-Circuit

ERD00636	16.0	5.1	6 5/8	47.50	32.00	11.38	8.06	3	7/8	1 5/8	200	300
ERD00648	21.4	2.7	6 5/8	59.50	44.00	11.38	8.06	3	7/8	1 5/8	200	300
ERD00660	27.7	4.8	8 5/8	71.50	56.00	11.38	8.06	3	7/8	1 5/8	200	300
ERD00736	27.5	4.3	8 5/8	50.50	32.13	14.06	10.13	3	7/8	1 5/8	200	300
ERD00748	34.6	3.7	8 5/8	62.50	44.13	14.06	10.13	3	7/8	1 5/8	200	300
ERD00760	40.9	3.8	8 5/8	74.50	56.13	14.06	10.13	3	7/8	1 5/8	200	300
ERD00848	44.9	5.9	10 3/4	63.13	41.50	15.19	10.69	3	1 1/8	2 1/8	200	300
ERD00860	53.9	4.2	10 3/4	75.13	53.50	15.19	10.69	3	1 1/8	2 1/8	200	300
ERD01048	54.2	3.6	10 3/4	65.13	41.50	16.56	11.50	4	1 1/8	2 1/8	200	300
ERD01060	68.4	4.5	10 3/4	77.13	53.50	16.56	11.50	4	1 1/8	2 1/8	200	300
ERD01160	84.6	4.9	12 3/4	77.63	53.50	17.69	12.06	4	1 3/8	2 5/8	200	300
ERD01260	93.3	6.0	12 3/4	78.25	53.50	18.94	12.75	4	1 3/8	2 5/8	200	300
ERD01360	111.4	5.9	14	78.88	53.50	20.06	13.31	4	1 5/8	3 1/8	200	300

**ERS**  
**1-Circuit**



**ERD**  
**2-Circuit**



# Custom Design Chiller Specification Data

Photo Copy and Fax to:  
Standard Sales Department  
708 345 3513  
or via the World Wide Web  
[www.stanref.com/quote.htm](http://www.stanref.com/quote.htm)

## Customer Information

Company \_\_\_\_\_

Contact Name \_\_\_\_\_ Date \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

## Chiller Design

DX serviceable, no. circuits \_\_\_\_\_

Flooded serviceable

## Performance

inlet fluid temperature \_\_\_\_\_ °F

outlet fluid temperature \_\_\_\_\_ °F

net load \_\_\_\_\_ tons

pressure drop \_\_\_\_\_ psi

fouling factor \_\_\_\_\_ (0.0001 ARI standard)

Refrigerant 22, 134A, 404A, NH3, other \_\_\_\_\_

suction temperature \_\_\_\_\_ °F of refrigerant at evaporator

## Fluid Circulated

water \_\_\_\_\_ %

ethylene glycol \_\_\_\_\_ %

propylene glycol \_\_\_\_\_ %

calcium chloride (CaCl<sub>2</sub>) \_\_\_\_\_ %

sodium chloride (NaCl) \_\_\_\_\_ %

other % if other,

specify properties at outlet temperature:

specific gravity \_\_\_\_\_

viscosity (centipoise) \_\_\_\_\_

thermal conductivity \_\_\_\_\_

specific heat \_\_\_\_\_

## Construction

size: width \_\_\_\_\_ length \_\_\_\_\_ height \_\_\_\_\_

materials: shell \_\_\_\_\_ tube \_\_\_\_\_

working pressures: shell \_\_\_\_\_ psi tube \_\_\_\_\_ psi

connection sizes: refrigerant inlet \_\_\_\_\_ refrigerant outlet \_\_\_\_\_ fluid inlet \_\_\_\_\_ fluid outlet \_\_\_\_\_

## Application

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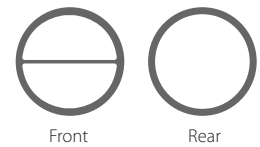
# CHILLER BARREL



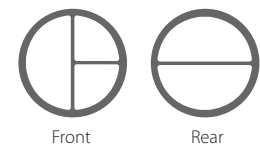
## gasket cross reference

MODELS	Front (GASKE-)	Rear (GASKE-)	Single Circuit	Dual Circuit	Quad Circuit
TX 2	2865	2865	Fig. A	NA	NA
TX 3	2865	2865	Fig. A	NA	NA
TX 5	2872	2872	Fig. A	NA	NA
TX 6	2872	2872	Fig. A	NA	NA
TX 7.5	2872	2872	Fig. A	NA	NA
TX 10	2872	2872	Fig. A	Fig. C	NA
TX 12	2889	2889	Fig. A	Fig. C	NA
TX 15	2889	2889	Fig. A	Fig. C	NA
TX 20	2889	2889	Fig. A	Fig. C	NA
TX 25	2889	2889	Fig. A	Fig. C	NA
TXC 30	2218	2218	Fig. B	Fig. D	NA
TXC 40	2227	2227	Fig. B	Fig. D	NA
TXC 50	2227	2227	Fig. B	Fig. D	NA
TXC 60	2227	2227	Fig. B	Fig. D	NA
TXC 75	2227	2227	Fig. B	Fig. D	NA
TXC 100	4892	4804	Fig. A	Fig. C	NA
TXC 120	4892	4804	Fig. A	Fig. C	NA
TXC150	3549	3549	NA	Fig. C	NA
TXC175	3549	3549	NA	Fig. C	NA
TXC200	5169	5169	NA	Fig. D	NA
TXC250	5169	5169	NA	Fig. D	NA
TXC275	3675	3675	NA	Fig. C	NA
TXC300	3637	3637	NA	Fig. C	NA
TXC400	3637	4878	NA	Fig. C	NA
TXC500	3532	3532	NA	Fig. D	NA

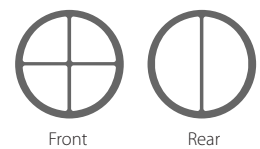
**Figure A**  
Single Circuit  
Dual Pass



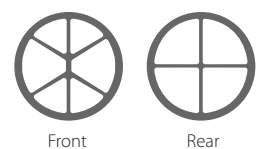
**Figure B**  
Single Circuit  
Four Pass



**Figure C**  
Dual Circuit  
Dual Pass



**Figure D**  
Dual Circuit  
Four Pass





## Vertical Subcooler

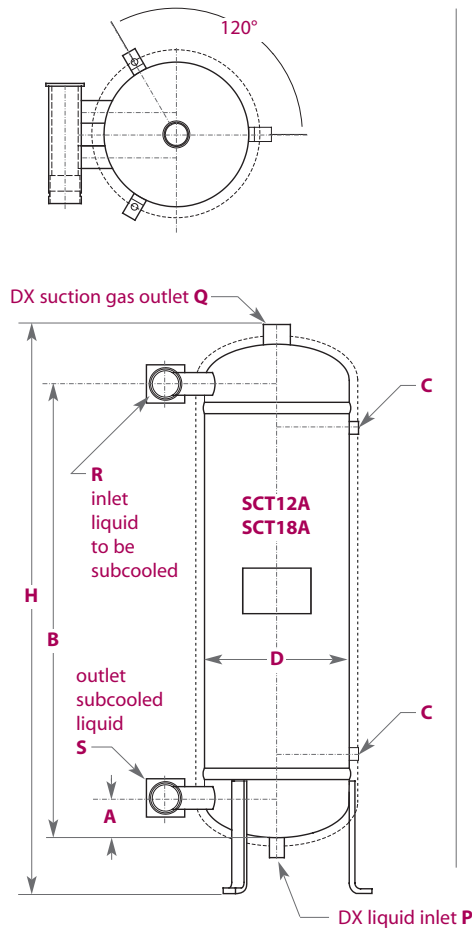
### design features & ratings

- Vertical installation for smaller footprint
- Welded and sealed construction
- Conforms to ASME or UL requirements
- 3/4" insulation
- Rugged shell and coil design
- 6 SCT models from 2 thru 18 tons
- Increase BTU Loading
- Decrease Electrical Usage

MODELS	Nom'l Tons*	Dimensions				Connections†					Shipping Weight (lbs)
		D	H	A	B	P (ids)	Q (ids)	R (ids)	S (ids)	C (fpt)	
SCT2	2	6 5/8	23 7/8	1 3/4	14 3/8	5/8	1 3/8	7/8	7/8	3/8	63
SCT4	3.9	8 5/8	25	2 1/4	15 3/8	5/8	1 3/8	1 1/8	1 1/8	3/8	73
SCT6	5.9	8 5/8	29 1/2	1 7/8	19 7/8	5/8	1 3/8	1 3/8	1 3/8	3/8	108
SCT9	8.9	10 3/4	31 1/2	2 9/16	21 3/16	7/8	1 5/8	2 1/8	2 1/8	1/2	148
SCT12A	11.8	12 3/4	40 1/4	3 1/2	30	1 1/8	2 1/8	2 1/8	2 1/8	1/2	240
SCT18A	17.7	12 3/4	50 1/4	3 1/2	40	1 1/8	2 1/8	2 5/8	2 5/8	1/2	280

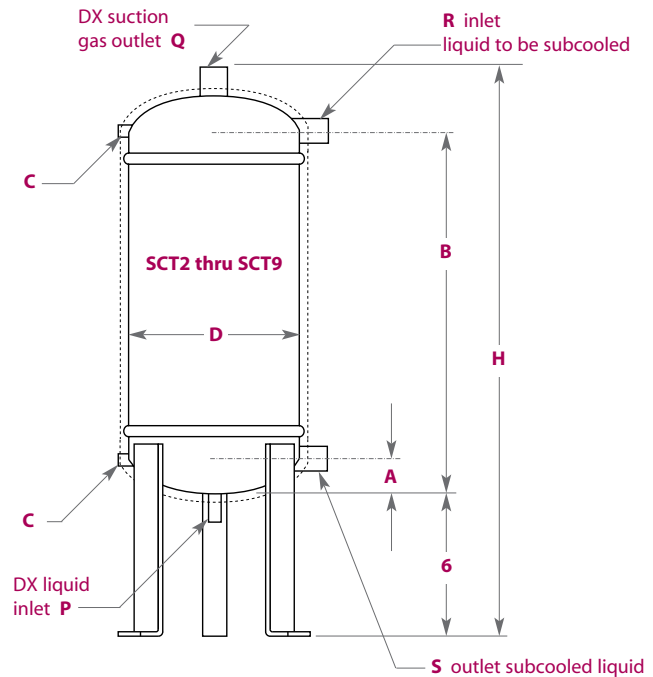
\* based on R-22 liquid inlet at 100°F. and 50°F. outlet temperature with R-22 evaporating at 40°F.

† Refrigerant fittings 1 3/4" length



Working Pressures:  
450 psig

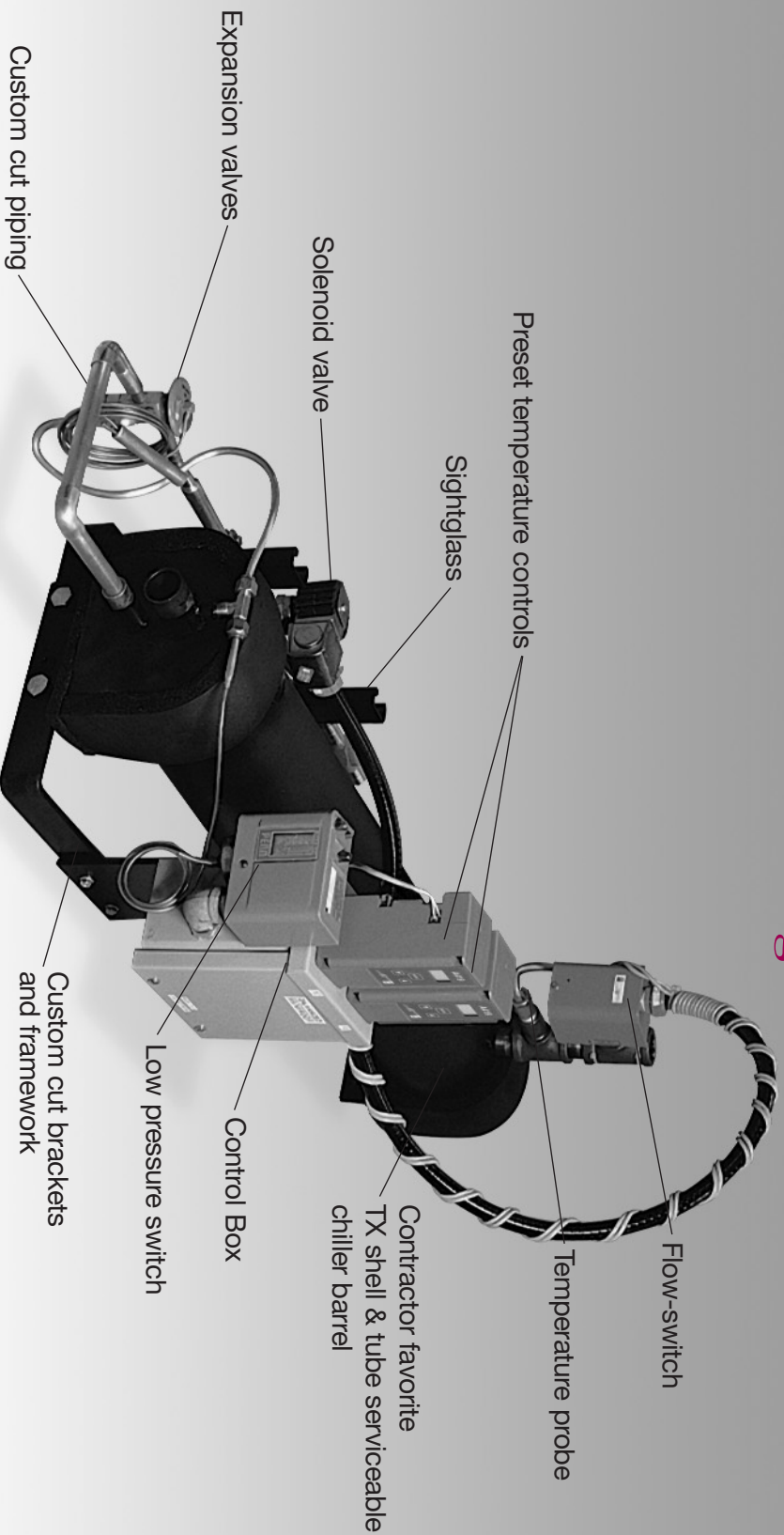
dimensions shown do not include the 3/4" factory insulation





# ChillerBuilder™ Kits

from Standard Refrigeration



Our ChillerBuilder Kits allow you to assemble a modular chiller solution in under an hour. Available from 2 to 75 tons, these kits provide all you need to build the low-side of a chiller system. You get the reliable TX evaporator, brand-name controls and components and custom-cut piping and framework.

Select a condensing unit and you've got a modular chiller perfect for spacetight commercial AC applications or boosting existing system capabilities. Why let some OEM limit your capabilities? With Standard: You design. You spec. You profit.

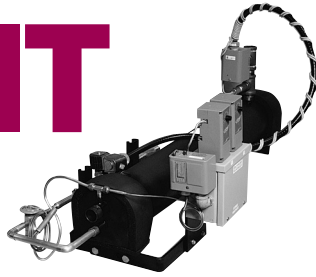


**Standard**  
Refrigeration Company

2050 N. Ruby St. • Maitland Park, IL 60160 • Phone (708) 345-5400 • Fax (708) 345-3513 • [www.stanref.com](http://www.stanref.com)

**Purveyors of the Finest Shell & Tube Heat Exchangers and Pressure Vessels**

# CBKIT



## Low-Side ChillerBuilder Kits

Kits Now Available up to 75 Tons

Low Side ChillerBuilder kits  
with digital controls

### design features & ratings

- Uses compact TX/TXC chiller barrel
- Brand name components
- One, two, three and four circuit options
- NEW three and four circuit models available, ideal for achieving up to 20 tons with single phase compressors
- Available in ranges from two to 75 tons
- Entire kit can be assembled in less than one hour
- Chiller barrel included
- NEW-includes Digital Controls

- Included components
- Framework
  - Temperature controls
  - Low pressure switch
  - Expansion valve
  - Solenoids
  - Control power supplies
  - Freezestat
  - Flow switch
  - Sight glasses
  - NEW-Includes Digital Controls

KIT 1-CIRCUIT	ChillerBuilder Kit Dimensions										W	P	Q
	Nominal Tons*	Circuits	TX Model	TX-Kit	A	B	C	D	H	L	Water Conn.	Liquid Conn.	Suction Conn.
CBKIT2-1	2	1	TX2-1	TXXKIT1	21	18 1/4	19 3/4	14	14	30 1/4	1	5/8	7/8
CBKIT3-1	3	1	TX 3-1	TXXKIT2	26	18 1/4	19 3/4	18	14	30 1/4	1	5/8	7/8
CBKIT5-1	5	1	TX 5-1	TXXKIT2	26	18 1/4	31 3/8	18	16	42 1/4	1 1/4	5/8	1 1/8
CBKIT6-1	6	1	TX 6-1	TXXKIT3	27	18 1/4	31 1/8	18	19	42 1/4	1 1/2	5/8	1 1/8
CBKIT7.5-1	7 1/2	1	TX 7 1/2-1	TXXKIT3	27	18 1/4	31 1/8	18	19	42 1/4	1 1/2	5/8	1 5/8
CBKIT10-1	10	1	TX10-1	TXXKIT3	27	18 1/4	30 3/8	18	19	42 1/4	2	5/8	1 5/8
CBKIT12-1	12	1	TX12-1	TXXKIT3	27	19 3/8	30 1/8	18	21	43 1/4	2	5/8	1 5/8
CBKIT15-1**	15	1	TX15-1	TXXKIT4	32	20 3/8	29 5/8	18	21	44 1/4	2 1/2	7/8	2 1/8
CBKIT20-1**	20	1	TX20-1	TXXKIT4	32	20 3/8	29	18	21	44 1/4	3	7/8	2 1/8
CBKIT25-1**	25	1	TX25-1	TXXKIT4	32	20 3/8	29	18	21	44 1/4	3	7/8	2 5/8
CBKIT30-1‡	30	1	TXC30-1	TXCKIT5	–	–	63	22	16	90	3	1 1/8	2 5/8
CBKIT40-1‡	40	1	TXC40-1	TXCKIT6	–	–	63	24	17	90	3	1 3/8	2 5/8

### 2-CIRCUIT

CBKIT10-2	10	2	TX10-2	DXXKIT 10-12	29	18 1/4	30 3/8	20	17	45 1/4	2	5/8	1 5/8
CBKIT12-2	12	2	TX12-2	DXXKIT 10-12	29	19 3/8	30 1/8	20	19	46 1/4	2	5/8	1 5/8
CBKIT15-2	15	2	TX15-2	DXXKIT 15-20	29	19 3/8	29 5/8	20	21	46 1/4	2 1/2	5/8	2 1/8
CBKIT20-2	20	2	TX20-2	DXXKIT 15-20	29	19 3/8	29	20	21	46 1/4	3	5/8	2 1/8
CBKIT25-2	25	2	TX25-2	DXXKIT 15-20	29	19 3/8	29	20	21	46 1/4	3	5/8	2 5/8
CBKIT30-2‡	30	2	TXC30-2	DTXCKIT 30	–	–	63	22	19	90	3	7/8	1 5/8
CBKIT40-2‡	40	2	TXC40-2	DTXCKIT 40	–	–	63	24	20	90	3	1 1/8	1 5/8
CBKIT50-2‡	50	2	TXC50-2	DTXCKIT 50	–	–	63	24	20	90	4	1 1/8	2 1/8
CBKIT60-2‡	60	2	TXC60-2	DTXCKIT 60	–	–	73	24	22	104	4	1 1/8	2 1/8
CBKIT75-2‡	75	2	TXC75-2	DTXCKIT 75	–	–	73	24	22	104	5	1 3/8	2 5/8

### MULTI CIRCUIT

CBKIT15-3	15	3	TX15-3	TXXKIT15-3	30 3/4	–	–	–	23 1/4	80	2 1/2	3/8	1 1/8
CBKIT20-4	20	4	TX20-4	TXXKIT20-4	30 3/4	–	–	–	23 1/4	182 3/4	3	3/8	1 1/8

120 volts required to operate CB Kits.

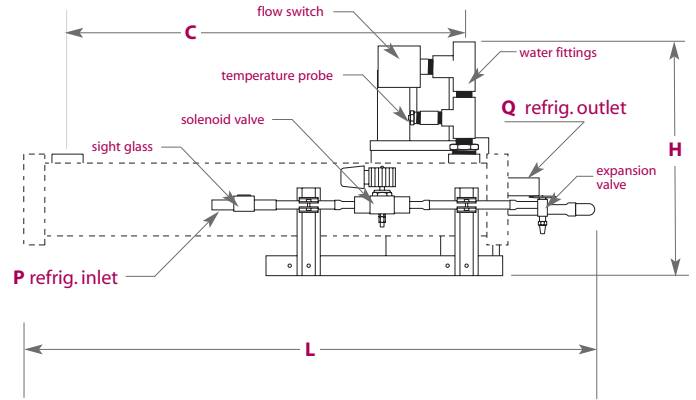
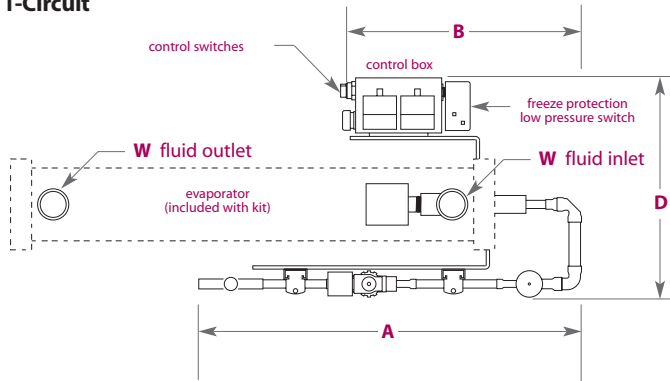
\* Tonnage capacities based on TXV capacities at 35 F suction, 115 F condensing temperature, 54 F inlet water, and 44 F outlet water using R-22

\*\* Pumpdown cycle included with CBKIT15-1, CBKIT20-1, and CBKIT25-1

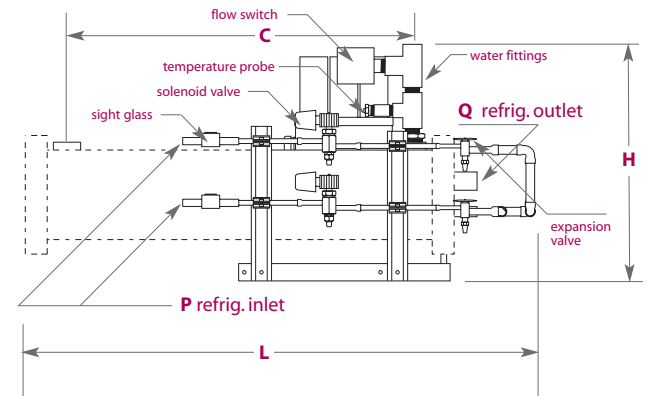
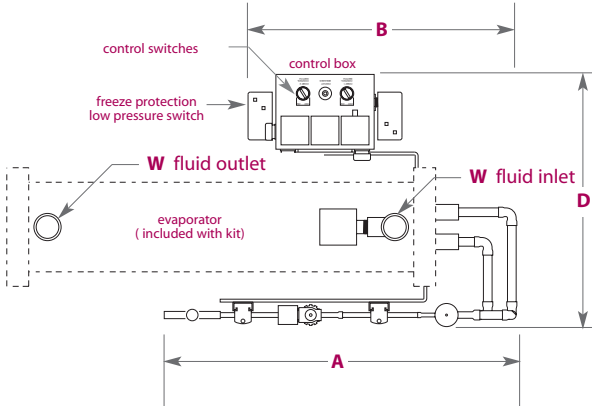
‡ Kits 30 through 75 tons include unloading feature. Kits with no unloading feature are also available.

All CBKITS include chiller barrel. ChillerBuilder kits without chiller barrel are available. Call the factory for more information.

### 1-Circuit

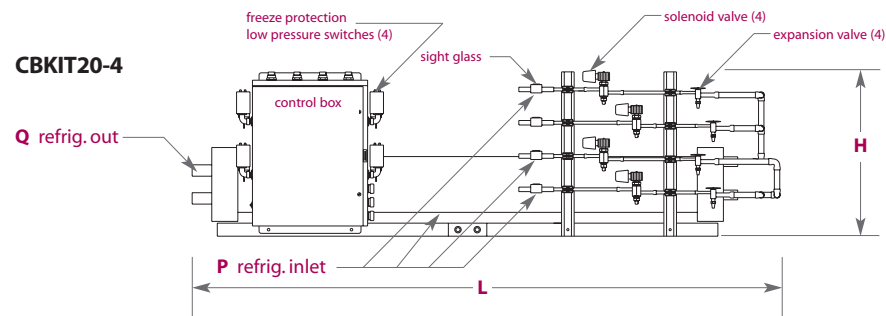
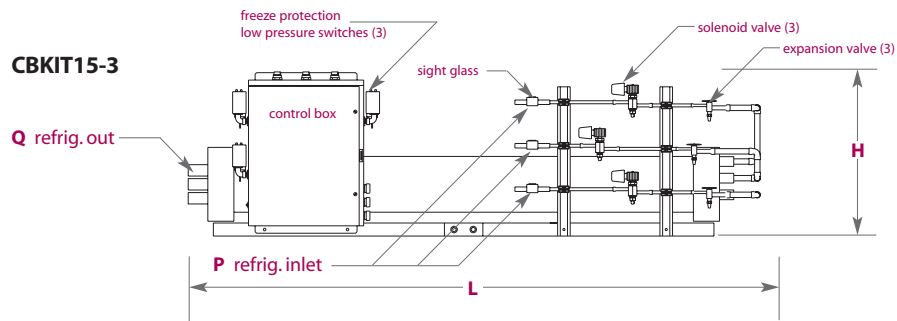
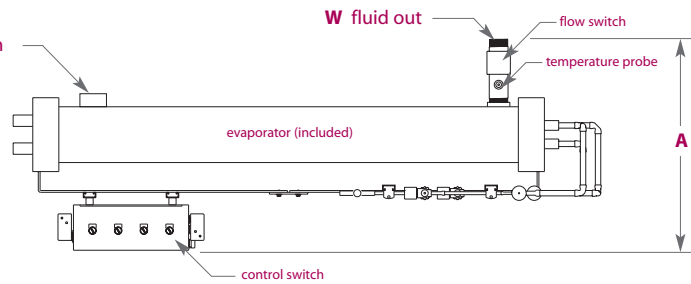


### 2-Circuit



### 3 & 4 Circuit

**Note:**  
Connection locations vary between 3 & 4 circuit models



# Liquid Receivers



RBV



UV



HR



UR



L

## design features & ratings

### Conformance

Each Standard stock receiver conforms to UL, CSA or ASME requirements for 450 psi maximum working pressure. Models with an internal diameter under six inches are UL listed; all larger models are made according to ASME code and tagged appropriately.

### Pumpdown & Refrigerant Charge

All pumpdowns are calculated at 80% capacity of liquid. Approximately 10% of pumpdown capacity is required to operate receiver properly.

### Custom and Ammonia Construction

Custom receivers for halocarbons and ammonia can be built based on application and construction criteria. Receivers may be ordered with or without extra features such as mounting brackets, fusible plugs, special fittings, liquid level indicators and alarm switches, to assure reliable service on virtually any application involving halocarbon type refrigerants.

### Note on Refrigerant R410a Applications

Due to the high working pressures of Refrigerant R410a. Any Receivers product in our catalog must be customized to conform to ASME construction. Please contact customer service for quotation.

## Selection

### Pumpdown Calculation Procedure

Refer to table for calculating pumpdown capacity of any Standard receiver design with elliptical ends. Pumpdown figures shown have been compensated to directly give capacity on 80% of the receiver volume filled with liquid at 90°F.

To figure pumpdown capacity, locate the receiver OD in the first column and read across to find the values for length correction and pounds of pumpdown for refrigerant used. Substitute those values in this formula:

$$\text{Pumpdown} = (\text{overall length} - \text{length correction}) \times (\text{pumpdown per inch})$$

To calculate overall length required for the given OD and specified pumpdown capacity, follow the same procedure given above, using this formula:

$$\text{Overall length} = (\text{pumpdown required} \div \text{pumpdown per inch}) + (\text{length correction})$$

### Pumpdown Capacity Table

Receiver OD (inches)	Length Correction (inches)	Pumpdown Capacity pounds per inch effective length			End to Weld (inches)
		R-22	R-134A	R404A	
4	0.9	0.38	0.38	0.33	1 7/8
5	1.1	0.60	0.61	0.52	1 7/8
6	1.2	0.88	0.89	0.76	2 3/8
6 3/8	1.4	1.06	1.08	0.92	2 7/8
8 5/8	1.8	1.82	1.84	1.58	3 1/8
10 3/4	2.3	2.80	2.84	2.44	4 1/2
12 3/4	2.6	3.96	4.01	3.45	5 1/2
14	2.9	4.77	4.83	4.15	5 7/8
16	3.2	6.31	6.38	5.49	6 3/8
18	3.7	7.94	8.03	6.90	6 3/4
20	4.0	9.89	10.01	8.60	7 1/4
24	4.9	14.11	14.28	12.28	8 1/2
30	5.2	22.44	22.71	19.52	10
36	5.6	32.68	33.07	28.43	11 1/2

### design features & ratings

MODELS	Pumpdown* (lbs)		Dimensions (inches)				Connections (inches)			Shipping Weight (lbs)
	R-22	R-134A	D	L	A	B	P (ids)	Q (ids)	S (fpt)	
285	16	16	5	28	3	25	5/8	5/8	3/8	19
306	25	26	6	30	3 5/8	26 3/8	5/8	5/8	3/8	24
366	31	31	6	36	3 5/8	32 3/8	5/8	5/8	3/8	31
3865	39	40	6 5/8	38	4 3/8	33 5/8	7/8	5/8	1/2	42
2885	48	48	8 5/8	28	4 5/8	23 3/8	1 1/8	7/8	1/2	45
3685	62	63	8 5/8	36	4 5/8	31 3/8	1 1/8	7/8	1/2	65
4285	73	74	8 5/8	42	4 5/8	37 3/8	1 1/8	7/8	1/2	71
4885	84	85	8 5/8	48	4 5/8	43 3/8	1 1/8	1 1/8	1/2	77
6085	106	107	8 5/8	60	4 5/8	55 3/8	1 1/8	1 1/8	1/2	108
36105	94	96	10 3/4	36	6 1/2	29 1/2	1 3/8	1 3/8	1/2	115
48105	128	130	10 3/4	48	6 1/2	41 1/2	1 3/8	1 3/8	1/2	138
60105	162	164	10 3/4	60	6 1/2	53 1/2	1 3/8	1 3/8	1/2	166
72105	195	198	10 3/4	72	6 1/2	65 1/2	1 3/8	1 3/8	1/2	196
96105	262	266	10 3/4	96	6 1/2	89 1/2	1 5/8	1 3/8	1/2	285
48122	180	182	12 3/4	48	8	40	1 5/8	1 3/8	1/2	182
60122	227	230	12 3/4	60	8	52	1 5/8	1 3/8	1/2	218
72122	275	278	12 3/4	72	8	64	2 1/8	1 3/8	1/2	260
96122	370	375	12 3/4	96	8	88	2 1/8	1 3/8	1/2 <sup>†</sup>	360
72145	330	334	14	72	8 3/8	63 5/8	2 1/8	1 5/8	1/2 <sup>†</sup>	316
96145	444	450	14	96	8 3/8	87 5/8	2 5/8	2 1/8	1/2 <sup>†</sup>	425
60166	358	362	16	60	8 7/8	51 1/8	2 5/8	2 1/8	1/2 <sup>†</sup>	306
72166	434	439	16	72	8 7/8	63 1/8	2 5/8	2 1/8	1/2 <sup>†</sup>	380
96166	586	592	16	96	8 7/8	87 1/8	2 5/8	2 1/8	1/2 <sup>†</sup>	486
72188	542	548	18	72	9 7/8	62 1/8	3 1/8	2 1/8	1/2 <sup>†</sup>	510
72201	673	681	20	72	10 1/2	61 1/2	3 1/8	2 5/8	1/2 <sup>†</sup>	570
84201	791	801	20	84	10 1/2	73 1/2	3 1/8	2 5/8	1/2 <sup>†</sup>	639
96201	910	921	20	96	10 1/2	85 1/2	3 1/8	2 5/8	1/2 <sup>†</sup>	756
96241	1,285	1,301	24	96	12 1/2	83 1/2	3 5/8	3 1/8	3/4 <sup>†</sup>	1000
12241	1,624	1,644	24	120	13	107	4 1/8	3 5/8	3/4 <sup>†</sup>	1250
12301	2,576	2,607	30	120	15	105	4 1/8	3 5/8	3/4 <sup>†</sup>	1800

\* All pumpdowns are calculated at 80% of receiver volume

Use the following multipliers for refrigerants other than shown above:

R-12 = R-22 capacity × 1.10

R-502 = R-22 capacity × 1.01

R-404A = R-22 capacity × 0.89

R-507 = R-22 capacity × 0.88

† Safety fitting located 30° above centerline below refrigerant outlet

**Working Pressure: 450 psi**

MODELS	Pumpdown* (lbs)		Dimensions (inches)						Connections		Valve Part Number	Ship Wt (lbs)
	R-22	R-134A	D	L	A	B	E	F	P & Q (ids)	S (fpt)		
RBV-285	16	16	5	28	3	25	7	21	1/2	3/8	V04ST	24
RBV-366	31	31	6	36	3 5/8	32 3/8	9	27	1/2	3/8	V04ST	35
RBV-3865	39	40	6 5/8	38	4 5/8	33 5/8	9 1/2	28 1/2	5/8	1/2	V05ST	45
RBV-3685	62	63	8 5/8	36	4 5/8	31 3/8	9	27	7/8	1/2	V07ST	69
RBV-4285	73	74	8 5/8	42	4 5/8	37 3/8	10 1/2	31 1/2	1 1/8	1/2	V09ST	75
RBV-36105	94	96	10 3/4	36	6 1/2	29 1/2	9	27	1 1/8	1/2	V09ST	117
RBV-48105	128	130	10 3/4	48	6 1/2	41 1/2	12	36	1 1/8	1/2	V09ST	145
RBV-60105	162	164	10 3/4	60	6 1/2	53 1/2	15	45	1 1/8	1/2	V09ST	170
RBV-48122	180	182	12 3/4	48	8	40	12	36	1 3/8	1/2	V11ST	186
RBV-60122	227	230	12 3/4	60	8	52	15	45	1 3/8	1/2	V11ST	224
RBV-72145	330	334	14	72	8 3/8	63 5/8	18	54	1 5/8	1/2†	valve-85A	339
RBV-96145	444	450	14	96	8 3/8	87 5/8	24	72	1 5/8	1/2†	valve-85A	448
RBV-96166	586	592	16	96	8 7/8	87 1/8	24	72	2 1/8	1/2†	valve-621A	510

\* All pumpdowns are calculated at 80% of receiver volume

Use the following multipliers for refrigerants other than shown above:

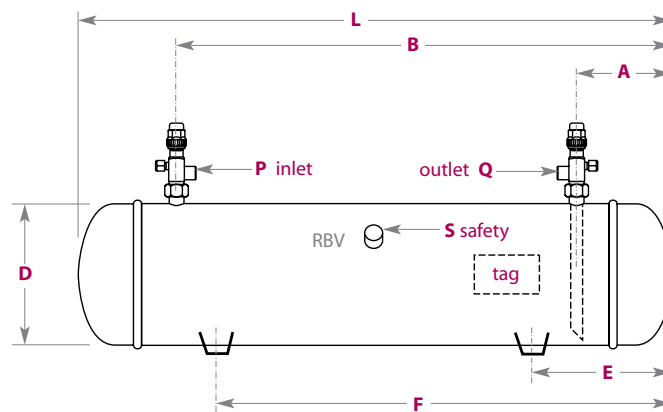
R-12= R-22 capacity × 1.10

R-502= R-22 capacity × 1.01

R-404A= R-22 capacity × 0.89

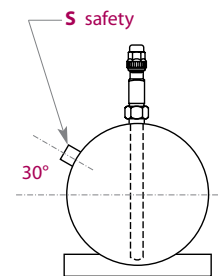
R-507= R-22 capacity × 0.88

† Safety fitting located 30° above centerline below refrigerant outlet



Tag location may vary per model.

Working Pressure: 450 psi



# UR

## Upright Receivers

### design features & ratings

MODELS	Pumpdown* (lbs)		Dimensions (inches)				Connections			Ship Weight (lbs)
	R-22	R-134A	D	H	A	B	P (ids)	Q (ids)	S (fpt)	
UR-20	18	19	8 5/8	12	5	7	5/8	5/8	3/8	29
UR-28	26	26	8 5/8	16	5	11	5/8	5/8	3/8	35
UR-48	44	45	10 3/4	18	6	11 1/2	1 1/8	7/8	1/2	60
UR-66	61	62	12 3/4	18	6 5/8	11 3/8	1 1/8	1 1/8	1/2	80
UR-72	67	68	12 3/4	20	6 5/8	13 3/8	1 1/8	1 1/8	1/2	88
UR-84	85	85	12 3/4	24	6 5/8	17 3/8	1 1/8	1 1/8	1/2	98
UR-108	101	102	14	24	7 1/2	16 1/2	1 3/8	1 3/8	1/2	111
UR-137	131	133	16	24	8	16	1 3/8	1 3/8	1/2	140
UR-151	156	158	12 3/4	42	6 7/8	34 1/2	1 3/8	1 3/8	1/2	170
UR-174	161	163	18	24	8 3/4	12 1/4	1 5/8	1 5/8	1/2	175
UR-201	206	208	14	46	7 5/8	37 1/2	1 5/8	1 5/8	1/2	210
UR-276	283	286	16	48	8 1/8	39	2 1/8	1 5/8	1/2	245
UR-351	358	362	16	60	8 3/8	51	2 5/8	2 1/8	1/2	300
UR-451	463	468	18	62	9	52 1/2	2 5/8	2 1/8	1/2	435

\* All pumpdowns are calculated at 80% of receiver volume

Use the following multipliers for refrigerants other than shown above:

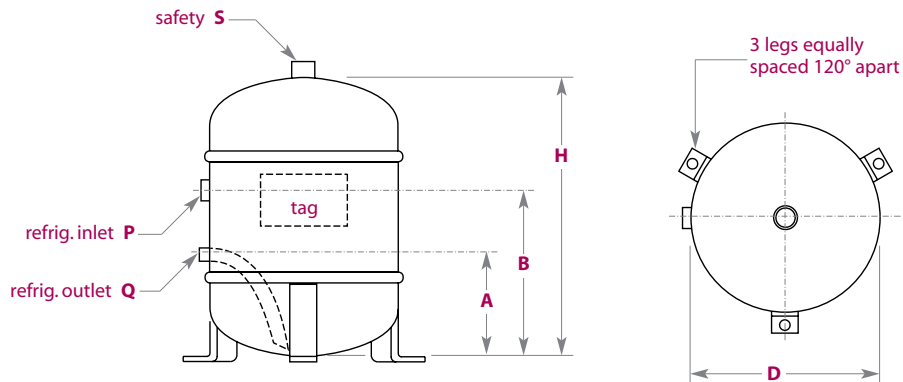
R-12 = R-22 capacity × 1.10

R-502 = R-22 capacity × 1.01

R-404A = R-22 capacity × 0.89

R-507 = R-22 capacity × 0.88

Working Pressure: 450 psi



Tag location may vary per model.

### design features & ratings

MODELS	Pumpdown* (lbs)		Dimensions (inches)				Connections		Valve Part Number	Ship Weight (lbs)
	R-22	R-134A	D	H	A	B	P & Q (ids)	S (fpt)		
UV-30	29	30	8 5/8	18	5 1/8	12 7/8	1/2	3/8	H04ST	40
UV-40	40	41	8 5/8	24	5 1/8	19 3/8	5/8	3/8	H05ST	47
UV-50	55	56	8 5/8	32	5 1/4	26 3/4	7/8	3/8	H07ST	60
UV-70	72	73	10 3/4	28	6	21 1/2	1 1/8	1/2	H09ST	90
UV-100	100	101	10 3/4	38	6	31 1/2	1 1/8	1/2	H09ST	120
UV-125	132	134	12 3/4	36	6 5/8	29 3/8	1 1/8	1/2	H09ST	160
UV-150	156	158	12 3/4	42	6 5/8	34 1/2	1 1/8	1/2	H09ST	175
UV-200	206	208	14	46	7 1/2	37 1/2	1 3/8	1/2	H11ST	215
UV-275	283	286	16	48	8 1/8	39	1 5/8	1/2	valve-85A	250
UV-350	358	362	16	60	8 1/8	51	1 5/8	1/2	valve-85A	305
UV-450	463	468	18	62	8 3/4	52 1/2	1 5/8	1/2	valve-85A	440

\* All pumpdowns are calculated at 80% of receiver volume

Use the following multipliers for refrigerants other than shown above:

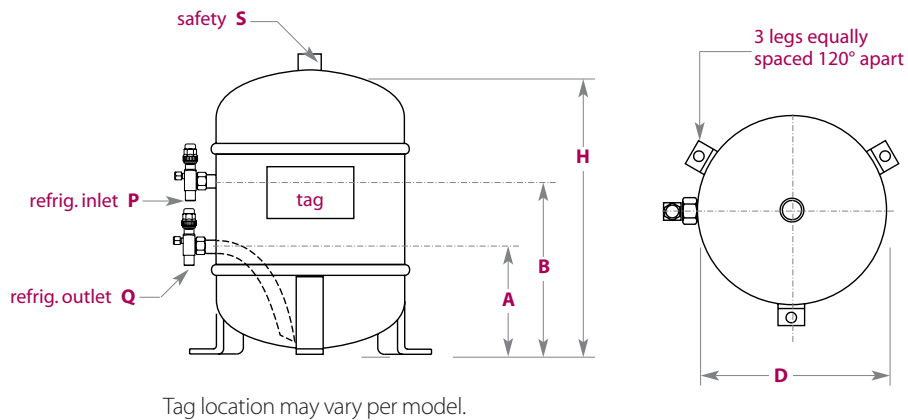
R-12 = R-22 capacity × 1.10

R-502 = R-22 capacity × 1.01

R-404A = R-22 capacity × 0.89

R-507 = R-22 capacity × 0.88

Working Pressure: 450 psi







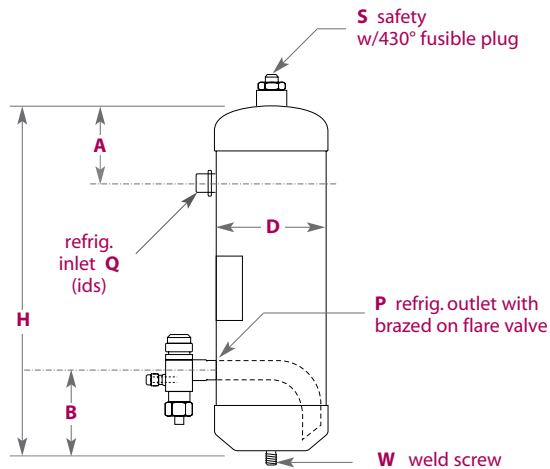
# Compact Vertical Receivers with Valve and Fusible Plug

MODELS	Pumpdown* (lbs)		Dimensions (inches)				Connections			W Weld Screw	Ship Weight (lbs)
	R-22	R-502	B	D	H	A	P (flare)	Q	S (fpt)		
L-408C	2.9	2.95	na	4	8	2 11/16	3/8	3/8	1/8	3/8"-16 x 1	7
L-413C	5.0	5.10	3 1/2	4	13 1/2	2 1/2	3/8	3/8	3/8	3/8"-16 x 1	10
L-516C	9.3	9.45	3 1/2	5	16	2 1/2	1/2	1/2	3/8	3/8"-16 x 1	14
L-618C	15.3	15.56	3 1/2	6	18	2 1/2	1/2	1/2	3/8	1/2"-13 x 1	19
L-623C	19.7	20.03	3 1/2	6	23	2 1/2	1/2	1/2	3/8	1/2"-13 x 1	24
L-630C	25.3	25.7	3 5/8	6	30	2 1/2	5/8	5/8	3/8	1/2"-13 x 1	29

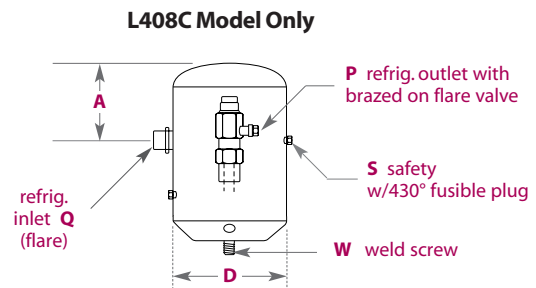
\* All pumpdowns are calculated at 80% of receiver volume

Use the following multipliers for refrigerants other than shown above:

- R-12 = R-22 capacity × 1.10
- R-502 = R-22 capacity × 1.01
- R-404A = R-22 capacity × 0.89
- R-507 = R-22 capacity × 0.88



Working Pressure: 500 psi



# A

## Suction Accumulators with or without boil-out coil



### design features & ratings

- Vertical installation for smaller footprint
- Prevents compressor damage due to slugging of refrigerant and oil
- Positive oil return at all rated conditions
- Designed for low temperature application
- Low pressure drop
- Acts as a suction muffler
- Corrosion resistant paint
- A.S.M.E. Coded Construction

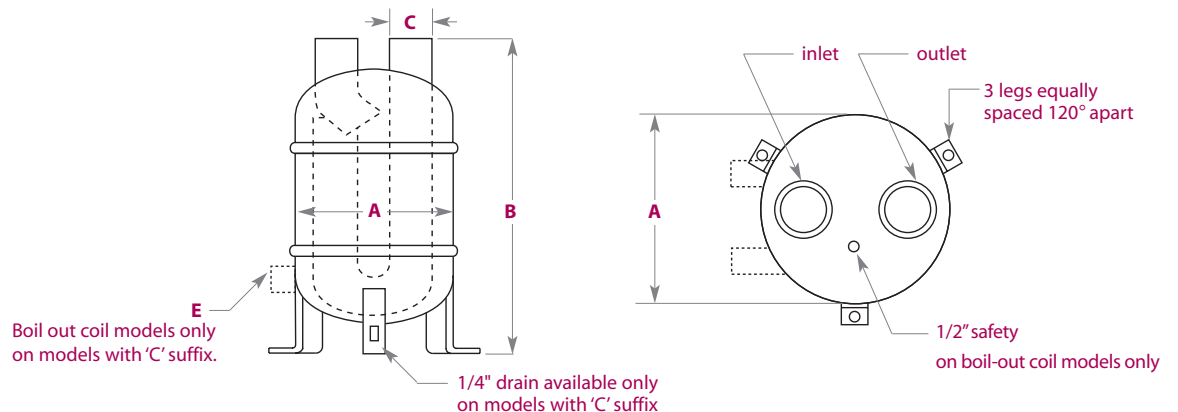
MODELS	Refrig. Cap. (lbs)	Dimensions				Shipping Weight (lbs)	Recommended Tons of Refrigeration Suction Evaporator Temp. ( °F )					
		A	B	C (ids)	E (ids)		R-22					
							+40°	+20°	0°	-20°	-40°	
A-6118	21.8	6 5/8	23 1/2	1 1/8	NA	26	MAX	9.1	6.5	4.2	2.8	1.8
A-6118C			27 1/2		7/8		31	MIN	0.9	0.8	0.7	0.5
A-6138	21.0	6 5/8	23 1/2	1 3/8	NA	26	MAX	15.6	10.8	6.8	4.5	2.9
A-6138C			27 1/2		1 1/8		31	MIN	1.8	1.5	1.3	1.1
A-6158	20.1	6 5/8	23 1/2	1 5/8	NA	27	MAX	27.6	19.5	12.0	7.8	5.0
A-6158C			27 1/2		1 1/8							
A-8158	31.0	8 5/8	25 3/4	1 3/8	NA	42	MAX	3.2	2.4	2.0	1.6	1.5
A-8158C			29 1/2		1 3/8							
A-8218	30.0	8 5/8	22 3/4	2 1/8	NA	43	MAX	58.1	40.1	26.1	18.2	12.3
A-8218C			29 1/2		1 3/8							
A-10218	45.0	10 3/4	22 1/2	2 1/8	NA	65	MAX	6.1	5.6	4.6	4.1	3.2
A-10218C			25 1/2		1 5/8							
A-10258	44.0	10 3/4	22 1/2	2 5/8	NA	66	MAX	89.1	61.2	41.1	28.1	18.0
A-10258C			25 1/2		1 5/8							
A-10318	49.0	10 3/4	24 15/16	3 1/8	NA	72	MAX	132.2	92.1	61.3	40.4	28.0
A-10318C			25 1/2		1 5/8							
A-12318	73.0	12 3/4	25 1/2	3 1/8	NA	92	MAX	15.6	13.2	11.6	9.6	7.5
A-12318C			28 1/2		2 1/8							
A-14418	125.0	14	33 1/2	4 1/8	NA	157	MAX	250.0	175.0	116.0	76.0	54.0
A-14418C			36 3/4		2 1/8							

Use the following multipliers for refrigerants other than shown above: R-404A= R-22 capacity × 0.89

Models with 'C' suffix include boil-out coil heat exchanger for additional protection.

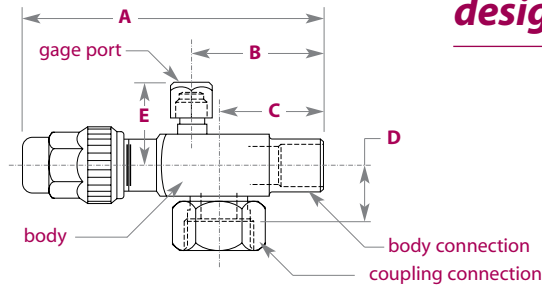
R-507= R-22 capacity × 0.88

Working Pressure: 450 psi



# Valves Rotalock®

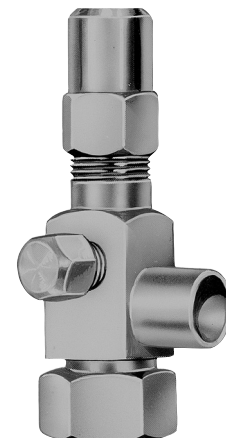
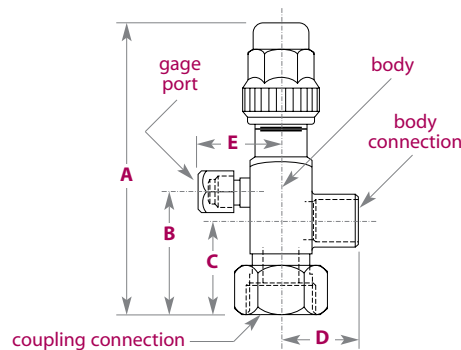
## design features & ratings



use stem end of valve & coupling connection as reference when determining gage port position

Connections		Top Gage Port	Left Gage Port	Right Gage Port	Body Size	Dimensions (inches)				
Body	Coupling					A	B	C	D	E
3/8 flare	3/4-16	H03FT	H03FL	H03FR	3/4 hex	3 23/32	1 17/32	1 3/16	25/32	1
1/2 flare	1-14	H04FT	H04FL	H04FR	7/8 sq	4 1/8	1 23/32	1 5/16	3/4	1 1/16
5/8 flare	1-14	H05FT	H05FL	H05FR	7/8 sq	4 3/8	1 31/32	1 9/16	3/4	1 1/16
1/2 ids	1-14	H04ST	H04SL	H04SR	7/8 sq	4 1/32	1 5/8	1 7/32	3/4	1 1/16
5/8 ids	1-14	H05ST	H05SL	H05SR	7/8 sq	4 9/32	1 7/8	1 15/32	3/4	1 1/16
7/8 ids	1 1/4-12	H07ST	H07SL	H07SR	1 1/8 sq	5 3/8	2 11/32	1 11/16	31/32	1 3/16
1 1/8 ids	1 1/4-12	H09ST	H09SL	H09SR	1 1/8 sq	5 5/8	2 19/32	1 15/32	31/32	1 3/16
1 3/8 ids	1 3/4-12	H11ST	H11SL	n/a	1 3/8 sq	7 3/16	3 5/16	2 15/32	1 3/16	1 5/16

use stem end of valve & body connection as reference when determining gage port position



Connections		Top Gage Port	Left Gage Port	Right Gage Port	Body Size	Dimensions (inches)				
Body	Coupling					A	B	C	D	E
3/8 flare	3/4-16	V03FT	V03FL	V03FR	3/4 hex	3 1/16	1 5/32	13/16	1 1/8	1
1/2 flare	1-14	V04FT	V04FL	V04FR	7/8 sq	3 5/16	1 9/32	7/8	1 9/32	1 1/16
5/8 flare	1-14	V05FT	V05FL	V05FR	7/8 sq	3 5/16	1 9/32	7/8	1 17/32	1 1/16
1/2 ids	1-14	V04ST	V04SL	V04SR	7/8 sq	3 11/16	1 9/32	7/8	1 1/32	1 1/16
5/8 ids	1-14	V05ST	V05SL	V05SR	7/8 sq	3 11/16	1 9/32	7/8	1 1/32	1 1/16
7/8 ids	1 1/4-12	V07ST	V07SL	V07SR	1 1/8 sq	4 25/32	1 3/4	1 3/32	1 9/16	1 3/16
1 1/8 ids	1 1/4-12	V09ST	V09SL	V09SR	1 1/8 sq	4 25/32	1 3/4	1 3/32	1 13/16	1 3/16
1 3/8 ids	1 3/4-12	V11ST	V11SL	n/a	1 3/8 sq	6 3/16	2 5/16	1 15/32	2 3/16	1 5/16

# (4) Bolt Flanged Valves / Indicator Components

## horizontal refrigerant valves

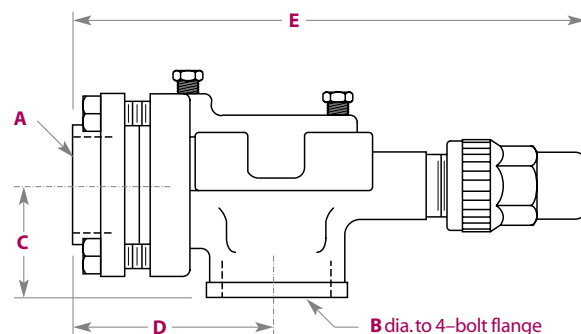
**part number** valve-85A

used on RBV-72145 & RBV-96145  
UV 275, UV350, UV 450

**part number** valve-621A

used on RBV-96166

Both valves utilize the four (4) bolt mating flanges installed on these receivers



part number	Dimensions (inches)				
	A	B	C	D	E
valve-85A	1 5/8	2 1/8	1 13/16	3 15/16	9 1/2
valve-621A	2 1/8	2 17/32	2 3/8	5 1/16	12

## LLI / LLH components

**part number** GASKE 995

Neoprene flat gasket. Fits current indicator and alarm adaptor on units manufactured after 1972



**part number** INDIC 21

Replacement dial for LLI indicators



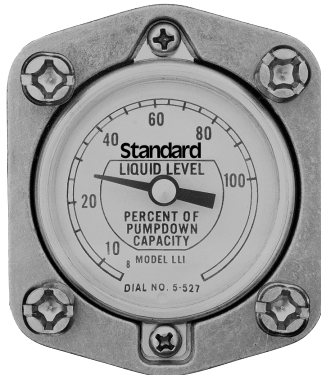
**part number** INDIC 49

Replacement switch for LLH alarms



# Float Type Indicators

## liquid level indicator



LLI

Magnetic liquid level indicators are an inexpensive, effective means of gauging the refrigerant level in a horizontal receiver. The dial reads percent of pumpdown capacity of the receiver: when the pointer indicates 100%, the receiver is 80% full of liquid.

Pounds of refrigerant can be determined by taking the indicated percentage of the specified pumpdown capacity of the receiver.

Normal location is on the side of the receiver, centered between the liquid inlet and outlet connections. Other locations may be provided if specified. Note that at least six inches are required between centers of adjacent liquid level indicator flanges, and also between a unit and the liquid outlet pickup tube.

These can be mounted in the center of either end, provided the respective inlet or outlet fitting is moved to 1½ tank diameters from that end.

Float and assembly dial are included.

## liquid level alarm



part number INDIC 58A

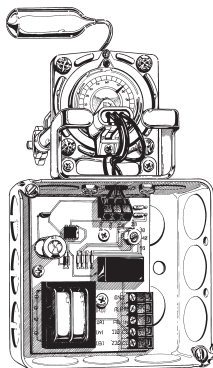
A liquid-level indicator is a single pole, single throw switch on which contacts close upon the decrease of the liquid level at 20% pumpdown.

Movement of the seamless aluminum float rotates a magnet on the inner side of the solid aluminum alloy head. The indicator pointer, or switch contacts, are on the outer side and are operated by a small magnet which follows the position of the inner magnet. There is no connection, except the magnetic field, between the inside and outside. Internal gears and bearings are stainless steel.

In case of external damage, the indicator dial or switch cartridge may be replaced from outside—the refrigerant charge is not disturbed.

Switch Duty	AC
Max. Volts	120/240
Max. Amps	1 (inductive)
Max. Watts	75/150

## liquid level indicator–alarm



part number INDIC 210A

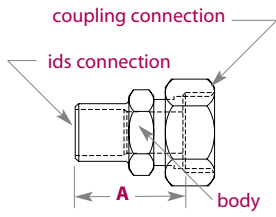
This indicator–alarm with selectable low–level point is designed for use in applications where low liquid level protection is desirable. It provides a relay circuit that closes at one of five user selectable levels of from 10 to 50%. The relay circuit can be used to drive a variety of applications from alarms to pumps. The indicator–alarm also provides a direct, visual indication of the liquid level in the tank.

Each indicator–alarm uses highly reliable and accurate, three wire, voltage divider technology to send the level signal to the level alarm, relay circuitry. The voltage divider uses thick film element in conjunction with a multi–fingered contact to ensure accuracy and reliability. The connector built into the indicator–alarm mates with a standard Packard automotive type, rubber sealed connector for easy installation and reliable connections.

Temperature	-20°C to 70°C (-4°F to 185°F), operating
Working Pressuer	410 PSIG
Power Rating	5 amps, 240 VAC max.
Voltage Input	110 or 220 VAC
Gauge Mounting	Rochester Senior™ Adapter
UL Status	UL recognized for refrigeration

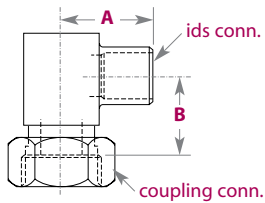
**All indicators require a factory installed flange and are available for 8% OD and larger horizontal receivers, only. Flange cost is not included in cost of indicator alarm.**

# Rotalock® Components



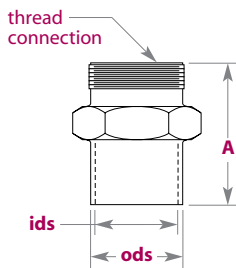
Connections		part number	Body	A (inches)
ids	coupling			
3/8	3/4-16	SA03	7/8 hex	1 9/32
1/2	1-14	SA04	7/8 hex	1 7/32
5/8	1-14	SA05	7/8 hex	1 9/32
7/8	1 1/4-12	SA07	1 1/8 hex	1 23/32
1 1/8	1 1/4-12	SA09	1 1/8 hex	1 31/32
1 3/8	1 3/4-12	SA11	1 3/4 hex	2 7/16

straight adapter



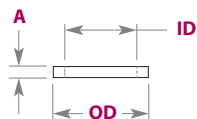
Connections		part number	A (inches)	B (inches)
ids	coupling			
3/8	3/4-16	AA03	1 5/16	1/2
1/2	1-14	AA04	1 3/32	17/32
5/8	1-14	AA05	1 3/32	19/32
7/8	1 1/4-12	AA07	1 9/16	5/8
1 1/8	1 1/4-12	AA09	1 13/16	1
1 3/8	1 3/4-12	AA11	2 3/16	1

angle adapter



Connections			part number	A (inches)
ids	ods	thread		
3/8	1/2	3/4-16	BA03x06	1 5/16
3/8	1/2	1-14	BA03x08	1 5/16
1/2	5/8	1-14	BA04x08	1 5/16
5/8	7/8	1-14	BA05x08	1 5/16
5/8	7/8	1 1/4-12	BA05x10	1 9/16
7/8	1 1/8	1 1/4-12	BA07x10	1 9/16
1 1/8	1 3/8	1 1/4-12	BA09x10	1 9/16
1 1/8	1 3/8	1 3/4-12	BA09x14	1 11/16
1 3/8	1 5/8	1 3/4-12	BA11x14	1 11/16

brass adapter



Dimensions (inches)			use with thread	part number
ID	OD	A		
7/16	9/16	1/16	3/4-16	TS-24590
5/8	3/4	1/16	1-14	TS-24591
7/8	1	1/16	1 1/4-12	TS-24592
1 3/8	1 1/2	1/16	1 3/4-12	TS-24593

teflon fiber seal



## valve and component notes

Steel valves and adapters with ids connections are electroplated and can be silver soldered. The valve stem packing can withstand considerable heat, but should be kept as cool as possible. Valves should be slightly open while soldering.

Teflon seals should be installed only after all soldering is completed. A seal is furnished with each valve, adapter or connection supplied on a vessel. Order additional seals for replacement only.

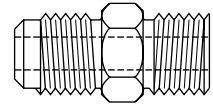
Steel valves with flare connections are cadmium plated. The stem packing will not withstand soldering temperatures, and the valve body must be protected if soldering is done near the valve.

# Safety Devices / Sight Glass Indicators

## fusible unions



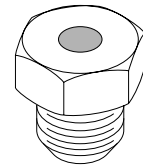
part number	Connections		temperature setting
	flare	mpt	
union-184	3/8	3/8	212° F
union-58	3/8	1/2	212° F
union-319	3/8	5/8-18UNF	212° F
union-67	3/8	1/2	275° F
union-76	3/8	3/8	283° F



## fusible plugs



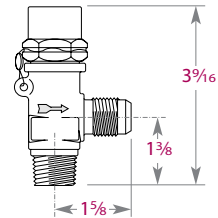
part number	thread size (mpt)	temperature setting
plug-148	1/8	212° F
plug-175	3/8	212° F
plug-265	5/8-18UNF	212° F
plug-166	1/8	283° F
plug-337	3/8	283° F
plug-364	5/8-18UNF	283° F



## relief valves



part number	Connections		pressure setting
	mpt	flare	
valve-58	3/8	3/8	350 psi
valve-67	3/8	3/8	400 psi
valve-94	1/2	5/8	350 psi
valve-102	1/2	5/8	400 psi
valve-764	1/2	5/8	450 psi
valve-771	3/8	3/8	450 psi



## protection notes

Relief valves are installed in a refrigeration system primarily to protect the vessel in the event of fire or other emergency high pressure condition.

Fusible unions and plugs protect only in the event of fire.

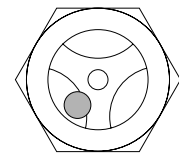
The 5/8-18UNF union or plug seats in a special 3/8" coupling with a copper zinc coated flare gasket, exactly as an SAE flare fitting. A conventional 3/8" mpt pipe threaded union, plug, or safety valve will also seal on the dryseal pipe thread of the coupling if ever necessary.

All systems must have a relief valve or fuse plug installed in order to comply with the ANSI B9.1 code.

## sight glasses

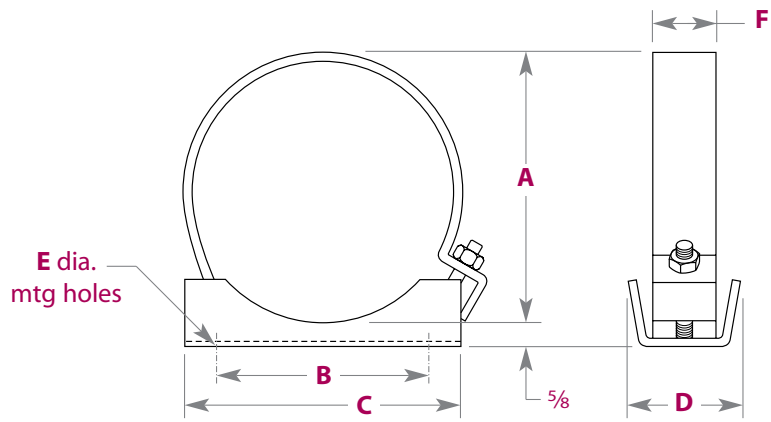


part number	thread size	bulls-eye type
SG04	1/2 mpt	float ball
SG06	3/4 mpt	float ball
SG08	1 mpt	float ball
SG10	1 1/4 mpt	float ball
SG11	2 mpt	float ball
SG12	1 1/4 -12 3/4 ROTALOCK	float ball



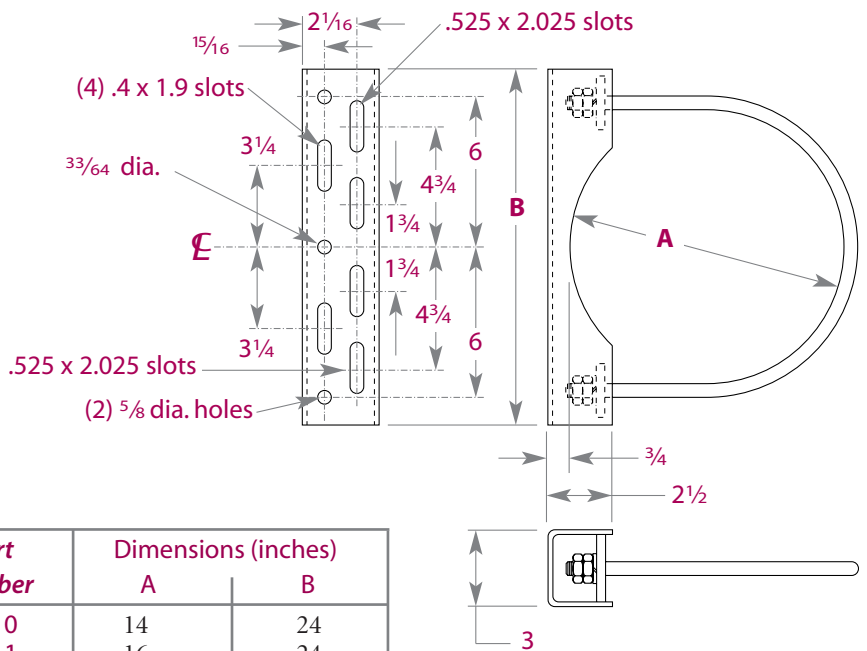
# Brackets

## universal



part number	Dimensions (inches)					
	A	B	C	D	E	F
5A	5	5 1/2	7	2 1/16	7/16	1 1/16
6A	6	5 1/2	7	2 1/16	7/16	1 1/16
6B	6 5/8	5 1/2	7	2 1/16	7/16	1 1/16
8B	8 5/8	8	9	2 7/8	7/16	1 1/16
10B	10 3/4	10	11	3 5/16	7/16	1 1/16
12B	12 3/4	11 5/8	13	4 1/8	9/16	1 1/2
14B	14	13 1/4	14 1/2	4 1/8	9/16	1 1/2
16B	16	15 3/4	17	4 1/8	9/16	1 1/2

## compressor / condenser



part number	Dimensions (inches)		part number	Dimensions (inches)	
	A	B		A	B
BR1	6	14	BR10	14	24
BR3	6 5/8	14	BR11	16	24
BR5	8 5/8	14	BR12	18	24
BR7	10 3/4	14	BR13	20	24
BR9	12 3/4	14			





# Standard

REFRIGERATION COMPANY

2050 North Ruby Street  
Melrose Park, Illinois 60160-1133  
708 345 5400 fax 345 3513  
[www.stanref.com](http://www.stanref.com)



## warranty

### Liability and Limitations

All products are thoroughly inspected and tested before leaving the factory, and are guaranteed against defects in material and workmanship to the extent expressly provided in this Paragraph. If it is proven to Standard satisfaction that any part of any such product was defective when shipped from the factory, and such part is returned to Standard's factory in Melrose Park, Illinois within twelve months of date of shipment thereof, transportation prepaid, Standard shall either furnish a replacement part or repair such part (whichever Standard may elect) free of charge and shall return such replacement part or repaired part to Purchaser, transportation prepaid. The foregoing shall not apply and Standard shall have no obligation under this Paragraph with respect to any part or product which Standard determines was subject to abuse, misuse, or improper installation or application. EXCEPT AS EXPRESSLY PROVIDED ABOVE, STANDARD MAKES NO GUARANTEE OR WARRANTY EXPRESS OR IMPLIED WITH RESPECT TO ANY PRODUCTS SOLD HEREUNDER OR ANY PART OF ANY SUCH PRODUCT, INCLUDING (WITHOUT LIMITING THE GENERALITY OF THE FOREGOING) WARRANTIES OF MERCHANTABILITY AND WARRANTIES OF FITNESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE, and Standard shall have no other liability whatsoever with respect to such products or parts including (without limitation) any liability for indirect, consequential or resultant damages whether based upon breach of warranty, negligence or any other ground, it being understood that replacement or repair of defective parts as herein provided shall be Purchaser's sole and exclusive remedy.

### Changes and Improvements

Changes and improvements may be made at any time but Standard Refrigeration Company shall be under no obligation to incorporate same in, or substitute the same for any products previously sold to any customer.

### Merchandise Returned for Credit

No merchandise will be accepted for credit unless authority of the factory has been first obtained. Only merchandise of current design, in their original individual cartons will be considered for return—and if returned, a handling charge of 12% of the original net purchase price, plus transportation, will be made. No provision is made for the return of merchandise of special nature, and orders for special merchandise are not subject to cancellation.

### Engineering Assistance

For assistance in the design, specification or use of Standard products, please contact your nearest sales representative or our office headquarters in Melrose Park, Illinois.

Engineering specifications in this catalog are current as of the printing date, but are subject to future design changes. Consult factory for latest specification data before ordering.

Product performance is based on ARI standards and nominal operating conditions. Standard Refrigeration Company is not responsible for product failure in nonconforming applications. For assistance, please consult the factory.