REFRIGERANT SUBCOOLER SELECTION PROCEDURE

1. Enter the refrigerant and evaporating temperature of the low temperature system being subcooled into Table 1 and read the MBtu/hr per ton required to subcool the liquid from 100°F to 55°F.
2. Multiply the capacity in tons of the low temperature system by the MBtu/hr per ton in Step 1 to determine the subcooler capacity required.
3. The capacities shown in Table 3 are based on subcooling R-502 with evaporated R-22. For subcooling other refrigerants with R-22, divide the calculated subcooler capacity required in Step 2 by the correction factor in Table 2 to determine the equivalent R-502 subcooling capacity required.
4. Subtract the evaporating temperature of the high temperature system from 55°F to determine the subcooler approach temperature.
5. Into Table 3, enter the Subcooler Capacity, at the approach temperature from Step 4 and select the Model whose capacity most closely matches the calculated equivalent capacity required per Step 3.

TABLE 1
MBtu/hr PER TON REQUIRED TO SUBCOOL LIQUID REFRIGERANT FROM 100°F TO 55°F

EVAPORATING	REFRIGERANT		
TEMPERATURE (°F)	R-12	R-22	R-502
+40	2.01	1.93	2.67
+20	2.08	1.98	2.77
0	2.16	2.02	2.88
-20	2.25	-	3.01
-40	-	-	3.15

TABLE 2
SUBCOOLED CAPACITY ADJUSTMENT FACTOR

SUBCOOLED REFRIGERANT	CAPACITY DIVISOR
R-12	0.65
R-22	1.05
R-502	1.00

TABLE 3
SUBCOOLED CAPACITY (MBtu/hr)

MODEL NO.	APPROACH (°F)								
	9	10	11	12	13	14	15	16	17
CHAX-3100-H	7.9	10.2	12.6	15.0	17.5	20.0	22.5	25.2	27.8
CHAX-3150-H	8.2	10.6	13.5	16.5	19.6	22.8	26.0	29.6	33.4
CHAX-3200-H	11.3	14.4	17.9	21.4	25.0	28.6	32.3	35.0	37.2
CHAX-3250-H	16.0	21.4	26.6	31.7	36.8	41.6	46.0	50.4	54.8
CHAX-3300-H	17.2	22.3	27.6	33.2	38.8	44.5	50.5	57.0	63.7
CHAX-3400-H	25.6	34.8	43.2	50.8	58.0	64.9	71.6	76.8	80.5
CHAX-3500-J	40.4	56.4	70.3	83.2	95.2	106.8	117.0	127.2	137.2

EXAMPLE:

Select a subcooler for a low temperature R-502 system which has 15 tons of capacity at 0°F evaporating temperature. The R-502 liquid is to be subcooled from 100°F to 55°F by a high temperature R-22 system having an evaporating temperature of 41°F.

1. Entering Table 1 with R-502 and 0°F evaporating temperature, it is seen that 2.88 MBtu/hr per ton is required to subcool the liquid from 100°F to 55°F.
2. Required subcooler capacity = 15 tons x 2.88 MBtu/hr per ton = 43.2 MBtu/hr.
3. From Table 2, equivalent R-502 capacity required = 43.2 / 1.00 = 43.2 MBtu/hr.
4. Approach temperature = 55 – 41 = 14°F
5. Entering Table 3 at 14°F approach temperature and 43.2 MBtu/hr, a CHAX-3300-H is selected which has a capacity of 44.5 MBtu/hr.

NOTE: Subcooler capacity ratings are based on either parallel flow or counterflow arrangement using R-22 as the evaporating refrigerant on the high temperature system with 7°F superheat and 100°F liquid entering expansion valve. For use with other refrigerants on the high temperature system or for operating conditions substantially different than those given, please consult factory.