Heat Reclaim Coil Bulletin

For Duct Mounting Copper Tubes and Aluminum Fins

Capacity Data

FINS PER INCH	AIRSIDE RESISTANCE INCHES OF WATER FACE VELOCITY (FPM) 500	600	700	800	TD °F	TOTAL HEAT REJECTION - R22 BTUH/SQ. FT. FACE AREA FACE VELOCITY (FPM) 500	550	600	650	700	750	800	OPER. WEIGHT (LBS/SQ. FT. FACE AREA)
8	0.20	0.27	0.35	0.44	20	6200	6500	6800	7100	7400	7700	8000	14
					25	7700	8100	8500	8900	9300	9700	10000	
					30	9300	9750	10200	10650	11100	11550	12000	
					35	10900	11400	11900	12400	13000	13500	14000	
					40	12400	13000	13600	14200	14800	15400	16000	
10	0.23	0.31	0.40	0.51	20	6800	7130	7460	7790	8120	8450	8780	17
					25	8500	8900	9300	9700	10100	10500	10900	
					30	10200	10700	11200	11700	12200	12700	13200	
					35	11900	12400	13000	13600	14100	14700	15300	
					40	13600	14260	14920	15580	16240	16950	17560	
12	0.27	0.36	0.46	0.59	20	7300	7650	8000	8350	8700	9050	9400	20
					25	9000	9500	10000	10500	11000	11500	12000	
					30	11000	11500	12000	12500	13000	13500	14000	
					35	12600	13300	14000	14700	15400	16100	16800	
					40	14600	15300	16000	16700	17400	18100	18800	

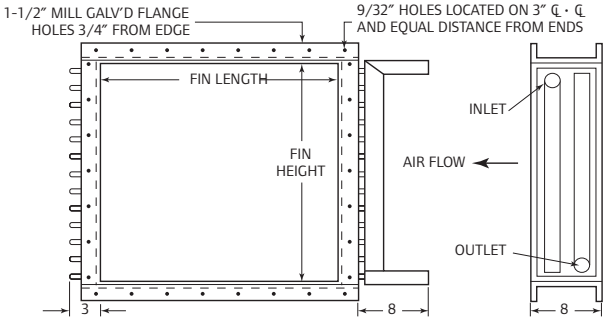
TD – Temperature difference between saturated condensing temp and entering air temp. Multiplier Factors for other refrigerants: R-404A and R-507-0.98, R-134A-0.95.

Physical Data - *Face Area in Sq. Ft. – Shading indicates most economical selections.*

TUBES IN FACE	FIN HEIGHT (IN)	TOTAL HEIGHT (IN)	AVAILABLE CIRCUITS	STANDARD FIN LENGTHS (IN) 36	42	48	54	60	66	72	84	96	108	120
20	30	30.5	20	7.5	8.8	10.0	11.3	12.5	13.8	15.0	17.5	20.0	22.5	25.0
22	33	33.5	22	8.3	9.6	11.0	12.4	13.8	15.1	16.5	19.3	22.0	24.8	27.5
24	36	36.5	24	9.0	10.5	12.0	13.5	15.0	16.5	18.0	21.0	24.0	27.0	30.0
26	39	39.5	26	-	11.4	13.0	14.6	16.3	17.9	19.5	22.8	26.0	29.3	32.5
28	42	42.5	28	-	12.3	14.0	15.8	17.5	19.3	21.0	24.5	28.0	31.5	35.0
30	45	45.5	30	-	-	15.0	16.9	18.8	20.6	22.5	26.3	30.0	33.8	37.5
32	48	48.5	32	-	-	16.0	18.0	20.0	22.0	24.0	28.0	32.0	36.0	40.0
34	51	51.5	34	-	-	-	19.1	21.3	23.4	25.5	29.8	34.0	38.3	42.5
36	54	54.5	36	-	-	-	20.3	22.5	24.8	27.0	31.5	36.0	40.5	45.0
38	57	57.5	38	-	-	-	-	-	26.1	28.5	33.3	38.0	42.8	47.5
40	60	60.5	40	-	-	-	-	-	27.5	30.0	35.0	40.0	45.0	50.0

Consult factory for other fin lengths, heights, and circuiting.

DIMENSIONS



NOMENCLATURE

HRC10 - 40 - 108 - HA - LH - MC
HRC12 - 34 - 96 - HA - RH - R22

- Fins/Inch 8, 10, or 12
- No. Tubes in Face
- Fin Length (in)
- HA Horizontal or VA Vertical Air Flow
- Coil Hand Facing Air Discharge RH or LH
- R22, 134A, 404A, 507 or Multi-Circuit

CONNECTIONS – ODS

IN	OUT	MBH
1-3/8	1-1/8	0-134
1-5/8	1-3/8	134-168
2-1/8	1-5/8	168-360
2-5/8	2-1/8	360-600
2-5/8	2-5/8	600-720
3-1/8	2-5/8	720-940

Heat of Rejection Calculation

Use compressor manufacturer's heat of rejection ratings whenever possible. Basic formulas for reciprocating compressors:

OPEN TYPE:
THR = COMPRESSOR BTUH + (2545 x BHP)

HERMETIC TYPE:
THR = COMPRESSOR BTUH + (3413 x KW)

THR may be estimated with factors shown in Table 1.

TABLE 1: COMPRESSOR BTUH x FACTOR

EVAP TEMP (˚F)	CONDENSING TEMPERATURE (˚F) OPEN COMPRESSOR			HERMETIC COMPRESSOR		
	90	100	110	90	100	110
-30	1.37	1.42	1.47	1.57	1.62	1.68
-20	1.33	1.37	1.42	1.49	1.53	1.58
-10	1.28	1.32	1.37	1.42	1.46	1.50
0	1.24	1.28	1.32	1.36	1.40	1.44
10	1.21	1.24	1.28	1.31	1.34	1.38
20	1.17	1.20	1.24	1.26	1.29	1.33
30	1.14	1.17	1.20	1.22	1.25	1.28
40	1.12	1.15	1.17	1.18	1.21	1.24
50	1.09	1.12	1.14	1.14	1.17	1.20

Single Circuited Heat Reclaim Coil Selection

Example:

GIVEN: 20,500 CFM, THR = 400,000 BTUH, 70˚F ENT. AIR, 100˚F SAT COND TEMP, Horizontal air flow, right hand connections, 0.4 inches maximum air side resistance, R22 refrigerant. FPM equals CFM divided by the duct open area in square feet. If duct size is not known, choose a face velocity from the capacity chart.

SELECTION: From Capacity Data – 640 FPM, 12 FIN/INCH results in 0.4 inches static pressure. BTUH/SQ. FT. FACE AREA = 12,400 with 30˚ TD. Required Face Area for Velocity = 20,500 CFM/640 = 32.03 SQ. FT. Required Face Area for BTUH = 400,000/12,400 = 32.26 SQ. FT. From Physical Data HRC12-32-96-HA-RH has a 32.0 SQ. FT. Face Area requiring 96" long x 48" high duct dimensions. Compare required Face Area and Air Side Resistance to the data in "**GIVEN**" and adjust if necessary.

Multi-Circuited Heat Reclaim Coil Selection

Example:

GIVEN: 30,000 CFM, THR, and COND TEMP as shown, horizontal airflow, left hand connection, 0.4 inches maximum air side resistance, refrigerant as shown. FPM explained on the left.

SELECTION:

Step 1 - List Refrigerant, SAT CON TEMP, TD, and THR for each system.
Step 2 - Correct THR to R22 and 35˚TD basis and total.
Step 3 - Divide each system Required THR by total THR.
Step 4 - From Capacity Data: 700 FPM, 10 FIN/INCH, results in 0.4 inches static pressure.

Required Face Area for Velocity = 30,000/700 = 42.9 SQ. FT.

Required BTUH/SQ. FT. Face = 582,255/42.9 = 13,572.

From Capacity Data:
10 FPI, 700 FPM, 35˚TD has BTUH/SQ. FT. Face = 14,100.

From Physical Data:
HRC10-40-108-HA-LH-MC has 45.0 SQ. FT. Face Area and 40 Circuits.

Complete Selection Form by assigning circuits as shown in Table 2.

TABLE 2: MULTI-CIRCUIT COIL EXAMPLE

STEP 1 - GIVEN DATA						STEP 2 - CORRECTIONS				STEP 3		STEP 4 - SELECTION			
SYSTEM	REF	SCT	TD	THR	/	REF	X	TD RATIO	=	REQ'D THR	%	X	CIRCUIT	=	REQ'D	ASSIGN
1	134A	100	35	70000	/	0.95	X	(35/35)	=	73684	0.13	X	40	=	5.2	5
2	22	100	35	150000	/	1.00	X	(35/35)	=	150000	0.26	X	40	=	10.4	10
3	22	100	35	130000	/	1.00	X	(35/35)	=	130000	0.22	X	40	=	8.8	9
4	404A	90	25	90000	/	0.98	X	(35/25)	=	128571	0.22	X	40	=	8.8	9
5	404A	90	25	70000	/	0.98	X	(35/25)	=	100000	0.17	X	40	=	6.8	7
TOTALS ACTUAL			=	510000				SELECTION	=	582255	1.00					40

Specification and Ordering Instructions

1. Complete Model Number
2. Total Heat of Rejection - BTUH
3. Multi-Circuit System Schedule
4. Entering Air Temperature (˚F)
5. CFM
6. Sat. Condensing Temperature (˚F)
7. Connection Hand Facing Air Stream
8. Vertical or Horizontal Flow
9. Allowable Air Side Resistance
10. Refrigerant

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