

LINE SIZE - R134a

BEIJER REF
Australia

SUCTION LINE																	LIQUID LINE																			
Total Ref Duty (Kw)	-10°C Sat. Evap. Temp					-5°C Sat. Evap. Temp					0°C Sat. Evap. Temp					5°C Sat. Evap. Temp					10°C Sat. Evap. Temp					Total Ref Duty (Kw)										
	Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Equivalent length (m)										
		10	25	30	50		10	25	30	50		10	25	30	50		10	25	30	50		10	25	30	50											
0.5	1/8	1/2	1/2	1/2	5/8	5/8	1/4	1/2	1/2	1/2	1/2	5/8	1/4	3/8	1/2	1/2	1/2	1/2	1/2	1/2	1/5	3/8	1/2	1/2	1/2	1/2	1/2	0.5								
1	1/2	1/2	5/8	5/8	3/4	3/4	1/2	1/2	5/8	5/8	3/4	3/4	3/8	1/2	5/8	5/8	5/8	5/8	5/8	5/8	3/8	3/8	1/2	5/8	5/8	5/8	5/8	1								
2	1-1/2	5/8	3/4	7/8	7/8	7/8	1	5/8	3/4	3/4	7/8	7/8	3/4	5/8	3/4	5/8	5/8	3/4	3/4	3/4	3/4	3/4	5/8	5/8	5/8	5/8	5/8	3/8	3/8	3/8	3/8	3/8	2			
3	2	3/4	7/8	7/8	1-1/8	1-1/8	1-3/4	3/4	7/8	7/8	1-1/8	1-1/8	1-3/4	3/4	3/4	3/4	7/8	7/8	7/8	1-1/8	1	5/8	3/4	3/4	3/4	3/4	7/8	3/8	3/8	3/8	3/8	1/2	3			
4	3-1/2	7/8	1-1/8	1-1/8	1-1/8	1-1/8	3	3/4	7/8	7/8	1-1/8	1-1/8	1-3/4	3/4	7/8	7/8	7/8	7/8	1-1/8	1-1/8	1-1/2	3/4	5/8	3/4	3/4	7/8	7/8	3/8	3/8	3/8	1/2	1/2	4			
5	4	7/8	1-1/8	1-1/8	1-1/8	1-1/8	3-1/2	7/8	1-1/8	1-1/8	1-1/8	1-1/8	3	3/4	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	3	3/4	7/8	7/8	7/8	7/8	1-1/8	3/8	3/8	1/2	1/2	1/2	5			
6	5	7/8	1-1/8	1-1/8	1-3/8	1-3/8	4	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3-1/2	3/4	1-1/8	1-1/8	1-1/8	1-3/8	3	3/4	7/8	7/8	1-1/8	1-1/8	3/4	7/8	7/8	1-1/8	1-1/8	3/8	1/2	1/2	1/2	1/2	6	
7.5	6	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	5	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	5	7/8	1-1/8	1-1/8	1-3/8	1-3/8	5	7/8	1-1/8	1-1/8	1-1/8	1-3/8	2-3/4	3/4	7/8	1-1/8	1-1/8	1-1/8	3/8	1/2	1/2	1/2	5/8	7.5
10	7	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	6	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	6	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	6	7/8	1-1/8	1-1/8	1-3/8	1-3/8	3	7/8	1-1/8	1-1/8	1-1/8	1-3/8	1/2	1/2	1/2	5/8	5/8	10
12.5	7-1/2	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	7-1/2	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7-1/2	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	7/8	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	12.5						
15	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	10	1-1/8	1-3/8	1-3/8	1-5/8	2-1/8	10	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	4	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	1/2	5/8	5/8	5/8	7/8	15	
17.5	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	7-1/2	1-1/8	1-3/8	1-3/8	1-5/8	2-1/8	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	1-5/8	1/2	5/8	5/8	7/8	7/8	17.5		
20	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	10	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	7-1/2	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7-1/2	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	1/2	5/8	5/8	7/8	7/8	20	
30	30	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	30	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	30	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	5/8	7/8	7/8	7/8	7/8	30
40	40	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	25	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	25	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	5/8	7/8	7/8	7/8	1-1/8	40
50	50	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	40	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	25	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	7/8	7/8	7/8	7/8	1-1/8	50
60	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	50	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	40	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	7/8	7/8	7/8	1-1/8	1-1/8	60
75	60	2-5/8	2-5/8	3-1/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	50	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	40	2-1/8	2-1/8	2-5/8	3-1/8	3-1/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	75
90	75	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	2-5/8	3-1/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	50	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	40	2-1/8	2-1/8	2-1/8	2-5/8	3-1/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	90
105	105	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	50	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	105
120	120	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	120
140	140	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	140					
160	160	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	3-1/8	4-1/8	160					
180	180	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	180					
200	200	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	200					
240	240	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	240					
260	260	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	4-1/8	4-1/8	4-1/8	4-1/8	60	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8	260					
280	280	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8	280					
300	300	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8	300					

Notes:

(1) This chart has been based on ASHRAE (1998) for type "L" refrigeration grade copper tube.

(2) Lengths are "Total Equivalent" including valves and fittings. Refer to TABLE 5 for estimates of "Equivalent Lengths" of the more common valves and fittings used today.

(3) This chart has been formulated to assist the reader and is not intended to be a substitute for good pipe work system design and practice.

(4) Duties are based on 40°C cond. temp. Multiply **required duty** by the following factors for other cond. temps : 20°C =

LINE SIZE - R404A - R507

BEIJER REF
Australia

SUCTION LINE																	LIQUID LINE																			
Total Ref Duty (Kw)	-40°C Sat. Evap. Temp					-30°C Sat. Evap. Temp					-20°C Sat. Evap. Temp					-5°C Sat. Evap. Temp					5°C Sat. Evap. Temp					Total Ref Duty (Kw)										
	Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Equivalent length (m)										
		10	25	30	50		10	25	30	50		10	25	30	50		10	25	30	50		10	25	30	50											
0.5	1-1/4	1/2	1/2	1/2	5/8	5/8	3/4	1/2	1/2	1/2	5/8	5/8	1/3	3/8	1/2	1/2	5/8	5/8	1/4	3/8	3/8	3/8	3/8	1/2	1/4	1/4	1/4	3/8	3/8	0.5						
1		5/8	5/8	3/4	7/8	7/8	1-1/2	5/8	5/8	3/4	7/8	7/8	3/4	1/2	5/8	5/8	3/4	3/4	3/8	1/2	1/2	5/8	5/8	1/2	1/2	3/8	3/8	3/8	3/8	3/8	1					
2	3-1/2	3/4	3/4	7/8	7/8	1-1/8	1-1/8	3	3/4	3/4	7/8	7/8	1-1/8	5/8	3/4	3/4	7/8	7/8	1-1/2	5/8	5/8	5/8	5/8	3/4	1/2	5/8	5/8	5/8	5/8	3/4	3/8	3/8	3/8	3/8	2	
3	5	7/8	7/8	7/8	1-1/8	1-1/8	4	7/8	7/8	7/8	1-1/8	1-1/8	3/4	7/8	7/8	7/8	1-1/8	1-1/8	3/4	5/8	5/8	5/8	5/8	3/4	5/8	5/8	5/8	3/4	3/4	3/8	3/8	3/8	1/2	3		
4	7-1/2	7/8	7/8	1-1/8	1-1/8	1-3/8	5	7/8	7/8	1-1/8	1-1/8	1-3/8	3/4	7/8	7/8	7/8	1-1/8	1-1/8	3/4	5/8	3/4	3/4	7/8	7/8	1-1/2	5/8	3/4	3/4	3/4	7/8	3/8	3/8	3/8	1/2	4	
5	10	7/8	1-1/8	1-1/8	1-3/8	1-3/8	6	7/8	1-1/8	1-1/8	1-3/8	1-3/8	3/4	7/8	7/8	1-1/8	1-1/8	1-1/8	3/4	3/4	7/8	7/8	1-1/8	3/4	3/4	3/4	7/8	7/8	3/8	3/8	3/8	3/8	1/2	5		
6		1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	4	7/8	1-1/8	1-1/8	1-1/8	1-1/8	3	3/4	7/8	7/8	1-1/8	1-1/8	3/4	7/8	7/8	1-1/8	1-1/8	3/8	1/2	1/2	1/2	1/2	1/2	6
7.5	13	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8		1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	6	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	3-1/2	7/8	7/8	1-1/8	1-1/8	1-1/8	3	3/4	7/8	7/8	7/8	1-1/8	3/8	1/2	1/2	1/2	5/8	7.5
10	15	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8	10	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	5	7/8	1-1/8	1-1/8	1-1/8	1-1/8	3-1/2	7/8	7/8	7/8	1-1/8	1-1/8	1/2	1/2	1/2	5/8	5/8	10	
12.5	22	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	13	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	10	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	6	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	5	7/8	7/8	1-1/8	1-1/8	1-3/8	1/2	5/8	5/8	5/8	5/8	12.5
15	27	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8		1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	13	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	6	7/8	1-1/8	1-1/8	1-1/8	1-3/8	1/2	5/8	5/8	5/8	5/8	15
17.5	30	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	15	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	15	1-3/8	1-5/8	1-5/8	1-5/8	1-5/8	15	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8		1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	1/2	5/8	5/8	5/8	5/8	17.5
20	37	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	22	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	20	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	10	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	5/8	5/8	5/8	5/8	7/8	20
30	45	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	15	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	13	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	5/8	5/8	7/8	7/8	7/8	30
40		2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	37	2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	25	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	15	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7/8	7/8	7/8	7/8	1-1/8	40
50		2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	45	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	40	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	30	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	20	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	7/8	7/8	7/8	1-1/8	1-1/8	50
60		2-5/8	2-5/8	3-1/8	3-1/8	4-1/8	50	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	25	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	25	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	7/8	7/8	1-1/8	1-1/8	1-1/8	60
75		2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	40	1-5/8	2-1/8	2-5/8	2-5/8	2-5/8	30	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	20	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	75
90		3-1/8	3-1/8	4-1/8	4-1/8		3-1/8	3-1/8	4-1/8	4-1/8		50	2-5/8	3-1/8	3-1/8	3-1/8	3-1/8	50	2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	7/8	1-1/8	1-1/8	1-3/8	1-3/8	90	
105		3-1/8	4-1/8	4-1/8			3-1/8	4-1/8	4-1/8			60	2-5/8	3-1/8	3-1/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	40	1-5/8	2-1/8	2-5/8	2-5/8	2-5/8	7/8	1-1/8	1-1/8	1-3/8	1-3/8	105	
120		4-1/8	4-1/8	4-1/8			4-1/8	4-1/8	4-1/8			60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	50	2-1/8	2-5/8	3-1/8	3-1/8	3-1/8	50	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	7/8	1-1/8	1-1/8	1-3/8	1-3/8	120	
140		4-1/8	4-1/8				4-1/8	4-1/8				60	3-1/8	3-1/8	4-1/8	4-1/8	4-1/8	50	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	50	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	140						
160		4-1/8	4-1/8				4-1/8	4-1/8				60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	160						
180		4-1/8	4-1/8				4-1/8	4-1/8				60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	180						
200		4-1/8					4-1/8					60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	200						
240												60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	3-1/8	4-1/8	240						
260												60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	260						
280												60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	280						
300												60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	300						

Notes:

(1) This chart has been based on ASHRAE (1998) for type "L" refrigeration grade copper tube.

(2) Lengths are "Total Equivalent" including valves and fittings. Refer to TABLE 5 for estimates of "Equivalent Lengths" of the more common valves and fittings used today.

(3) This chart has been formulated to assist the reader and is not intended to be a substitute for good pipe work system design and practice.

(4) Duties are based on 40°C cond. temp. Multiply **required duty** by the following factors for other cond. temps : 20°C = 0.85, 30°C = 0.91, 40°C = 1.00, 45°C = 1.05, 50°C = 1.10.

(5) Nom. HP's are to assist obtaining a "rough" unit size at each evaporating point (@ 40°C condensing temperature). HP's are based on current Hermetic Units up to 1-3/4 HP, Scroll Units up to 15 HP and Semi-Hermetic Units above this point.

Table 2

LINE SIZE - R22 - R407F

SUCTION LINE																	LIQUID LINE																	
Total Ref Duty (Kw)	-30°C Sat. Evap. Temp					-20°C Sat. Evap. Temp					-5°C Sat. Evap. Temp					5°C Sat. Evap. Temp					10°C Sat. Evap. Temp					Total Ref Duty (Kw)								
	Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Nom. HP (5)	Equivalent length (m)				Equivalent length (m)								
		10	25	30	50		10	25	30	50		10	25	30	50		10	25	30	50		10	25	30	50									
0.5	3/8	1/2	1/2	1/2	5/8	5/8	3/8	1/2	1/2	1/2	5/8	1/4	3/8	3/8	3/8	1/2	1/2	3/8	3/8	3/8	1/2	1/2	1/4	1/4	1/4	3/8	3/8	0.5						
1	1-1/4	5/8	5/8	5/8	3/4	3/4	1	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1						
2	2	3/4	3/4	7/8	7/8	7/8	1-1/2	5/8	3/4	3/4	7/8	7/8	1	1/2	5/8	5/8	3/4	3/4	5/8	1/2	1/2	5/8	5/8	5/8	3/8	3/8	3/8	3/8	3/8	2				
3	3-1/2	7/8	7/8	7/8	1-1/8	1-1/8	3	3/4	7/8	7/8	7/8	7/8	1-1/2	5/8	3/4	3/4	7/8	1	1/2	5/8	5/8	3/4	3/4	3/4	3/8	3/8	3/8	3/8	1/2	3				
4	5	7/8	7/8	1-1/8	1-1/8	1-1/8	3-1/2	3/4	7/8	7/8	1-1/8	1-1/8	2	5/8	3/4	3/4	7/8	7/8	1-1/4	5/8	3/4	3/4	7/8	3/8	3/8	3/8	3/8	1/2	4					
5	6	7/8	1-1/8	1-1/8	1-1/8	1-3/8	4	7/8	7/8	1-1/8	1-1/8	1-3/8	3/4	3/4	7/8	7/8	1-1/8	1-3/4	5/8	3/4	3/4	7/8	7/8	3/8	3/8	1/2	1/2	1/2	5					
6	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	1-5/8	5	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3	3/4	7/8	7/8	1-1/8	2	3/4	3/4	7/8	7/8	1-1/8	5/8	3/4	3/4	7/8	7/8	6					
7.5	10	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	6	7/8	1-1/8	1-1/8	1-3/8	1-3/8	3-1/2	3/4	7/8	1-1/8	1-1/8	3	3/4	7/8	7/8	1-1/8	2	3/4	7/8	7/8	7/8	1-1/8	7.5					
10	13	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	1-5/8	5	7/8	1-1/8	1-1/8	1-1/8	3-1/2	3/4	7/8	7/8	1-1/8	1-1/8	3/4	7/8	7/8	1-1/8	1-1/8	10					
12.5		1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	10	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	6	7/8	1-1/8	1-1/8	1-3/8	4	7/8	7/8	1-1/8	1-1/8	1-3/8	3/8	1/2	1/2	5/8	5/8	12.5					
15	15	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	13	1-1/8	1-3/8	1-3/8	1-5/8	2-1/8	7-1/2	1-1/8	1-1/8	1-3/8	5	7/8	1-1/8	1-1/8	1-1/8	1-3/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	15						
17.5		1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	15	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	1-1/8	1-3/8	1-3/8	1-5/8	6	7/8	1-1/8	1-1/8	1-3/8	1-3/8	4	7/8	1-1/8	1-1/8	1-3/8	1-3/8	17.5					
20	22	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	20	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	10	1-1/8	1-3/8	1-3/8	1-5/8	7-1/2	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	4-1/2	7/8	1-1/8	1-1/8	1-3/8	1-3/8	20				
30	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	1-5/8	2-1/8	2-1/8	2-5/8	15	1-3/8	1-3/8	1-5/8	2-1/8	10	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7-1/2	1-1/8	1-3/8	1-3/8	1-5/8	7/8	7/8	30			
40	40	2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	25	1-3/8	1-5/8	1-5/8	2-1/8	15	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	10	1-1/8	1-3/8	1-3/8	1-5/8	7/8	7/8	40			
50	50	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	50	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	30	1-5/8	1-5/8	2-1/8	2-1/8	20	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	15	1-3/8	1-5/8	1-5/8	2-1/8	7/8	7/8	50			
60	60	2-5/8	2-5/8	3-1/8	3-1/8	3-1/8	60	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	35	1-5/8	2-1/8	2-1/8	2-1/8	25	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	20	1-3/8	1-5/8	1-5/8	2-1/8	7/8	7/8	60			
75		2-5/8	3-1/8	3-1/8	3-1/8	4-1/8	40	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	40	1-5/8	2-1/8	2-1/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	25	1-5/8	1-5/8	2-1/8	2-1/8	7/8	7/8	75			
90		2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	50	2-5/8	2-5/8	3-1/8	3-1/8	3-1/8	50	2-1/8	2-1/8	2-5/8	2-5/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	30	1-5/8	2-1/8	2-1/8	2-5/8	7/8	7/8	90			
105		2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	2-5/8	40	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8	35	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	7/8	1-1/8	1-1/8	1-3/8	105
120		3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	50	2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	40	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	7/8	1-1/8	1-1/8	1-3/8	120
140		3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	50	2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	7/8	1-1/8	1-1/8	1-3/8	140
160		3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	3-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	60	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	7/8	1-1/8	1-1/8	1-3/8	160
180		4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	60	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	7/8	1-1/8	1-1/8	1-3/8	180
200		4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	60	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	7/8	1-1/8	1-1/8	1-3/8	200
240		4-1/8					60	3-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	60	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	7/8	1-3/8	1-3/8	1-5/8	240
260		4-1/8					60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	2-5/8	4-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	3-1/8	4-1/8	4-1/8	7/8	1-3/8	1-3/8	1-5/8	260
280		4-1/8					60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	3-1/8	4-1/8	4-1/8	7/8	1-3/8	1-3/8	1-5/8	280
300		4-1/8					60	4-1/8	4-1/8	4-1/8	4-1/8	4-1/8	60	3-1/8	4-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	3-1/8	4-1/8	4-1/8	60	2-1/8	2-5/8	3-1/8	4-1/8	4-1/8	7/8	1-3/8	1-3/8	1-5/8	300

Notes:

(1) This chart has been based on ASHRAE (1998) for type "L" refrigeration grade copper tube.

(2) Lengths are "Total Equivalent" including valves and fittings. Refer to TABLE 5 for estimates of "Equivalent Lengths" of the more common valves and fittings used today.

(3) This chart has been formulated to assist the reader and is not intended to be a substitute for good pipe work system design and practice.

(4) Duties are based on 40°C cond. temp. Multiply **required duty** by the following factors for other cond. temps : 20°C = 0.85, 30°C = 0.91, 40°C = 1.00, 45°C = 1.05, 50°C = 1.10.

(5) Nom. HP's are to assist obtaining a "rough" unit size at each evaporating point (@ 40°C condensing temperature). HP's are based on current Hermetic Units up to 1-3/4 HP, Scroll Units up to 15 HP and Semi-Hermetic Units above this point.

Table 3

REMOTE CONDENSER LINE SIZE

Total Ref Duty (Kw)	R134a						R404A - R507						R22 - R407F						Total Ref Duty (Kw)				
	DISCHARGE LINE					DRAIN LINE	DISCHARGE LINE					DRAIN LINE	DISCHARGE LINE					DRAIN LINE					
	Equivalent length (m)					Cond to Receiver (4)	Cond to Receiver (5)	Equivalent length (m)					Cond to Receiver (4)	Cond to Receiver (5)	Equivalent length (m)					Cond to Receiver (4)	Cond to Receiver (5)		
	10	25	30	50	80			10	25	30	50	80			10	25	30	50	80				
0.5	3/8	3/8	1/2	1/2	1/2	1/4	1/4	3/8	3/8	3/8	1/2	1/2	1/4	1/4	3/8	3/8	3/8	3/8	3/8	1/4	1/4	0.5	
1	3/8	1/2	1/2	1/2	1/2	1/4	3/8	3/8	1/2	1/2	1/2	1/2	3/8	3/8	3/8	3/8	3/8	1/2	3/8	3/8	3/8	1	
2	1/2	1/2	1/2	5/8	5/8	3/8	3/8	3/8	1/2	1/2	1/2	5/8	5/8	3/8	3/8	3/8	1/2	1/2	1/2	3/8	3/8	2	
3	1/2	5/8	5/8	5/8	3/4	3/8	3/8	1/2	5/8	5/8	5/8	3/4	3/4	3/8	3/8	1/2	1/2	1/2	5/8	5/8	3/8	3/8	3
4	1/2	5/8	5/8	3/4	3/4	3/8	3/8	1/2	5/8	5/8	3/4	3/4	3/4	3/8	1/2	1/2	1/2	5/8	5/8	3/8	3/8	4	
5	5/8	5/8	3/4	3/4	7/8	1/2	1/2	5/8	5/8	5/8	3/4	7/8	1/2	5/8	1/2	5/8	1/2	5/8	5/8	3/4	3/8	5	
6	5/8	3/4	3/4	7/8	7/8	1/2	1/2	5/8	3/4	3/4	3/4	7/8	1/2	5/8	1/2	5/8	1/2	5/8	3/4	3/4	1/2	3/8	6
7.5	5/8	3/4	3/4	7/8	7/8	1/2	1/2	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	3/4	3/4	3/4	7/8	1/2	1/2	7.5	
10	3/4	7/8	7/8	7/8	1-1/8	5/8	5/8	3/4	7/8	7/8	7/8	1-1/8	5/8	5/8	5/8	3/4	3/4	7/8	7/8	1/2	5/8	10	
12.5	3/4	7/8	7/8	1-1/8	1-1/8	5/8	3/4	3/4	7/8	7/8	1-1/8	1-1/8	5/8	3/4	3/4	7/8	7/8	1-1/8	5/8	5/8	5/8	12.5	
15	7/8	7/8	1-1/8	1-1/8	1-1/8	5/8	3/4	3/4	7/8	1-1/8	1-1/8	1-1/8	3/4	7/8	3/4	7/8	7/8	7/8	1-1/8	5/8	3/4	15	
17.5	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3/4	7/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3/4	7/8	3/4	7/8	7/8	7/8	1-1/8	5/8	3/4	17.5	
20	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3/4	7/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3/4	7/8	3/4	7/8	7/8	7/8	1-1/8	5/8	3/4	20	
30	1-1/8	1-1/8	1-3/8	1-3/8	1-5/8	7/8	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	7/8	1-1/8	7/8	1-1/8	1-1/8	1-1/8	1-3/8	3/4	7/8	30	
40	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7/8	1-1/8	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	7/8	1-3/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	7/8	1-1/8	40	
50	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	7/8	1-3/8	1-1/8	1-3/8	1-3/8	1-5/8	2-1/8	1-1/8	1-3/8	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	7/8	1-1/8	50	
60	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	1-1/8	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	1-1/8	1-5/8	1-1/8	1-3/8	1-3/8	1-3/8	1-5/8	7/8	1-3/8	60	
75	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	1-1/8	1-5/8	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	1-1/8	1-5/8	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	1-1/8	1-3/8	75	
90	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	1-1/8	1-5/8	1-3/8	2-1/8	2-1/8	2-1/8	2-1/8	1-3/8	1-5/8	1-3/8	1-5/8	1-5/8	2-1/8	1-1/8	1-5/8	90		
105	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	1-3/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	1-3/8	2-1/8	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	1-3/8	2-1/8	105	
120	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	1-3/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	2-5/8	1-3/8	2-1/8	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8	1-3/8	2-1/8	120	
140	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	1-3/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	1-3/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	1-3/8	2-1/8	2-1/8	140	
160	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8	1-3/8	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8	1-5/8	2-1/8	2-5/8	2-1/8	2-1/8	2-1/8	2-5/8	1-3/8	2-1/8	2-1/8	160	
180	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	1-3/8	2-5/8	2-1/8	2-5/8	2-5/8	3-1/8	1-5/8	2-5/8	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	1-3/8	2-1/8	2-1/8	180	
200	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	1-5/8	2-5/8	2-1/8	2-5/8	2-5/8	3-1/8	1-5/8	3-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	1-3/8	2-5/8	2-5/8	200	
240	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	1-5/8	2-5/8	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	1-5/8	3-1/8	2-1/8	2-1/8	2-5/8	2-5/8	1-3/8	2-5/8	2-5/8	240	
260	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	1-5/8	3-1/8	2-1/8	2-5/8	2-5/8	3-1/8	3-1/8	1-5/8	3-1/8	2-1/8	2-1/8	2-5/8	2-5/8	3-1/8	1-5/8	2-5/8	260	
280	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	1-5/8	3-1/8	2-1/8	2-5/8	2-5/8	3-1/8	4-1/8	2-1/8	3-1/8	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	1-5/8	3-1/8	280	
300	2-5/8	2-5/8	3-1/8	3-1/8	4-1/8	1-5/8	3-1/8	2-1/8	2-5/8	3-1/8	3-1/8	4-1/8	2-1/8	3-1/8	2-1/8	2-5/8	2-5/8	2-5/8	3-1/8	1-5/8	3-1/8	300	

Notes:

- (1) This chart has been based on ASHRAE (1998) for type "L" refrigeration grade copper tube.
- (2) Lengths are "Total Equivalent" including valves and fittings. Refer to TABLE 5 for estimates of "Equivalent Lengths" of the more common valves and fittings used today.
- (3) This chart has been formulated to assist the reader and is not intended to be a substitute for good pipe work system design and practice.
- (4) Use these sizes for condenser to receiver drain lines when additional gas balance lines are installed (to avoid "liquid hang-up" in the condenser). These are based on 0.02K/m of pipe run.
- (5) Use these sizes for condenser to receiver drain lines which are "self venting" (no additional gas balance line req'd).

Table 4

EQUIVALENT LENGTHS - VALVES & FITTINGS

Table 5

	Fitting Size													
	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1-1/8"	1-3/8"	1-5/8"	2-1/8"	2-5/8"	3-1/8"	3-5/8"	4-1/8"
Valves	Equivalent length (m)													
Ball Valve	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.6	0.8		
Rotolock Valve	1.3	1.5	2.6	3.3	3.7	4.5	5.6	6.7	7.8	10.4	12.6	15.6		
Angle Receiver Valve	1.1	1.2	2.1	2.7	3.1	3.7	4.6	5.5	6.4	8.5	10.4	12.8	14.9	17.4
Flanged Service Valve				2.3	4.0	4.6	5.7	6.9	8.6	10.3	12.0	16.0	19.4	28.0
Check Valve				1.9	1.4	1.4	3.4	7.0	9.4	24.4	51.6			32.6
Fittings (Copper Sweat)														
45° Elbow	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.4	1.7
90° Elbow	0.2	0.2	0.3	0.6	0.7	0.8	0.9	1.2	1.4	1.5	2.1	2.4	3.1	3.7
180° Return Bend	0.4	0.5	0.6	0.8	1.1	1.2	1.5	1.8	2.1	3.4	4.0	4.9	5.5	6.4
Tee (from side branch)	0.5	0.6	0.9	1.2	1.4	1.5	1.8	2.4	2.7	3.7	4.3	5.2	6.1	6.7
P Trap	0.6	0.7	0.9	1.4	1.7	2.0	2.4	3.1	3.5	4.9	6.1	7.3	8.5	10.1
Change Fittings - Reducers (Eg: 1/2" to 3/8" = one size or 1-3/8" to 7/8" = two sizes)														
One size change		0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Two size changes				0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.9
Three size changes					0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.0

Notes:

- This chart has been produced to assist refrigeration pipe system design using the "equivalent pipe length" method.
Add the total equivalent length for each fitting to each particular line type and then combine with line lengths. Then enter in at the applicable point of the "LINE SIZE" tables.
-

COMPENSATION REQUIRED (By Subcooling) FOR VERTICAL LIFT IN LIQUID LINES.

Table 6

Deg K @ Lift Shown.

Liquid Temp (°C)	R134a		R404A - R507		R22 - R407F	
	Lift (m)		Lift (m)		Lift (m)	
	3.0	6.0	3.0	6.0	3.0	6.0
20°	2.0	3.9	1.2	2.3	1.4	2.7
30°	1.6	3.1	0.9	1.9	1.1	2.2
40°	1.3	2.5	0.8	1.6	0.9	1.8
50°	1.0	2.1	0.7	1.5	0.8	1.5
60°	0.9	1.8	0.6	1.1	0.7	1.3

Notes:

- This chart is to assist in allowance for vertical lift in liquid line runs. Figures show the degree of subcooling required (K) in order to compensate for the effect of lift. (Compensation can be achieved through the installation of a 'suction to liquid' heat exchanger.)
- For lifts other than listed proportion figures accordingly.
- Figures are "net effects", meaning a net loss thru vertical rise may be offset by a nett gain through vertical fall in liquid line.

REFRIGERANT PIPE HOLDING CAPACITIES. (Kg/m)

Table 7

		Temp (°C)	Pipe Size													
			1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1-1/8"	1-3/8"	1-5/8"	2-1/8"	2-5/8"	3-1/8"	3-5/8"	4-1/8"
R134a	SUCTION	-10°	0.0002	0.0005	0.0010	0.0016	0.0024	0.0032	0.0055	0.0084	0.0119	0.0208	0.0320	0.0457	0.0618	0.0804
		-5°	0.0002	0.0006	0.0012	0.0019	0.0028	0.0038	0.0064	0.0098	0.0138	0.0241	0.0371	0.0530	0.0717	0.0932
		0°	0.0003	0.0007	0.0014	0.0023	0.0034	0.0045	0.0077	0.0117	0.0166	0.0288	0.0444	0.0634	0.0857	0.1114
		5°	0.0003	0.0009	0.0017	0.0027	0.0040	0.0053	0.0091	0.0139	0.0196	0.0342	0.0527	0.0752	0.1017	0.1322
		10°	0.0004	0.0010	0.0020	0.0032	0.0047	0.0063	0.0108	0.0164	0.0232	0.0404	0.0622	0.0888	0.1201	0.1562
	DISCHARGE	60°	0.0017	0.0045	0.0087	0.0136	0.0205	0.0273	0.0465	0.0708	0.1002	0.1743	0.2688	0.3837	0.5190	0.6746
	LIQUID	35°	0.0223	0.0602	0.1167	0.1822	0.2735	0.3648	0.6215	0.9463	1.3405	2.3309	3.5944	5.1306	6.9393	9.0207
R404A - R507	SUCTION	-40°	0.0001	0.0004	0.0007	0.0011	0.0016	0.0022	0.0037	0.0056	0.0079	0.0138	0.0212	0.0303	0.0410	0.0532
		-30°	0.0002	0.0006	0.0011	0.0017	0.0026	0.0034	0.0058	0.0088	0.0125	0.0218	0.0336	0.0479	0.0648	0.0842
		-20°	0.0003	0.0008	0.0015	0.0024	0.0036	0.0048	0.0082	0.0125	0.0177	0.0308	0.0474	0.0680	0.0915	0.1190
		-5°	0.0005	0.0013	0.0026	0.0040	0.0060	0.0080	0.0137	0.0208	0.0294	0.0512	0.0790	0.1127	0.1524	0.1981
		5°	0.0007	0.0018	0.0036	0.0056	0.0084	0.0112	0.0190	0.0289	0.0410	0.0713	0.1100	0.1570	0.2123	0.2760
	DISCHARGE	60°	0.0037	0.0101	0.0196	0.0305	0.0458	0.0612	0.1042	0.1586	0.2247	0.3908	0.6026	0.8602	1.1634	1.5123
	LIQUID	35°	0.0190	0.0515	0.0997	0.1557	0.2337	0.3117	0.5311	0.8086	1.1455	1.9918	3.0716	4.3843	5.9299	7.7085
R22 - R407F	SUCTION	-40°	0.0001	0.0003	0.0005	0.0008	0.0011	0.0015	0.0026	0.0039	0.0056	0.0097	0.0150	0.0214	0.0290	0.0376
		-30°	0.0001	0.0004	0.0007	0.0012	0.0017	0.0023	0.0039	0.0060	0.0085	0.0147	0.0227	0.0324	0.0439	0.0570
		-20°	0.0002	0.0006	0.0011	0.0017	0.0025	0.0034	0.0057	0.0088	0.0124	0.0216	0.0332	0.0475	0.0642	0.0834
		-5°	0.0003	0.0009	0.0018	0.0028	0.0043	0.0057	0.0097	0.0147	0.0209	0.0363	0.0560	0.0799	0.1081	0.1405
		5°	0.0005	0.0013	0.0025	0.0039	0.0059	0.0078	0.0133	0.0203	0.0287	0.0499	0.0770	0.1099	0.1486	0.1932
	DISCHARGE	60°	0.0021	0.0058	0.0112	0.0174	0.0262	0.0349	0.0595	0.0906	0.1283	0.2231	0.3440	0.4911	0.6642	0.8634
	LIQUID	35°	0.0220	0.0593	0.1149	0.1795	0.2694	0.3593	0.6123	0.9322	1.3205	2.2962	3.5410	5.0543	6.8362	8.8866

CORRECTION FACTORS FOR LIQUID & DISCHARGE LINES

Table 8

	DISCHARGE GAS TEMPERATURE (°C)							LIQUID TEMPERATURE (°C)						
	30°	35°	40°	45°	50°	65°	70°	20°	25°	30°	40°	45°	50°	55°
R134a	0.43	0.50	0.57	0.66	0.76	1.15	1.32	1.05	1.03	1.02	0.98	0.96	0.94	0.92
R404A - R507	0.38	0.44	0.51	0.60	0.70	1.21	1.89	1.07	1.04	1.02	0.97	0.94	0.90	0.86
R22 - R407F	0.45	0.52	0.59	0.68	0.77	1.14	1.31	1.05	1.04	1.02	0.98	0.96	0.94	0.92

Note:

1. Use these charts to estimate system refrigerant charge by adding these pipe holding capacities to the estimated holding capacities of all evaporator(s) & condenser(s) in the system.