

Heat pump or reverse cycle applications – For heat pump and reverse cycle applications the refrigerant distributor needs sufficient capacity for both the refrigeration and reverse cycles. When selecting a 1650 series distributor, the reverse liquid flow capacity is the first consideration. If the distributor is correctly chosen for the reverse cycle, the selection will have ample capacity for the refrigeration cycle. To meet reverse cycle requirements, use Table 4 below to select distributor circuit sizes.

Example:

Select tube size for an outdoor coil assuming the following reverse cycle (cooling mode) conditions:

Example:

- R-410A
- 40°F evaporating temperature
- 100°F liquid refrigerant temperature
- 5 circuits, 24" tube lengths
- 5 tons

- Tons per circuit: $5/5 = 1.0$ tons

- Looking at Table 4 below, we see pressure drop across 1/4" OD tube is 2 psi. This is an acceptable pressure drop.
- Type 1653 distributor may be used.
- The side outlet connection can be selected from Table 5. In the above example, the smallest acceptable side connection is 1/2" OD.

TABLE 5

Maximum Number of Circuits for Various Sizes of Side Connections REFRIGERANTS 22, 134a, and 410A				
SIDE CONNECTIONS ODF SOLDER - Inches (10)	3/16" OD TUBE	1/4" OD TUBE	5/16" OD TUBE	3/8" OD TUBE
3/8	6	3	2	---
1/2	9	5	3	2
5/8	16	8	5	3
7/8	28	15	9	5
1-1/8	---	26	16	10

For two side connections, number of circuits may be doubled.
 (10) In some cases it may be necessary to reduce the line size at the distributor to utilize one of the side outlet connections available.

3. Side Connections – are selected as follows:

Hot gas defrost and hot gas bypass applications – For hot gas defrost or hot gas bypass applications the hot gas bypass line size is approximately equal to the discharge line. Choose the side connection(s) to match the bypass line.

Heat pump or reverse cycle applications – For heat pump applications select the side connection(s) from Table 5.

TABLE 4

Reverse Liquid Flow Capacities Per Circuit of Side Outlet Distributors (BTU/HR) at Various Pressure Drops												
TOTAL PRESSURE DROP - psi DISTRIBUTOR and TUBES (9)	3/16" OD TUBE			1/4" OD TUBE			5/16" OD TUBE			3/8" OD TUBE		
	REFRIGERANT											
	22	407C	410A	22	407C	410A	22	407C	410A	22	407C	410A
1/2	1900	1800	1900	5800	5500	5600	11900	11300	11500	21800	20600	21000
1	2900	2700	2800	8500	8100	8200	17500	16600	16900	31900	30300	30700
1-1/2	3600	3400	3500	10700	10100	10300	21900	20800	21100	39900	37800	38300
2	4300	4000	4100	12500	11800	12000	25700	24300	24600	46700	44300	44800
2-1/2	4800	4600	4700	14100	13400	13600	29000	27500	27800	52800	50000	50500

(9) Assumes 30" distributor tube length. Total DP includes the side connection, 2 short radius elbows, and the liquid line tee.

