

# HEATING VENTILATING AIR CONDITIONING GUIDE 1940

TABLE 3. PRESSURE LOSSES IN DICHLORODIFLUOROMETHANE SUCTION REFRIGERANT LINES

| COPPER PIPE<br>ACTUAL O.D.<br>INCHES | CAPACITY<br>BTU PER HOUR | PRESSURE DROP IN POUNDS PER SQUARE INCH PER 100 FT* |      |      |      |      |      |      |
|--------------------------------------|--------------------------|-----------------------------------------------------|------|------|------|------|------|------|
|                                      |                          | REFRIGERANT TEMPERATURE DEG F                       |      |      |      |      |      |      |
|                                      |                          | -10                                                 | 0    | 10   | 20   | 30   | 40   | 50   |
| 3/4                                  | 2,000                    | 0.3                                                 | 0.3  | 0.2  | 0.2  | 0.2  | 0.1  | 0.1  |
|                                      | 4,000                    | 1.3                                                 | 1.0  | 0.8  | 0.7  | 0.6  | 0.5  | 0.4  |
|                                      | 6,000                    | 2.8                                                 | 2.2  | 1.8  | 1.5  | 1.2  | 1.0  | 0.9  |
|                                      | 8,000                    | 4.8                                                 | 3.8  | 3.1  | 2.6  | 2.1  | 1.8  | 1.5  |
|                                      | 10,000                   | 7.4                                                 | 5.8  | 4.8  | 3.9  | 3.3  | 2.8  | 2.3  |
|                                      | 12,000                   | 10.5                                                | 8.4  | 6.8  | 5.6  | 4.7  | 4.0  | 3.3  |
|                                      | 14,000                   | 14.0                                                | 11.0 | 9.1  | 7.6  | 6.4  | 5.4  | 4.5  |
|                                      | 16,000                   |                                                     | 14.5 | 12.0 | 9.8  | 8.3  | 7.0  | 5.8  |
|                                      | 18,000                   |                                                     |      | 15.0 | 12.3 | 10.4 | 8.7  | 7.2  |
|                                      | 20,000                   |                                                     |      |      | 15.0 | 12.7 | 10.7 | 8.9  |
| 1 1/8                                | 7,000                    | 0.4                                                 | 0.3  | 0.3  | 0.2  | 0.2  | 0.2  | 0.1  |
|                                      | 10,000                   | 1.0                                                 | 0.7  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  |
|                                      | 15,000                   | 1.9                                                 | 1.5  | 1.2  | 1.0  | 0.8  | 0.7  | 0.6  |
|                                      | 20,000                   | 3.3                                                 | 2.6  | 2.1  | 1.7  | 1.4  | 1.2  | 1.0  |
|                                      | 25,000                   | 5.0                                                 | 4.0  | 3.2  | 2.7  | 2.2  | 1.9  | 1.6  |
|                                      | 35,000                   | 9.7                                                 | 7.7  | 6.2  | 5.1  | 4.3  | 3.6  | 3.0  |
|                                      | 45,000                   | 15.8                                                | 12.6 | 10.0 | 8.4  | 7.0  | 5.9  | 4.9  |
|                                      | 60,000                   |                                                     |      |      | 14.8 | 12.2 | 10.2 | 8.6  |
|                                      | 70,000                   |                                                     |      |      |      |      | 14.0 | 11.7 |
|                                      |                          |                                                     |      |      |      |      |      |      |
| 1 3/8                                | 10,000                   | 0.3                                                 | 0.2  | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  |
|                                      | 15,000                   | 0.7                                                 | 0.5  | 0.4  | 0.3  | 0.3  | 0.2  | 0.2  |
|                                      | 20,000                   | 1.2                                                 | 0.9  | 0.7  | 0.6  | 0.5  | 0.4  | 0.4  |
|                                      | 30,000                   | 2.6                                                 | 2.1  | 1.6  | 1.3  | 1.1  | 0.9  | 0.8  |
|                                      | 40,000                   | 4.6                                                 | 3.6  | 2.8  | 2.3  | 1.9  | 1.6  | 1.4  |
|                                      | 50,000                   | 7.0                                                 | 5.5  | 4.4  | 3.5  | 2.9  | 2.5  | 2.1  |
|                                      | 60,000                   | 10.0                                                | 7.8  | 6.2  | 5.0  | 4.2  | 3.5  | 3.0  |
|                                      | 80,000                   |                                                     | 14.0 | 11.0 | 8.7  | 7.3  | 6.2  | 5.2  |
|                                      | 100,000                  |                                                     |      |      | 13.5 | 11.3 | 9.5  | 8.2  |
|                                      |                          |                                                     |      |      |      |      |      |      |
| 1 5/8                                | 30,000                   | 1.6                                                 | 1.3  | 1.0  | 0.8  | 0.7  | 0.6  | 0.5  |
|                                      | 40,000                   | 2.7                                                 | 2.1  | 1.7  | 1.4  | 1.1  | 0.9  | 0.8  |
|                                      | 50,000                   | 4.2                                                 | 3.2  | 2.5  | 2.1  | 1.7  | 1.4  | 1.2  |
|                                      | 60,000                   | 6.1                                                 | 4.5  | 3.6  | 2.9  | 2.4  | 2.0  | 1.7  |
|                                      | 70,000                   | 8.7                                                 | 6.3  | 4.8  | 3.8  | 3.1  | 2.6  | 2.2  |
|                                      | 80,000                   |                                                     | 8.4  | 6.3  | 4.9  | 4.0  | 3.3  | 2.8  |
|                                      | 90,000                   |                                                     |      | 8.0  | 6.2  | 4.9  | 4.1  | 3.5  |
|                                      | 100,000                  |                                                     |      | 10.0 | 7.6  | 6.1  | 5.0  | 4.2  |
|                                      | 120,000                  |                                                     |      |      |      | 8.6  | 7.0  | 5.9  |
|                                      | 140,000                  |                                                     |      |      |      |      | 9.5  | 7.9  |

\*Length of tubing includes the average number of fittings.

# CHAPTER 24. COOLING AND DEHUMIDIFICATION METHODS

TABLE 3. PRESSURE LOSSES IN DICHLORODIFLUOROMETHANE SUCTION REFRIGERANT LINES (CONTINUED)

| COPPER PIPE<br>ACTUAL O.D.<br>INCHES | CAPACITY<br>BTU PER HOUR | PRESSURE DROP IN POUNDS PER SQUARE INCH PER 100 FT* |      |      |      |      |      |     |
|--------------------------------------|--------------------------|-----------------------------------------------------|------|------|------|------|------|-----|
|                                      |                          | REFRIGERANT TEMPERATURE DEG F                       |      |      |      |      |      |     |
|                                      |                          | -10                                                 | 0    | 10   | 20   | 30   | 40   | 50  |
| 2 1/8                                | 50,000                   | 0.7                                                 | 0.5  | 0.4  | 0.3  | 0.3  | 0.2  | 0.2 |
|                                      | 100,000                  | 2.6                                                 | 1.8  | 1.4  | 1.1  | 0.9  | 0.8  | 0.7 |
|                                      | 150,000                  | 5.6                                                 | 3.9  | 3.0  | 2.4  | 2.0  | 1.6  | 1.4 |
|                                      | 200,000                  | 9.8                                                 | 6.7  | 5.2  | 4.1  | 3.4  | 2.8  | 2.4 |
|                                      | 250,000                  | 14.8                                                | 10.3 | 8.0  | 6.3  | 5.1  | 4.2  | 3.6 |
|                                      | 300,000                  |                                                     | 14.5 | 11.3 | 9.0  | 7.2  | 6.0  | 5.0 |
|                                      | 350,000                  |                                                     | 19.5 | 15.3 | 12.0 | 9.7  | 7.8  | 6.7 |
|                                      | 400,000                  |                                                     |      | 19.6 | 15.3 | 12.5 | 10.0 | 8.5 |
|                                      |                          |                                                     |      |      |      |      |      |     |
|                                      |                          |                                                     |      |      |      |      |      |     |
| 2 3/8                                | 50,000                   | 0.2                                                 | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  | 0.1 |
|                                      | 100,000                  | 0.7                                                 | 0.6  | 0.5  | 0.4  | 0.3  | 0.2  | 0.2 |
|                                      | 150,000                  | 1.6                                                 | 1.2  | 1.0  | 0.8  | 0.6  | 0.5  | 0.4 |
|                                      | 200,000                  | 2.8                                                 | 2.1  | 1.7  | 1.4  | 1.1  | 0.9  | 0.7 |
|                                      | 250,000                  | 4.3                                                 | 3.4  | 2.6  | 2.1  | 1.7  | 1.3  | 1.1 |
|                                      | 300,000                  | 6.1                                                 | 4.5  | 3.7  | 3.0  | 2.4  | 1.9  | 1.5 |
|                                      | 350,000                  | 8.2                                                 | 6.0  | 5.0  | 4.0  | 3.2  | 2.5  | 2.0 |
|                                      | 400,000                  |                                                     | 7.8  | 6.5  | 5.1  | 4.2  | 3.3  | 2.7 |
|                                      | 450,000                  |                                                     |      | 7.7  | 6.4  | 5.3  | 4.0  | 3.5 |
|                                      |                          |                                                     |      |      |      |      |      |     |
| 3 1/8                                | 200,000                  | 1.2                                                 | 1.0  | 0.8  | 0.6  | 0.5  | 0.4  | 0.4 |
|                                      | 300,000                  | 2.6                                                 | 2.0  | 1.6  | 1.3  | 1.0  | 0.8  | 0.7 |
|                                      | 400,000                  | 4.5                                                 | 3.4  | 2.6  | 2.1  | 1.7  | 1.4  | 1.3 |
|                                      | 500,000                  | 7.3                                                 | 5.4  | 4.1  | 3.3  | 2.7  | 2.2  | 1.9 |
|                                      | 600,000                  |                                                     | 8.1  | 6.0  | 4.7  | 3.8  | 3.1  | 2.7 |
|                                      | 700,000                  |                                                     |      | 8.4  | 6.5  | 5.2  | 4.2  | 3.5 |
|                                      | 800,000                  |                                                     |      |      | 8.6  | 6.8  | 5.5  | 4.6 |
|                                      | 900,000                  |                                                     |      |      |      | 8.7  | 7.0  | 5.9 |
|                                      | 1,000,000                |                                                     |      |      |      |      | 8.9  | 7.3 |
|                                      |                          |                                                     |      |      |      |      |      |     |
| 3 3/8                                | 300,000                  | 1.2                                                 | 0.9  | 0.7  | 0.6  | 0.5  | 0.4  | 0.3 |
|                                      | 400,000                  | 2.0                                                 | 1.6  | 1.3  | 1.0  | 0.8  | 0.7  | 0.6 |
|                                      | 500,000                  | 3.2                                                 | 2.5  | 1.9  | 1.6  | 1.3  | 1.0  | 0.9 |
|                                      | 600,000                  | 4.6                                                 | 3.6  | 2.8  | 2.2  | 1.8  | 1.5  | 1.3 |
|                                      | 700,000                  | 6.4                                                 | 4.9  | 3.8  | 3.0  | 2.5  | 2.0  | 1.7 |
|                                      | 800,000                  | 8.7                                                 | 6.4  | 4.9  | 3.9  | 3.2  | 2.5  | 2.2 |
|                                      | 900,000                  |                                                     | 8.2  | 6.2  | 4.9  | 3.9  | 3.2  | 2.7 |
|                                      | 1,000,000                |                                                     |      | 7.7  | 6.1  | 4.9  | 4.0  | 3.3 |
|                                      | 1,100,000                |                                                     |      | 9.4  | 7.3  | 5.8  | 4.8  | 4.0 |
|                                      |                          |                                                     |      |      |      |      |      |     |
| 3 5/8                                | 1,200,000                |                                                     |      |      | 8.7  | 6.9  | 5.6  | 4.8 |
|                                      | 1,300,000                |                                                     |      |      |      | 8.0  | 6.6  | 5.6 |
|                                      | 1,400,000                |                                                     |      |      |      | 9.3  | 7.6  | 6.4 |
|                                      |                          |                                                     |      |      |      |      |      |     |

\*Length of tubing includes the average number of fittings.