



MASTERFLUX

SIERRA03-0982Z1

Brushless DC Variable Speed Compressor Technical Data Sheet

General Information

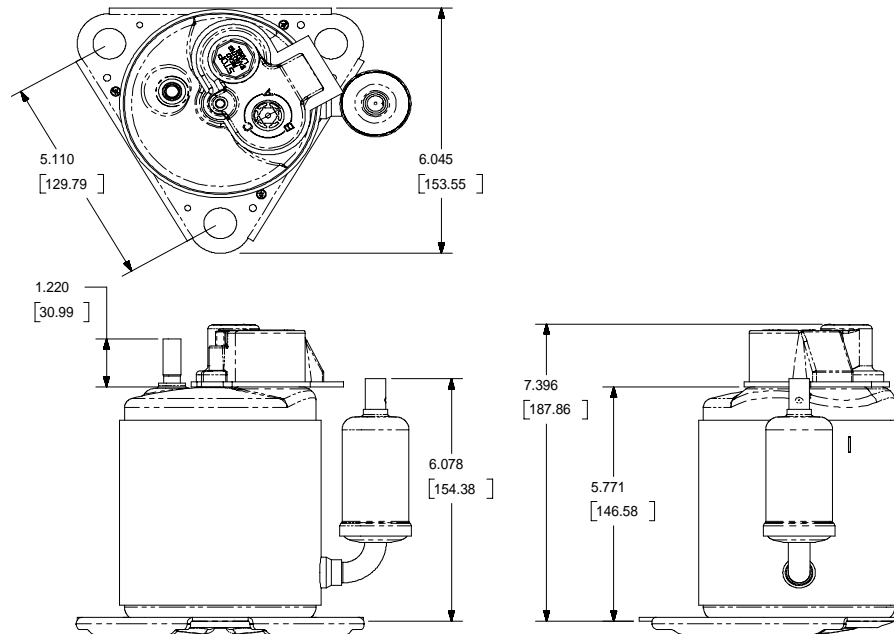
Compressor Part Number - Accumulator (81.6 cc)
Sales Compressor Drawing
Sales Controller Drawing
Wiring Diagram

SIERRA00027
DCMX01-004
DGMX002
DEMX04

Application Information

| | |
|-------------------------------|--------------------------------------|
| Application | LBP, Freezer |
| Refrigerant | R404A |
| Voltage Range | 22-50V DC |
| Evaporator Temperature Range | -40° C to -12.2° C (-40° F to 10° F) |
| Condenser Temperature Range | 37.8° C to 60° C (100° F to 140° F) |
| Maximum Discharge Temperature | 126.7° C (260° F) |
| Maximum Compression Ratio | 16:1 |

Compressor Dimensions



the Sierra



MASTERFLUX

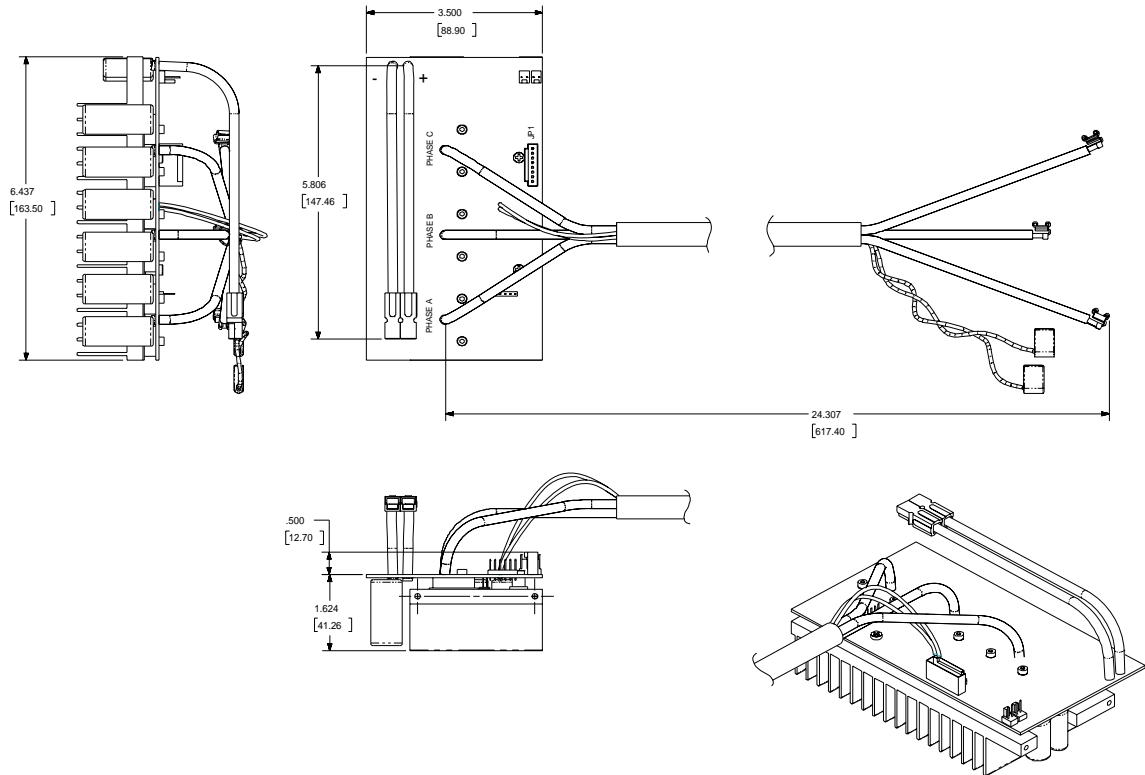
SIERRA03-0982Z1

Brushless DC Variable Speed Compressor Technical Data Sheet

Controller Features

- Over/under voltage protection
- Compressor thermal monitoring
- Controller thermal monitoring
- Locked rotor protection

Controller Dimensions



the Sierra

MASTERFLUX COMPRESSOR PERFORMANCE CHART (24V)
SIERRA03-0982Z1
Capacity (48.9° C Condenser) watt

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 1800 | 238 | 288 | 327 | 375 | 431 | 494 | 562 | 637 | 716 | 799 |
| 2300 | 304 | 367 | 418 | 479 | 550 | 631 | 719 | 814 | 915 | 1021 |
| 2800 | 370 | 447 | 509 | 583 | 670 | 768 | 875 | 991 | 1114 | 1242 |
| 3200 | 423 | 511 | 581 | 666 | 766 | 878 | 1000 | 1133 | 1273 | 1420 |

Power Consumption (48.9° C Condenser) watt

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 1800 | 442 | 496 | 523 | 549 | 574 | 600 | 625 | 649 | 673 | 697 |
| 2300 | 565 | 634 | 668 | 701 | 734 | 766 | 798 | 829 | 860 | 890 |
| 2800 | 688 | 772 | 813 | 853 | 893 | 933 | 972 | 1010 | 1047 | 1084 |
| 3200 | 786 | 882 | 929 | 975 | 1021 | 1066 | 1110 | 1154 | 1197 | 1239 |

Current (48.9° C Condenser) amp

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 1800 | 18.42 | 20.67 | 21.79 | 22.88 | 23.92 | 25.00 | 26.04 | 27.04 | 28.04 | 29.04 |
| 2300 | 23.54 | 26.42 | 27.83 | 29.21 | 30.58 | 31.92 | 33.25 | 34.54 | 35.83 | 37.08 |
| 2800 | 28.67 | 32.17 | 33.88 | 35.54 | 37.21 | 38.88 | 40.50 | 42.08 | 43.63 | 45.17 |
| 3200 | 32.75 | 36.75 | 38.71 | 40.63 | 42.54 | 44.42 | 46.25 | 48.08 | 49.88 | 51.63 |

COP (48.9° C Condenser) watt/watt

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 1800 | 0.54 | 0.58 | 0.62 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |
| 2300 | 0.54 | 0.58 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |
| 2800 | 0.54 | 0.58 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |
| 3200 | 0.54 | 0.58 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |

Mass Flow (48.9° C Condenser) kg/hr

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 1800 | 8.07 | 10.02 | 11.48 | 13.20 | 15.24 | 17.51 | 20.05 | 22.82 | 25.81 | 28.98 |
| 2300 | 10.34 | 12.84 | 14.65 | 16.87 | 19.46 | 22.36 | 25.63 | 29.12 | 32.98 | 37.06 |
| 2800 | 12.56 | 15.60 | 17.87 | 20.55 | 23.68 | 27.22 | 31.16 | 35.47 | 40.14 | 45.09 |
| 3200 | 14.38 | 17.83 | 20.41 | 23.50 | 27.08 | 31.12 | 35.61 | 40.55 | 45.86 | 51.53 |

* all data points are with 4.4° C return gas, 0° C subcooling, and 35° C ambient

MASTERFLUX COMPRESSOR PERFORMANCE CHART (48V)
SIERRA03-0982Z1
Capacity (48.9° C Condenser) watt

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 3700 | 489 | 591 | 672 | 771 | 885 | 1015 | 1156 | 1309 | 1472 | 178 |
| 4500 | 595 | 719 | 817 | 937 | 1077 | 1234 | 1406 | 1593 | 1790 | 1997 |
| 5000 | 661 | 798 | 908 | 1041 | 1196 | 1371 | 1563 | 1769 | 1989 | 2219 |
| 5500 | 727 | 878 | 999 | 1145 | 1316 | 1508 | 1719 | 1946 | 2188 | 2441 |

Power Consumption (48.9° C Condenser) watt

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 3700 | 909 | 1020 | 1074 | 1128 | 1181 | 1233 | 1284 | 1334 | 1384 | 1432 |
| 4500 | 1105 | 1240 | 1306 | 1372 | 1436 | 1499 | 1562 | 1623 | 1683 | 1742 |
| 5000 | 1228 | 1378 | 1452 | 1524 | 1595 | 1666 | 1735 | 1803 | 1870 | 1936 |
| 5500 | 1351 | 1316 | 1597 | 1677 | 1755 | 1832 | 1909 | 1983 | 2057 | 2129 |

Current (48.9° C Condenser) amp

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 3700 | 18.94 | 21.25 | 22.38 | 23.50 | 24.60 | 25.69 | 26.75 | 27.79 | 28.83 | 29.83 |
| 4500 | 23.02 | 25.83 | 27.21 | 28.58 | 29.92 | 31.23 | 32.54 | 33.81 | 35.06 | 36.29 |
| 5000 | 25.58 | 28.71 | 30.25 | 31.75 | 33.23 | 34.71 | 36.15 | 37.56 | 38.96 | 40.33 |
| 5500 | 28.15 | 27.42 | 33.27 | 34.94 | 36.56 | 38.17 | 39.77 | 41.31 | 42.85 | 44.35 |

COP (48.9° C Condenser) watt/watt

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 3700 | 0.54 | 0.58 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 0.12 |
| 4500 | 0.54 | 0.58 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |
| 5000 | 0.54 | 0.58 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |
| 5500 | 0.54 | 0.67 | 0.63 | 0.68 | 0.75 | 0.82 | 0.90 | 0.98 | 1.06 | 1.15 |

Mass Flow (48.9° C Condenser) kg/hr

| rpm | Evaporator Temperature (° C) | | | | | | | | | |
|------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -40.0 | -34.4 | -31.7 | -28.9 | -26.1 | -23.3 | -20.6 | -17.8 | -15.0 | -12.2 |
| 3700 | 16.65 | 20.64 | 23.59 | 27.17 | 31.30 | 35.97 | 41.19 | 46.90 | 53.02 | 59.60 |
| 4500 | 20.23 | 25.08 | 28.67 | 33.02 | 38.06 | 43.77 | 50.08 | 57.02 | 64.50 | 72.48 |
| 5000 | 22.45 | 27.85 | 31.89 | 36.70 | 42.27 | 48.63 | 55.66 | 63.37 | 71.67 | 80.56 |
| 5500 | 24.72 | 30.66 | 35.06 | 40.37 | 46.54 | 53.48 | 61.23 | 69.67 | 78.83 | 88.59 |

* all data points are with 4.4° C return gas, 0° C subcooling, and 35° C ambient

MASTERFLUX COMPRESSOR PERFORMANCE CHART (24V)

SIERRA03-0982Z1

| Capacity (120° F Condenser) | | | | | | | | | | BTU/hr |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|---------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 1800 | 812 | 982 | 1116 | 1280 | 1471 | 1686 | 1921 | 2175 | 2445 | 2728 |
| 2300 | 1038 | 1255 | 1426 | 1636 | 1880 | 2154 | 2455 | 2780 | 3124 | 3486 |
| 2800 | 1264 | 1527 | 1737 | 1992 | 2288 | 2622 | 2989 | 3384 | 3804 | 4243 |
| 3200 | 1444 | 1746 | 1985 | 2276 | 2615 | 2997 | 3416 | 3868 | 4347 | 4850 |

| Power Consumption (120° F Condenser) | | | | | | | | | | watt |
|---|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 1800 | 442 | 496 | 523 | 549 | 574 | 600 | 625 | 649 | 673 | 697 |
| 2300 | 565 | 634 | 668 | 701 | 734 | 766 | 798 | 829 | 860 | 890 |
| 2800 | 688 | 772 | 813 | 853 | 893 | 933 | 972 | 1010 | 1047 | 1084 |
| 3200 | 786 | 882 | 929 | 975 | 1021 | 1066 | 1110 | 1154 | 1197 | 1239 |

| Current (120° F Condenser) | | | | | | | | | | amp |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 1800 | 18.42 | 20.67 | 21.79 | 22.88 | 23.92 | 25.00 | 26.04 | 27.04 | 28.04 | 29.04 |
| 2300 | 23.54 | 26.42 | 27.83 | 29.21 | 30.58 | 31.92 | 33.25 | 34.54 | 35.83 | 37.08 |
| 2800 | 28.67 | 32.17 | 33.88 | 35.54 | 37.21 | 38.88 | 40.50 | 42.08 | 43.63 | 45.17 |
| 3200 | 32.75 | 36.75 | 38.71 | 40.63 | 42.54 | 44.42 | 46.25 | 48.08 | 49.88 | 51.63 |

| EER (120° F Condenser) | | | | | | | | | | BTU/h/watt |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 1800 | 1.84 | 1.98 | 2.13 | 2.33 | 2.56 | 2.81 | 3.07 | 3.35 | 3.63 | 3.91 |
| 2300 | 1.84 | 1.98 | 2.13 | 2.33 | 2.56 | 2.81 | 3.08 | 3.35 | 3.63 | 3.92 |
| 2800 | 1.84 | 1.98 | 2.14 | 2.34 | 2.56 | 2.81 | 3.08 | 3.35 | 3.63 | 3.91 |
| 3200 | 1.84 | 1.98 | 2.14 | 2.33 | 2.56 | 2.81 | 3.08 | 3.35 | 3.63 | 3.91 |

| Mass Flow (120° F Condenser) | | | | | | | | | | lb/hr |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|--------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 1800 | 17.8 | 22.1 | 25.3 | 29.1 | 33.6 | 38.6 | 44.2 | 50.3 | 56.9 | 63.9 |
| 2300 | 22.8 | 28.3 | 32.3 | 37.2 | 42.9 | 49.3 | 56.5 | 64.2 | 72.7 | 81.7 |
| 2800 | 27.7 | 34.4 | 39.4 | 45.3 | 52.2 | 60.0 | 68.7 | 78.2 | 88.5 | 99.4 |
| 3200 | 31.7 | 39.3 | 45.0 | 51.8 | 59.7 | 68.6 | 78.5 | 89.4 | 101.1 | 113.6 |

* all data points are with 40° F return gas, 0° F subcooling, and 95° F ambient

MASTERFLUX COMPRESSOR PERFORMANCE CHART (48V)

SIERRA03-0982Z1

| Capacity (120° F Condenser) | | | | | | | | | | BTU/hr |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|---------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 3700 | 1670 | 2018 | 2295 | 2632 | 3024 | 3465 | 3949 | 4472 | 5026 | 607 |
| 4500 | 2031 | 2455 | 2791 | 3201 | 3677 | 4214 | 4803 | 5439 | 6113 | 6820 |
| 5000 | 2257 | 2727 | 3101 | 3556 | 4086 | 4682 | 5337 | 6043 | 6792 | 7577 |
| 5500 | 2482 | 3000 | 3411 | 3912 | 4495 | 5150 | 5871 | 6647 | 7472 | 8338 |

| Power Consumption (120° F Condenser) | | | | | | | | | | watt |
|---|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 3700 | 909 | 1020 | 1074 | 1128 | 1181 | 1233 | 1284 | 1334 | 1384 | 1432 |
| 4500 | 1105 | 1240 | 1306 | 1372 | 1436 | 1499 | 1562 | 1623 | 1683 | 1742 |
| 5000 | 1228 | 1378 | 1452 | 1524 | 1595 | 1666 | 1735 | 1803 | 1870 | 1936 |
| 5500 | 1351 | 1316 | 1597 | 1677 | 1755 | 1832 | 1909 | 1983 | 2057 | 2129 |

| Current (120° F Condenser) | | | | | | | | | | amp |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 3700 | 18.94 | 21.25 | 22.38 | 23.50 | 24.60 | 25.69 | 26.75 | 27.79 | 28.83 | 29.83 |
| 4500 | 23.02 | 25.83 | 27.21 | 28.58 | 29.92 | 31.23 | 32.54 | 33.81 | 35.06 | 36.29 |
| 5000 | 25.58 | 28.71 | 30.25 | 31.75 | 33.23 | 34.71 | 36.15 | 37.56 | 38.96 | 40.33 |
| 5500 | 28.15 | 27.42 | 33.27 | 34.94 | 36.56 | 38.17 | 39.77 | 41.31 | 42.85 | 44.35 |

| EER (120° F Condenser) | | | | | | | | | | BTU/h/watt |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|-------------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 3700 | 1.84 | 1.98 | 2.14 | 2.33 | 2.56 | 2.81 | 3.08 | 3.35 | 3.63 | 0.42 |
| 4500 | 1.84 | 1.98 | 2.14 | 2.33 | 2.56 | 2.81 | 3.07 | 3.35 | 3.63 | 3.92 |
| 5000 | 1.84 | 1.98 | 2.14 | 2.33 | 2.56 | 2.81 | 3.08 | 3.35 | 3.63 | 3.91 |
| 5500 | 1.84 | 2.28 | 2.14 | 2.33 | 2.56 | 2.81 | 3.08 | 3.35 | 3.63 | 3.92 |

| Mass Flow (120° F Condenser) | | | | | | | | | | lb/hr |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|--------------|
| Evaporator Temperature (° F) | | | | | | | | | | |
| rpm | -40.0 | -30.0 | -25.0 | -20.0 | -15.0 | -10.0 | -5.0 | 0.0 | 5.0 | 10.0 |
| 3700 | 36.7 | 45.5 | 52.0 | 59.9 | 69.0 | 79.3 | 90.8 | 103.4 | 116.9 | 131.4 |
| 4500 | 44.6 | 55.3 | 63.2 | 72.8 | 83.9 | 96.5 | 110.4 | 125.7 | 142.2 | 159.8 |
| 5000 | 49.5 | 61.4 | 70.3 | 80.9 | 93.2 | 107.2 | 122.7 | 139.7 | 158.0 | 177.6 |
| 5500 | 54.5 | 67.6 | 77.3 | 89.0 | 102.6 | 117.9 | 135.0 | 153.6 | 173.8 | 195.3 |

* all data points are with 40° F return gas, 0° F subcooling, and 95° F ambient