

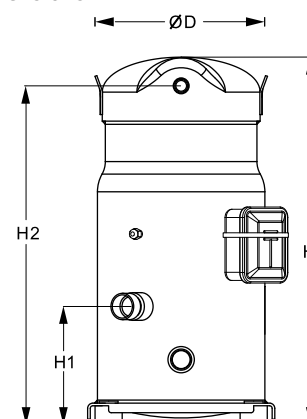
Datasheets

# Danfoss scroll compressors **SM / SY / SZ / SH / WSH**



**General Characteristics**

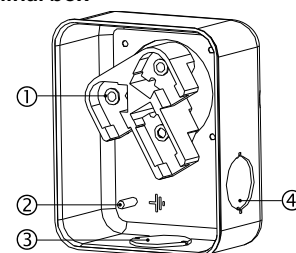
|                                                   |  |                                                                       |
|---------------------------------------------------|--|-----------------------------------------------------------------------|
| Model number (on compressor nameplate)            |  | <b>SZ120S4VC</b>                                                      |
| Code number for Singlepack*                       |  | SZ120-4VI                                                             |
| Code number for Industrial pack**                 |  | SZ120-4VM                                                             |
| Drawing number                                    |  | 8552037b                                                              |
| Suction and discharge connections                 |  | Brazed                                                                |
| Suction connection                                |  | 1-3/8" ODF                                                            |
| Discharge connection                              |  | 7/8" ODF                                                              |
| Oil sight glass                                   |  | Threaded                                                              |
| Oil equalisation connection                       |  | 3/8" flare SAE                                                        |
| Oil drain connection                              |  | None                                                                  |
| LP gauge port                                     |  | Schrader                                                              |
| IPR valve                                         |  | None                                                                  |
| Swept volume                                      |  | 166,6 cm <sup>3</sup> /rev                                            |
| Displacement @ Nominal speed                      |  | 29.0 m <sup>3</sup> /h @ 2900 rpm - 35.0 m <sup>3</sup> /h @ 3500 rpm |
| Net weight                                        |  | 73 kg                                                                 |
| Oil charge                                        |  | 3,25 litre, POE - 160SZ                                               |
| Maximum system test pressure Low Side / High side |  | 25 bar(g) / 32 bar(g)                                                 |
| Maximum differential test pressure                |  | 24 bar                                                                |
| Maximum number of starts per hour                 |  | 12                                                                    |
| Refrigerant charge limit                          |  | 10 kg                                                                 |
| Approved refrigerants                             |  | R407C, R134a, R404A, R507A                                            |

**Dimensions**


D=254 mm  
 H=558 mm  
 H1=178,4 mm  
 H2=514,5 mm  
 H3=- mm

**Electrical Characteristics**

|                                                    |                                     |
|----------------------------------------------------|-------------------------------------|
| Nominal voltage                                    | 380-400V/3/50Hz - 460V/3/60Hz       |
| Voltage range                                      | 340-440 V @ 50Hz - 414-506 V @ 60Hz |
| Winding resistance (between phases) +/- 7% at 25°C | 1.05 Ω                              |
| Rated Load Amps (RLA)                              | 20.7 A                              |
| Maximum Continuous Current (MCC)                   | 29 A                                |
| Locked Rotor Amps (LRA)                            | 130 A                               |
| Motor protection                                   | Internal overload protector         |

**Terminal box**


IP54 (with cable gland)

- 1: Power connection, 3 x 4.8 mm (3/16")
- 2: Earth M4-12
- 3: Knock-out Ø 29 mm (1.14")
- 4: Knock-out Ø 25.5 mm (1.00")

**Recommended Installation torques**

|                                      |             |
|--------------------------------------|-------------|
| Oil sight glass                      | 50 Nm       |
| Power connections / Earth connection | 3 Nm / 2 Nm |
| Mounting bolts                       | 21 Nm       |

**Parts shipped with compressor**

|                                                              |
|--------------------------------------------------------------|
| Mounting kit with grommets, bolts, nuts, sleeves and washers |
| Initial oil charge                                           |
| Installation instructions                                    |

**Approvals** : CE certified, UL certified (file SA6873), -

\*Singlepack: Compressor in cardboard box

\*\*Industrial pack: 8 Unboxed compressors on pallet (order per multiples of 8)

**Rotolock accessories, suction side**
**Code no.**

|                                                   |         |
|---------------------------------------------------|---------|
| Solder sleeve, P10 (1-3/4" Rotolock, 1-3/8" ODF)  | 8153003 |
| Rotolock valve, V10 (1-3/4" Rotolock, 1-3/8" ODF) | 8168022 |
| Gasket, 1-3/4"                                    | 8156132 |

**Rotolock accessories, discharge side**
**Code no.**

|                                                 |         |
|-------------------------------------------------|---------|
| Rotolock valve, V05 (1-1/4" Rotolock, 7/8" ODF) | 8168030 |
| Gasket, 1-3/4"                                  | 8156132 |

**Rotolock accessories, sets**
**Code no.**

|                                                                                      |          |
|--------------------------------------------------------------------------------------|----------|
| Solder sleeve adapter set (1-3/4" Rotolock, 1-3/8" ODF), (1-1/4" Rotolock, 7/8" ODF) | 120Z0405 |
| Valve set, V10 (1-3/4"~1-3/8"), V05 (1-1/4"~7/8")                                    | 7703392  |
| Gasket set, 1-1/4", 1-3/4", 2-1/4", OSG gaskets black & white                        | 8156013  |

**Oil / lubricants**
**Code no.**

|                                     |          |
|-------------------------------------|----------|
| POE lubricant, 160SZ, 1 litre can   | 7754023  |
| POE lubricant, 160SZ, 2.5 litre can | 120Z0571 |

**Crankcase heaters**
**Code no.**

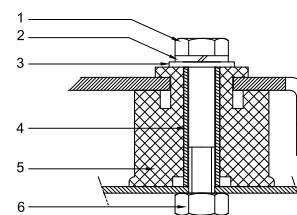
|                                                                   |          |
|-------------------------------------------------------------------|----------|
| Surface sump heater + bottom insulation, 48 W, 24 V, CE mark, UL  | 120Z0361 |
| Surface sump heater + bottom insulation, 48 W, 230 V, CE mark, UL | 120Z0380 |
| Surface sump heater + bottom insulation, 48 W, 400 V, CE mark, UL | 120Z0381 |
| Surface sump heater + bottom insulation, 48 W, 460 V, CE mark, UL | 120Z0382 |
| Belt type crankcase heater, 65 W, 460 V, CE mark, UL              | 120Z0466 |
| Belt type crankcase heater, 65 W, 230 V, CE mark, UL              | 7773107  |
| Belt type crankcase heater, 65 W, 400 V, CE mark, UL              | 7773117  |
| Belt type crankcase heater, 65 W, 400 V, CE mark, UL              | 120Z0039 |

**Miscellaneous accessories**
**Code no.**

|                                                             |          |
|-------------------------------------------------------------|----------|
| Electronic soft start kit, MCI 25 C                         | 7705007  |
| Soft start kit with statoric resistors, prewired box, SCR03 | 7705001  |
| Acoustic hood for scroll compressor S110-S120               | 7755010  |
| Bottom insulation for scroll compressor                     | 120Z0356 |
| Discharge thermostat kit                                    | 7750009  |

**Spare parts**
**Code no.**

|                                                                                          |         |
|------------------------------------------------------------------------------------------|---------|
| Mounting kit for 1 scroll compressor including 4 grommets, 4 sleeves, 4 bolts, 4 washers | 8156138 |
| Oil sight glass with gaskets (black & white)                                             | 8156019 |
| Gasket for oil sight glass (white teflon)                                                | 8156129 |
| Service kit for terminal box 96 x 115 mm, including 1 cover, 1 clamp                     | 8156135 |
| T block connector 52 x 57 mm                                                             | 8173230 |

**Mounting kit**


- 1: Bolt (4x)
- 2: Lock washer (4x)
- 3: Flat washer (4x)
- 4: Sleeve (4x)
- 5: Grommet (4x)
- 6: Nut (4x)

**Performance data at 50 Hz, EN 12900 rating conditions**
**R407C**

| Cond. temp. in<br>°C (tc) | Evaporating temperature in °C (to) |     |     |    |   |   |    |    |
|---------------------------|------------------------------------|-----|-----|----|---|---|----|----|
|                           | -20                                | -15 | -10 | -5 | 0 | 5 | 10 | 15 |

**Cooling capacity in W**

|    |        |        |        |        |        |        |        |        |   |
|----|--------|--------|--------|--------|--------|--------|--------|--------|---|
| 30 | 10 889 | 13 929 | 17 524 | 21 748 | 26 676 | 32 383 | 38 943 | 46 431 | - |
| 35 | 10 170 | 13 127 | 16 603 | 20 673 | 25 412 | 30 894 | 37 193 | 44 385 | - |
| 40 | 9 391  | 12 248 | 15 589 | 19 489 | 24 021 | 29 261 | 35 283 | 42 162 | - |
| 45 | -      | 11 304 | 14 493 | 18 205 | 22 514 | 27 496 | 33 224 | 39 774 | - |
| 50 | -      | -      | 13 325 | 16 833 | 20 903 | 25 609 | 31 027 | 37 231 | - |
| 55 | -      | -      | -      | 15 384 | 19 198 | 23 613 | 28 703 | 34 544 | - |
| 60 | -      | -      | -      | -      | 17 410 | 21 517 | 26 263 | 31 725 | - |
| 65 | -      | -      | -      | -      | 15 551 | 19 333 | 23 719 | 28 785 | - |

**Power input in W**

|    |       |       |       |       |        |        |        |        |   |
|----|-------|-------|-------|-------|--------|--------|--------|--------|---|
| 30 | 5 043 | 5 109 | 5 159 | 5 190 | 5 201  | 5 189  | 5 152  | 5 088  | - |
| 35 | 5 679 | 5 742 | 5 785 | 5 806 | 5 803  | 5 774  | 5 716  | 5 627  | - |
| 40 | 6 379 | 6 446 | 6 489 | 6 506 | 6 496  | 6 455  | 6 383  | 6 277  | - |
| 45 | -     | 7 227 | 7 276 | 7 296 | 7 285  | 7 241  | 7 161  | 7 043  | - |
| 50 | -     | -     | 8 155 | 8 185 | 8 179  | 8 137  | 8 056  | 7 933  | - |
| 55 | -     | -     | -     | 9 177 | 9 184  | 9 151  | 9 075  | 8 954  | - |
| 60 | -     | -     | -     | -     | 10 307 | 10 289 | 10 225 | 10 112 | - |
| 65 | -     | -     | -     | -     | 11 555 | 11 559 | 11 513 | 11 415 | - |

**Current consumption in A**

|    |       |       |       |       |       |       |       |       |   |
|----|-------|-------|-------|-------|-------|-------|-------|-------|---|
| 30 | 12.03 | 12.11 | 12.18 | 12.21 | 12.22 | 12.17 | 12.08 | 11.92 | - |
| 35 | 12.67 | 12.75 | 12.81 | 12.84 | 12.84 | 12.78 | 12.68 | 12.50 | - |
| 40 | 13.43 | 13.51 | 13.57 | 13.60 | 13.59 | 13.53 | 13.41 | 13.23 | - |
| 45 | -     | 14.41 | 14.47 | 14.50 | 14.48 | 14.42 | 14.30 | 14.11 | - |
| 50 | -     | -     | 15.54 | 15.57 | 15.55 | 15.48 | 15.36 | 15.16 | - |
| 55 | -     | -     | -     | 16.82 | 16.81 | 16.74 | 16.61 | 16.41 | - |
| 60 | -     | -     | -     | -     | 18.28 | 18.21 | 18.08 | 17.87 | - |
| 65 | -     | -     | -     | -     | 19.97 | 19.91 | 19.78 | 19.57 | - |

**Mass flow in kg/h**

|    |     |     |     |     |     |     |     |     |   |
|----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 30 | 229 | 289 | 357 | 436 | 527 | 631 | 748 | 881 | - |
| 35 | 224 | 285 | 354 | 434 | 525 | 629 | 746 | 879 | - |
| 40 | 218 | 280 | 349 | 429 | 521 | 624 | 742 | 874 | - |
| 45 | -   | 273 | 343 | 423 | 514 | 617 | 735 | 867 | - |
| 50 | -   | -   | 334 | 414 | 505 | 608 | 724 | 856 | - |
| 55 | -   | -   | -   | 403 | 493 | 596 | 711 | 842 | - |
| 60 | -   | -   | -   | -   | 479 | 581 | 696 | 825 | - |
| 65 | -   | -   | -   | -   | 463 | 563 | 677 | 804 | - |

**Coefficient of performance (C.O.P.)**

|    |      |      |      |      |      |      |      |      |   |
|----|------|------|------|------|------|------|------|------|---|
| 30 | 2.16 | 2.73 | 3.40 | 4.19 | 5.13 | 6.24 | 7.56 | 9.13 | - |
| 35 | 1.79 | 2.29 | 2.87 | 3.56 | 4.38 | 5.35 | 6.51 | 7.89 | - |
| 40 | 1.47 | 1.90 | 2.40 | 3.00 | 3.70 | 4.53 | 5.53 | 6.72 | - |
| 45 | -    | 1.56 | 1.99 | 2.50 | 3.09 | 3.80 | 4.64 | 5.65 | - |
| 50 | -    | -    | 1.63 | 2.06 | 2.56 | 3.15 | 3.85 | 4.69 | - |
| 55 | -    | -    | -    | 1.68 | 2.09 | 2.58 | 3.16 | 3.86 | - |
| 60 | -    | -    | -    | -    | 1.69 | 2.09 | 2.57 | 3.14 | - |
| 65 | -    | -    | -    | -    | 1.35 | 1.67 | 2.06 | 2.52 | - |

**Nominal performance at to = 5 °C, tc = 50 °C**

|                     |        |      |
|---------------------|--------|------|
| Cooling capacity    | 25 609 | W    |
| Power input         | 8 137  | W    |
| Current consumption | 15.48  | A    |
| Mass flow           | 608    | kg/h |
| C.O.P.              | 3.15   |      |


**Pressure switch settings**

|                           |      |        |
|---------------------------|------|--------|
| Maximum HP switch setting | 29.5 | bar(g) |
| Minimum LP switch setting | 0.5  | bar(g) |
| LP pump down setting      | 1    | bar(g) |

**Sound power data**

|                    |    |       |
|--------------------|----|-------|
| Sound power level  | 77 | dB(A) |
| With acoustic hood | 69 | dB(A) |

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 10 K , Subcooling = 0 K

All performance data +/- 5%

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**Performance data at 50 Hz, ARI rating conditions**
**R407C**

| Cond. temp. in<br>°C (tc) | Evaporating temperature in °C (to) |     |     |    |   |   |    |    |
|---------------------------|------------------------------------|-----|-----|----|---|---|----|----|
|                           | -20                                | -15 | -10 | -5 | 0 | 5 | 10 | 15 |

**Cooling capacity in W**

|    |        |        |        |        |        |        |        |        |   |
|----|--------|--------|--------|--------|--------|--------|--------|--------|---|
| 30 | 11 678 | 14 922 | 18 752 | 23 247 | 28 486 | 34 546 | 41 504 | 49 439 | - |
| 35 | 10 961 | 14 129 | 17 849 | 22 198 | 27 256 | 33 099 | 39 806 | 47 456 | - |
| 40 | 10 178 | 13 256 | 16 848 | 21 035 | 25 894 | 31 504 | 37 945 | 45 292 | - |
| 45 | -      | 12 311 | 15 760 | 19 767 | 24 412 | 29 774 | 35 930 | 42 961 | - |
| 50 | -      | -      | 14 597 | 18 408 | 22 822 | 27 918 | 33 775 | 40 473 | - |
| 55 | -      | -      | -      | 16 968 | 21 135 | 25 950 | 31 492 | 37 842 | - |
| 60 | -      | -      | -      | -      | 19 364 | 23 883 | 29 096 | 35 083 | - |
| 65 | -      | -      | -      | -      | 17 524 | 21 732 | 26 602 | 32 214 | - |

**Power input in W**

|    |       |       |       |       |        |        |        |        |   |
|----|-------|-------|-------|-------|--------|--------|--------|--------|---|
| 30 | 5 043 | 5 109 | 5 159 | 5 190 | 5 201  | 5 189  | 5 152  | 5 088  | - |
| 35 | 5 679 | 5 742 | 5 785 | 5 806 | 5 803  | 5 774  | 5 716  | 5 627  | - |
| 40 | 6 379 | 6 446 | 6 489 | 6 506 | 6 496  | 6 455  | 6 383  | 6 277  | - |
| 45 | -     | 7 227 | 7 276 | 7 296 | 7 285  | 7 241  | 7 161  | 7 043  | - |
| 50 | -     | -     | 8 155 | 8 185 | 8 179  | 8 137  | 8 056  | 7 933  | - |
| 55 | -     | -     | -     | 9 177 | 9 184  | 9 151  | 9 075  | 8 954  | - |
| 60 | -     | -     | -     | -     | 10 307 | 10 289 | 10 225 | 10 112 | - |
| 65 | -     | -     | -     | -     | 11 555 | 11 559 | 11 513 | 11 415 | - |

**Current consumption in A**

|    |       |       |       |       |       |       |       |       |   |
|----|-------|-------|-------|-------|-------|-------|-------|-------|---|
| 30 | 12.03 | 12.11 | 12.18 | 12.21 | 12.22 | 12.17 | 12.08 | 11.92 | - |
| 35 | 12.67 | 12.75 | 12.81 | 12.84 | 12.84 | 12.78 | 12.68 | 12.50 | - |
| 40 | 13.43 | 13.51 | 13.57 | 13.60 | 13.59 | 13.53 | 13.41 | 13.23 | - |
| 45 | -     | 14.41 | 14.47 | 14.50 | 14.48 | 14.42 | 14.30 | 14.11 | - |
| 50 | -     | -     | 15.54 | 15.57 | 15.55 | 15.48 | 15.36 | 15.16 | - |
| 55 | -     | -     | -     | 16.82 | 16.81 | 16.74 | 16.61 | 16.41 | - |
| 60 | -     | -     | -     | -     | 18.28 | 18.21 | 18.08 | 17.87 | - |
| 65 | -     | -     | -     | -     | 19.97 | 19.91 | 19.78 | 19.57 | - |

**Mass flow in kg/h**

|    |     |     |     |     |     |     |     |     |   |
|----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 30 | 228 | 287 | 355 | 434 | 524 | 627 | 744 | 876 | - |
| 35 | 223 | 283 | 352 | 432 | 522 | 625 | 742 | 874 | - |
| 40 | 217 | 278 | 348 | 427 | 518 | 621 | 737 | 869 | - |
| 45 | -   | 271 | 341 | 420 | 511 | 614 | 730 | 861 | - |
| 50 | -   | -   | 332 | 412 | 502 | 604 | 720 | 850 | - |
| 55 | -   | -   | -   | 401 | 490 | 592 | 707 | 837 | - |
| 60 | -   | -   | -   | -   | 476 | 577 | 691 | 820 | - |
| 65 | -   | -   | -   | -   | 460 | 560 | 673 | 800 | - |

**Coefficient of performance (C.O.P.)**

|    |      |      |      |      |      |      |      |      |   |
|----|------|------|------|------|------|------|------|------|---|
| 30 | 2.32 | 2.92 | 3.63 | 4.48 | 5.48 | 6.66 | 8.06 | 9.72 | - |
| 35 | 1.93 | 2.46 | 3.09 | 3.82 | 4.70 | 5.73 | 6.96 | 8.43 | - |
| 40 | 1.60 | 2.06 | 2.60 | 3.23 | 3.99 | 4.88 | 5.94 | 7.22 | - |
| 45 | -    | 1.70 | 2.17 | 2.71 | 3.35 | 4.11 | 5.02 | 6.10 | - |
| 50 | -    | -    | 1.79 | 2.25 | 2.79 | 3.43 | 4.19 | 5.10 | - |
| 55 | -    | -    | -    | 1.85 | 2.30 | 2.84 | 3.47 | 4.23 | - |
| 60 | -    | -    | -    | -    | 1.88 | 2.32 | 2.85 | 3.47 | - |
| 65 | -    | -    | -    | -    | 1.52 | 1.88 | 2.31 | 2.82 | - |

**Nominal performance at to = 7.2 °C, tc = 54.4 °C**

|                     |        |      |
|---------------------|--------|------|
| Cooling capacity    | 28 553 | W    |
| Power input         | 8 994  | W    |
| Current consumption | 16.53  | A    |
| Mass flow           | 643    | kg/h |
| C.O.P.              | 3.17   |      |

**Pressure switch settings**

|                           |      |        |
|---------------------------|------|--------|
| Maximum HP switch setting | 29.5 | bar(g) |
| Minimum LP switch setting | 0.5  | bar(g) |
| LP pump down setting      | 1    | bar(g) |

**Sound power data**

|                    |    |       |
|--------------------|----|-------|
| Sound power level  | 77 | dB(A) |
| With acoustic hood | 69 | dB(A) |

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 11.1 K , Subcooling = 8.3 K

All performance data +/- 5%

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**Performance data at 50 Hz, EN 12900 rating conditions**
**R134a**

| Cond. temp. in<br>°C (tc) | Evaporating temperature in °C (to) |     |    |   |   |    |    |  |
|---------------------------|------------------------------------|-----|----|---|---|----|----|--|
|                           | -15                                | -10 | -5 | 0 | 5 | 10 | 15 |  |

**Cooling capacity in W**

|    |       |        |        |        |        |        |        |   |   |
|----|-------|--------|--------|--------|--------|--------|--------|---|---|
| 35 | 8 715 | 11 130 | 13 982 | 17 317 | 21 181 | 25 619 | 30 677 | - | - |
| 40 | 8 163 | 10 493 | 13 239 | 16 449 | 20 169 | 24 443 | 29 317 | - | - |
| 45 | 7 585 | 9 816  | 12 446 | 15 520 | 19 082 | 23 180 | 27 859 | - | - |
| 50 | 6 981 | 9 103  | 11 604 | 14 529 | 17 923 | 21 833 | 26 304 | - | - |
| 55 | -     | 8 353  | 10 713 | 13 478 | 16 692 | 20 402 | 24 652 | - | - |
| 60 | -     | -      | 9 776  | 12 368 | 15 390 | 18 887 | 22 904 | - | - |
| 65 | -     | -      | -      | 11 201 | 14 018 | 17 289 | 21 060 | - | - |
| 70 | -     | -      | -      | 9 978  | 12 577 | 15 609 | 19 120 | - | - |

**Power input in W**

|    |       |       |       |       |       |       |       |   |   |
|----|-------|-------|-------|-------|-------|-------|-------|---|---|
| 35 | 4 013 | 4 041 | 4 061 | 4 071 | 4 069 | 4 053 | 4 020 | - | - |
| 40 | 4 468 | 4 495 | 4 516 | 4 526 | 4 525 | 4 509 | 4 476 | - | - |
| 45 | 4 981 | 5 009 | 5 030 | 5 041 | 5 039 | 5 024 | 4 991 | - | - |
| 50 | 5 559 | 5 587 | 5 608 | 5 619 | 5 618 | 5 603 | 5 571 | - | - |
| 55 | -     | 6 233 | 6 255 | 6 266 | 6 266 | 6 251 | 6 219 | - | - |
| 60 | -     | -     | 6 975 | 6 987 | 6 987 | 6 973 | 6 942 | - | - |
| 65 | -     | -     | -     | 7 787 | 7 787 | 7 773 | 7 743 | - | - |
| 70 | -     | -     | -     | 8 670 | 8 671 | 8 657 | 8 627 | - | - |

**Current consumption in A**

|    |       |       |       |       |       |       |       |   |   |
|----|-------|-------|-------|-------|-------|-------|-------|---|---|
| 35 | 11.07 | 11.11 | 11.13 | 11.13 | 11.12 | 11.09 | 11.02 | - | - |
| 40 | 11.49 | 11.52 | 11.55 | 11.55 | 11.54 | 11.51 | 11.45 | - | - |
| 45 | 11.98 | 12.02 | 12.04 | 12.05 | 12.04 | 12.01 | 11.95 | - | - |
| 50 | 12.56 | 12.60 | 12.63 | 12.64 | 12.63 | 12.60 | 12.54 | - | - |
| 55 | -     | 13.28 | 13.30 | 13.31 | 13.31 | 13.28 | 13.22 | - | - |
| 60 | -     | -     | 14.08 | 14.09 | 14.09 | 14.06 | 14.01 | - | - |
| 65 | -     | -     | -     | 14.98 | 14.98 | 14.96 | 14.91 | - | - |
| 70 | -     | -     | -     | 15.99 | 15.99 | 15.97 | 15.92 | - | - |

**Mass flow in kg/h**

|    |     |     |     |     |     |     |     |   |   |
|----|-----|-----|-----|-----|-----|-----|-----|---|---|
| 35 | 211 | 264 | 325 | 394 | 472 | 561 | 660 | - | - |
| 40 | 208 | 261 | 322 | 392 | 471 | 560 | 660 | - | - |
| 45 | 204 | 258 | 319 | 389 | 469 | 558 | 658 | - | - |
| 50 | 199 | 253 | 315 | 385 | 465 | 554 | 654 | - | - |
| 55 | -   | 248 | 310 | 380 | 459 | 548 | 648 | - | - |
| 60 | -   | -   | 303 | 373 | 452 | 541 | 640 | - | - |
| 65 | -   | -   | -   | 364 | 443 | 531 | 630 | - | - |
| 70 | -   | -   | -   | 353 | 431 | 519 | 618 | - | - |

**Coefficient of performance (C.O.P.)**

|    |      |      |      |      |      |      |      |   |   |
|----|------|------|------|------|------|------|------|---|---|
| 35 | 2.17 | 2.75 | 3.44 | 4.25 | 5.20 | 6.32 | 7.63 | - | - |
| 40 | 1.83 | 2.33 | 2.93 | 3.63 | 4.46 | 5.42 | 6.55 | - | - |
| 45 | 1.52 | 1.96 | 2.47 | 3.08 | 3.79 | 4.61 | 5.58 | - | - |
| 50 | 1.26 | 1.63 | 2.07 | 2.59 | 3.19 | 3.90 | 4.72 | - | - |
| 55 | -    | 1.34 | 1.71 | 2.15 | 2.66 | 3.26 | 3.96 | - | - |
| 60 | -    | -    | 1.40 | 1.77 | 2.20 | 2.71 | 3.30 | - | - |
| 65 | -    | -    | -    | 1.44 | 1.80 | 2.22 | 2.72 | - | - |
| 70 | -    | -    | -    | 1.15 | 1.45 | 1.80 | 2.22 | - | - |

**Nominal performance at to = 5 °C, tc = 50 °C**

|                     |        |      |
|---------------------|--------|------|
| Cooling capacity    | 17 923 | W    |
| Power input         | 5 618  | W    |
| Current consumption | 12.63  | A    |
| Mass flow           | 465    | kg/h |
| C.O.P.              | 3.19   |      |

to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 10 K , Subcooling = 0 K

**Pressure switch settings**

|                           |      |        |
|---------------------------|------|--------|
| Maximum HP switch setting | 20.5 | bar(g) |
| Minimum LP switch setting | 0.5  | bar(g) |
| LP pump down setting      | 0.5  | bar(g) |

**Sound power data**

|                    |   |       |
|--------------------|---|-------|
| Sound power level  | 0 | dB(A) |
| With acoustic hood | 0 | dB(A) |

All performance data +/- 5%

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**Performance data at 50 Hz, ARI rating conditions**
**R134a**

| Cond. temp. in<br>°C (tc) | Evaporating temperature in °C (to) |     |    |   |   |    |    |  |
|---------------------------|------------------------------------|-----|----|---|---|----|----|--|
|                           | -15                                | -10 | -5 | 0 | 5 | 10 | 15 |  |

**Cooling capacity in W**

|    |       |        |        |        |        |        |        |   |   |
|----|-------|--------|--------|--------|--------|--------|--------|---|---|
| 35 | 9 439 | 12 035 | 15 094 | 18 665 | 22 795 | 27 532 | 32 923 | - | - |
| 40 | 8 890 | 11 405 | 14 364 | 17 816 | 21 808 | 26 388 | 31 603 | - | - |
| 45 | 8 312 | 10 734 | 13 581 | 16 902 | 20 744 | 25 155 | 30 182 | - | - |
| 50 | 7 705 | 10 022 | 12 746 | 15 924 | 19 604 | 23 834 | 28 660 | - | - |
| 55 | -     | 9 272  | 11 859 | 14 883 | 18 389 | 22 425 | 27 039 | - | - |
| 60 | -     | -      | 10 922 | 13 779 | 17 098 | 20 930 | 25 320 | - | - |
| 65 | -     | -      | -      | 12 613 | 15 735 | 19 349 | 23 502 | - | - |
| 70 | -     | -      | -      | 11 386 | 14 298 | 17 683 | 21 588 | - | - |

**Power input in W**

|    |       |       |       |       |       |       |       |   |   |
|----|-------|-------|-------|-------|-------|-------|-------|---|---|
| 35 | 4 013 | 4 041 | 4 061 | 4 071 | 4 069 | 4 053 | 4 020 | - | - |
| 40 | 4 468 | 4 495 | 4 516 | 4 526 | 4 525 | 4 509 | 4 476 | - | - |
| 45 | 4 981 | 5 009 | 5 030 | 5 041 | 5 039 | 5 024 | 4 991 | - | - |
| 50 | 5 559 | 5 587 | 5 608 | 5 619 | 5 618 | 5 603 | 5 571 | - | - |
| 55 | -     | 6 233 | 6 255 | 6 266 | 6 266 | 6 251 | 6 219 | - | - |
| 60 | -     | -     | 6 975 | 6 987 | 6 987 | 6 973 | 6 942 | - | - |
| 65 | -     | -     | -     | 7 787 | 7 787 | 7 773 | 7 743 | - | - |
| 70 | -     | -     | -     | 8 670 | 8 671 | 8 657 | 8 627 | - | - |

**Current consumption in A**

|    |       |       |       |       |       |       |       |   |   |
|----|-------|-------|-------|-------|-------|-------|-------|---|---|
| 35 | 11.07 | 11.11 | 11.13 | 11.13 | 11.12 | 11.09 | 11.02 | - | - |
| 40 | 11.49 | 11.52 | 11.55 | 11.55 | 11.54 | 11.51 | 11.45 | - | - |
| 45 | 11.98 | 12.02 | 12.04 | 12.05 | 12.04 | 12.01 | 11.95 | - | - |
| 50 | 12.56 | 12.60 | 12.63 | 12.64 | 12.63 | 12.60 | 12.54 | - | - |
| 55 | -     | 13.28 | 13.30 | 13.31 | 13.31 | 13.28 | 13.22 | - | - |
| 60 | -     | -     | 14.08 | 14.09 | 14.09 | 14.06 | 14.01 | - | - |
| 65 | -     | -     | -     | 14.98 | 14.98 | 14.96 | 14.91 | - | - |
| 70 | -     | -     | -     | 15.99 | 15.99 | 15.97 | 15.92 | - | - |

**Mass flow in kg/h**

|    |     |     |     |     |     |     |     |   |   |
|----|-----|-----|-----|-----|-----|-----|-----|---|---|
| 35 | 210 | 263 | 323 | 392 | 470 | 558 | 656 | - | - |
| 40 | 207 | 260 | 321 | 390 | 469 | 557 | 656 | - | - |
| 45 | 203 | 257 | 318 | 387 | 466 | 555 | 654 | - | - |
| 50 | 198 | 252 | 314 | 383 | 462 | 551 | 650 | - | - |
| 55 | -   | 247 | 308 | 378 | 457 | 545 | 644 | - | - |
| 60 | -   | -   | 301 | 371 | 450 | 538 | 637 | - | - |
| 65 | -   | -   | -   | 362 | 441 | 528 | 627 | - | - |
| 70 | -   | -   | -   | 351 | 429 | 517 | 614 | - | - |

**Coefficient of performance (C.O.P.)**

|    |      |      |      |      |      |      |      |   |   |
|----|------|------|------|------|------|------|------|---|---|
| 35 | 2.35 | 2.98 | 3.72 | 4.58 | 5.60 | 6.79 | 8.19 | - | - |
| 40 | 1.99 | 2.54 | 3.18 | 3.94 | 4.82 | 5.85 | 7.06 | - | - |
| 45 | 1.67 | 2.14 | 2.70 | 3.35 | 4.12 | 5.01 | 6.05 | - | - |
| 50 | 1.39 | 1.79 | 2.27 | 2.83 | 3.49 | 4.25 | 5.14 | - | - |
| 55 | -    | 1.49 | 1.90 | 2.38 | 2.93 | 3.59 | 4.35 | - | - |
| 60 | -    | -    | 1.57 | 1.97 | 2.45 | 3.00 | 3.65 | - | - |
| 65 | -    | -    | -    | 1.62 | 2.02 | 2.49 | 3.04 | - | - |
| 70 | -    | -    | -    | 1.31 | 1.65 | 2.04 | 2.50 | - | - |

**Nominal performance at to = 7.2 °C, tc = 54.4 °C**

|                     |        |      |
|---------------------|--------|------|
| Cooling capacity    | 20 256 | W    |
| Power input         | 6 180  | W    |
| Current consumption | 13.21  | A    |
| Mass flow           | 495    | kg/h |
| C.O.P.              | 3.28   |      |

**Pressure switch settings**

|                           |      |        |
|---------------------------|------|--------|
| Maximum HP switch setting | 20.5 | bar(g) |
| Minimum LP switch setting | 0.5  | bar(g) |
| LP pump down setting      | 0.5  | bar(g) |

**Sound power data**

|                    |   |       |
|--------------------|---|-------|
| Sound power level  | 0 | dB(A) |
| With acoustic hood | 0 | dB(A) |

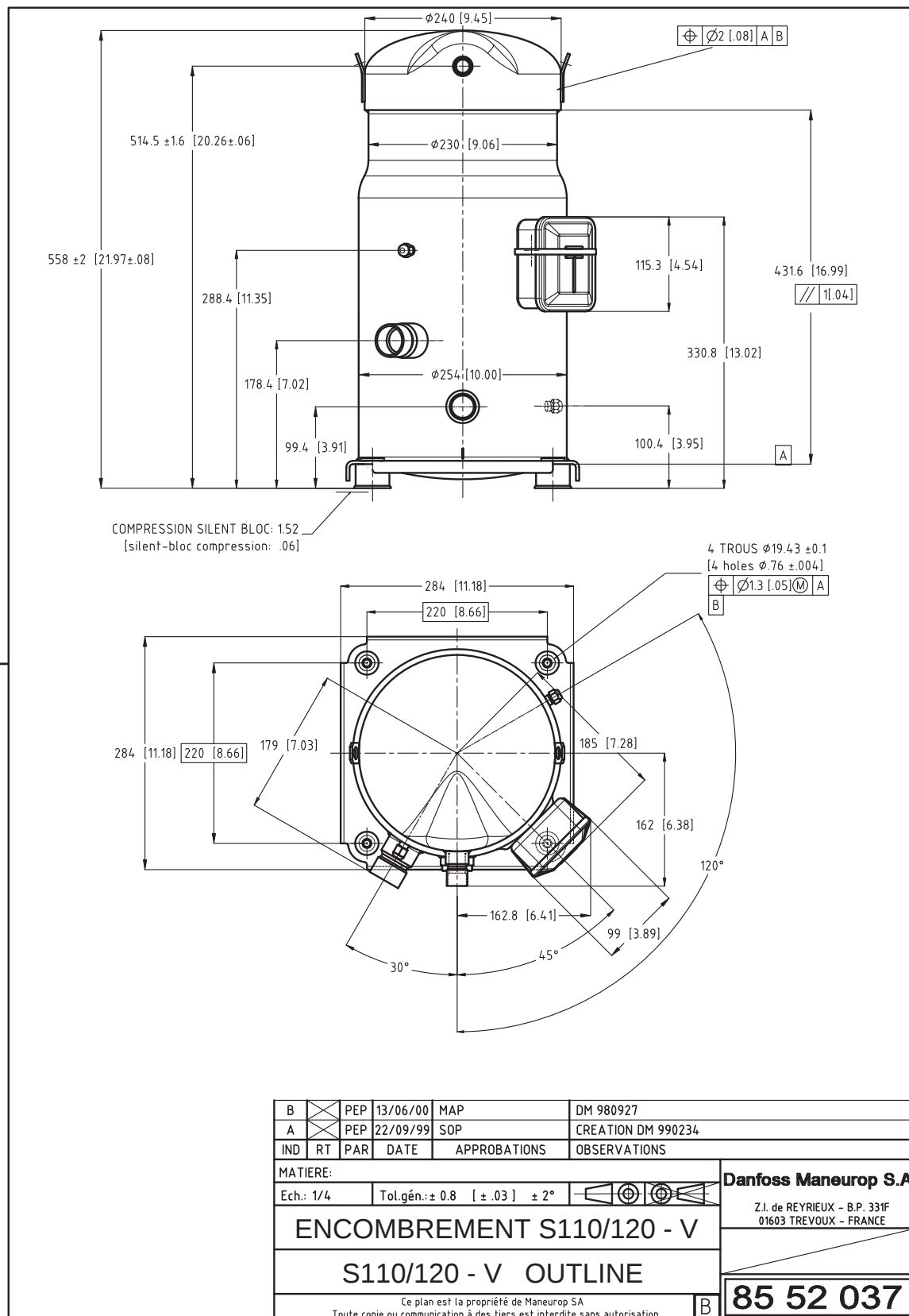
to: Evaporating temperature at dew point

tc: Condensing temperature at dew point

Rating conditions : Superheat = 11.1 K , Subcooling = 8.3 K

All performance data +/- 5%

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|                                  |                                               |          |      |                                                        |
|----------------------------------|-----------------------------------------------|----------|------|--------------------------------------------------------|
| B                                | PEP                                           | 13/06/00 | MAP  | DM 980927                                              |
| A                                | PEP                                           | 22/09/99 | SOP  | CREATION DM 990234                                     |
| IND                              | RT                                            | PAR      | DATE | APPROBATIONS                                           |
| OBSERVATIONS                     |                                               |          |      |                                                        |
| MATIERE:                         |                                               |          |      |                                                        |
| Ech.: 1/4                        | Tol.gén.: $\pm 0.8$ $[\pm .03]$ $\pm 2^\circ$ |          |      |                                                        |
| <b>ENCOMBREMENT S110/120 - V</b> |                                               |          |      | <b>Danfoss Maneurop S.A.</b>                           |
| <b>S110/120 - V OUTLINE</b>      |                                               |          |      | Z.I. de REYRIEUX - B.P. 331F<br>01603 TREVOUX - FRANCE |
| 85 52 037                        |                                               |          |      |                                                        |