

Model: SZ160

Data

Type: Hermetic scroll compressors

Producer: Maneurop

Series: SZ

Model: SZ160

Technical data

| | |
|--|---------------------------|
| Displacement [m ³ /h]: | 37,7 |
| Cylinder capacity [cm ³]: | 216,6 |
| RPM [min ⁻¹]: | 2900 |
| Weight [kg]: | 94 |
| Oil charge [dm ³]: | 4 |
| Oil type: | 160SZ |
| Maximum system test pressure low side / high side: | 25 / 32 |
| Maximum number of starts without softstart [1/h]: | 12 |
| Refrigerant charge limit [dm ³]: | 13 |
| Refrigerant: | R407C, R134a, R404A/R507A |

Connections

| | <u>milimeters</u> | <u>inches</u> |
|--|-------------------|---------------|
| Suction Rotolock valve connection: | | 2 1/4" |
| Discharge Rotolock valve connection: | | 1 3/4" |
| Suction connection with supplied sleeve: | | 1 3/8" |
| Discharge connection with supplied sleeve: | | 7/8" |

Approvals

| | |
|-----|---|
| CCC | - |
| CE | + |
| UL | + |

Model: SZ160

Capacity

R134a

Cooling capacity [W]

| $t_c \setminus t_e$ | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|
| 30 | 13 127 | 16 693 | 20 885 | 25 765 | 31 391 | 37 823 | 45 122 |
| 35 | 12 406 | 15 883 | 19 962 | 24 704 | 30 167 | 36 413 | 43 501 |
| 40 | 11 660 | 15 033 | 18 984 | 23 573 | 28 858 | 34 902 | 41 763 |
| 45 | 10 895 | 14 148 | 17 955 | 22 375 | 27 468 | 33 293 | 39 912 |
| 50 | 10 112 | 13 231 | 16 878 | 21 114 | 25 998 | 31 591 | 37 952 |
| 55 | - | 12 285 | 15 757 | 19 793 | 24 454 | 29 798 | 35 886 |
| 60 | - | - | 14 595 | 18 417 | 22 838 | 27 918 | 33 717 |
| 65 | - | - | - | 16 988 | 21 154 | 25 955 | 31 450 |
| 70 | - | - | - | 15 510 | 19 406 | 23 912 | 29 088 |

Power input [W]

| $t_c \setminus t_e$ | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|-------|-------|-------|--------|--------|--------|--------|
| 30 | 4 793 | 4 853 | 4 901 | 4 933 | 4 946 | 4 934 | 4 895 |
| 35 | 5 259 | 5 322 | 5 374 | 5 410 | 5 427 | 5 421 | 5 389 |
| 40 | 5 790 | 5 856 | 5 912 | 5 953 | 5 975 | 5 976 | 5 950 |
| 45 | 6 391 | 6 461 | 6 521 | 6 567 | 6 595 | 6 602 | 6 584 |
| 50 | 7 067 | 7 141 | 7 206 | 7 257 | 7 292 | 7 306 | 7 295 |
| 55 | - | 7 902 | 7 972 | 8 030 | 8 071 | 8 093 | 8 090 |
| 60 | - | - | 8 825 | 8 890 | 8 938 | 8 968 | 8 974 |
| 65 | - | - | - | 9 842 | 9 899 | 9 937 | 9 952 |
| 70 | - | - | - | 10 893 | 10 957 | 11 004 | 11 030 |

Current [A]

| $t_c \setminus t_e$ | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|-------|-------|-------|-------|-------|-------|-------|
| 30 | 12.17 | 12.21 | 12.23 | 12.22 | 12.17 | 12.10 | 11.98 |
| 35 | 12.56 | 12.61 | 12.63 | 12.63 | 12.61 | 12.55 | 12.45 |
| 40 | 13.04 | 13.09 | 13.13 | 13.15 | 13.14 | 13.09 | 13.02 |
| 45 | 13.61 | 13.68 | 13.73 | 13.76 | 13.77 | 13.75 | 13.70 |
| 50 | 14.31 | 14.39 | 14.45 | 14.50 | 14.53 | 14.53 | 14.50 |
| 55 | - | 15.22 | 15.30 | 15.37 | 15.42 | 15.44 | 15.44 |
| 60 | - | - | 16.29 | 16.38 | 16.45 | 16.50 | 16.53 |
| 65 | - | - | - | 17.55 | 17.65 | 17.72 | 17.78 |
| 70 | - | - | - | 18.89 | 19.01 | 19.12 | 19.20 |

Model: SZ160

Capacity

Mass flow [kg/s]

| $t_c \setminus t_e$ | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|
| 30 | 280.71 | 349.84 | 429.18 | 519.61 | 622.01 | 737.24 | 866.17 |
| 35 | 276.33 | 346.62 | 427.03 | 518.43 | 621.71 | 737.73 | 867.37 |
| 40 | 271.48 | 342.73 | 424.00 | 516.19 | 620.15 | 736.77 | 866.92 |
| 45 | 266.11 | 338.12 | 420.07 | 512.84 | 617.30 | 734.32 | 864.77 |
| 50 | 260.19 | 332.77 | 415.20 | 508.35 | 613.11 | 730.33 | 860.90 |
| 55 | - | 326.63 | 409.35 | 502.69 | 607.54 | 724.78 | 855.26 |
| 60 | - | - | 402.48 | 495.82 | 600.58 | 717.62 | 847.83 |
| 65 | - | - | - | 487.70 | 592.16 | 708.83 | 838.56 |
| 70 | - | - | - | 478.29 | 582.27 | 698.35 | 827.42 |

C.O.P. [W/W]

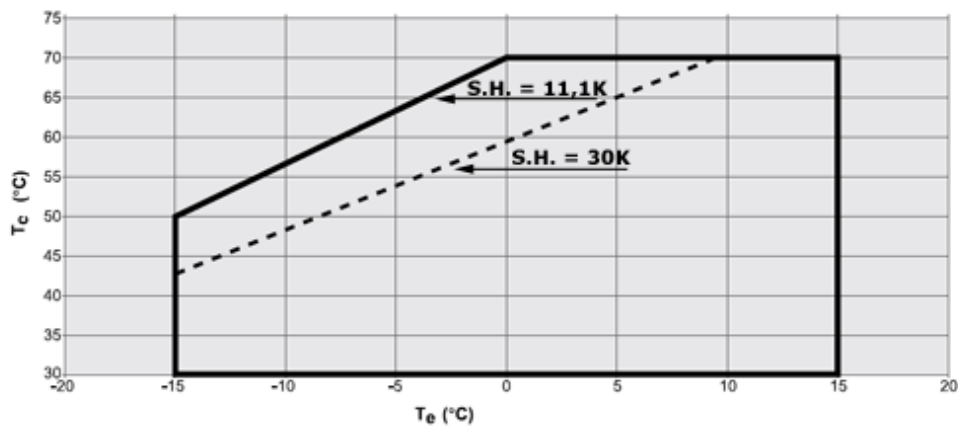
| $t_c \setminus t_e$ | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|------|------|------|------|------|------|------|
| 30 | 2.74 | 3.44 | 4.26 | 5.22 | 6.35 | 7.67 | 9.22 |
| 35 | 2.36 | 2.98 | 3.71 | 4.57 | 5.56 | 6.72 | 8.07 |
| 40 | 2.01 | 2.57 | 3.21 | 3.96 | 4.83 | 5.84 | 7.02 |
| 45 | 1.70 | 2.19 | 2.75 | 3.41 | 4.16 | 5.04 | 6.06 |
| 50 | 1.43 | 1.85 | 2.34 | 2.91 | 3.57 | 4.32 | 5.20 |
| 55 | - | 1.55 | 1.98 | 2.46 | 3.03 | 3.68 | 4.44 |
| 60 | - | - | 1.65 | 2.07 | 2.56 | 3.11 | 3.76 |
| 65 | - | - | - | 1.73 | 2.14 | 2.61 | 3.16 |
| 70 | - | - | - | 1.42 | 1.77 | 2.17 | 2.64 |

Operating conditions: suction superheat: 11.1 K, subcooling: 8.3 K

t_c - Condensing temperature [°C]

t_e - Evaporating temperature [°C]

Application range



Model: SZ160

Capacity

R407C

Cooling capacity [W]

| $t_c \setminus t_e$ | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| 30 | 14 560 | 18 543 | 23 283 | 28 882 | 35 443 | 43 068 | 51 857 | 61 914 |
| 35 | 13 697 | 17 568 | 22 154 | 27 558 | 33 881 | 41 226 | 49 693 | 59 386 |
| 40 | 12 777 | 16 505 | 20 906 | 26 083 | 32 137 | 39 171 | 47 286 | 56 584 |
| 45 | - | 15 374 | 19 559 | 24 478 | 30 232 | 36 924 | 44 655 | 53 527 |
| 50 | - | - | 18 133 | 22 763 | 28 186 | 34 505 | 41 821 | 50 236 |
| 55 | - | - | - | 20 957 | 26 018 | 31 933 | 38 803 | 46 730 |
| 60 | - | - | - | - | 23 750 | 29 229 | 35 622 | 43 030 |
| 65 | - | - | - | - | 21 400 | 26 413 | 32 297 | 39 155 |

Power input [W]

| $t_c \setminus t_e$ | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|-------|-------|--------|--------|--------|--------|--------|--------|
| 30 | 6 584 | 6 668 | 6 729 | 6 769 | 6 791 | 6 796 | 6 786 | 6 764 |
| 35 | 7 344 | 7 442 | 7 516 | 7 567 | 7 599 | 7 612 | 7 610 | 7 593 |
| 40 | 8 191 | 8 303 | 8 389 | 8 451 | 8 492 | 8 514 | 8 518 | 8 506 |
| 45 | - | 9 268 | 9 366 | 9 439 | 9 489 | 9 518 | 9 528 | 9 522 |
| 50 | - | - | 10 466 | 10 549 | 10 608 | 10 644 | 10 660 | 10 658 |
| 55 | - | - | - | 11 800 | 11 866 | 11 910 | 11 931 | 11 933 |
| 60 | - | - | - | - | 13 283 | 13 333 | 13 360 | 13 365 |
| 65 | - | - | - | - | 14 877 | 14 933 | 14 964 | 14 973 |

Current [A]

| $t_c \setminus t_e$ | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 30 | 13.98 | 14.05 | 14.06 | 14.04 | 13.98 | 13.89 | 13.78 | 13.65 |
| 35 | 14.79 | 14.88 | 14.93 | 14.95 | 14.93 | 14.89 | 14.83 | 14.75 |
| 40 | 15.72 | 15.84 | 15.93 | 15.97 | 15.99 | 15.99 | 15.97 | 15.93 |
| 45 | - | 16.97 | 17.07 | 17.14 | 17.19 | 17.21 | 17.22 | 17.22 |
| 50 | - | - | 18.42 | 18.50 | 18.57 | 18.61 | 18.64 | 18.67 |
| 55 | - | - | - | 20.09 | 20.16 | 20.22 | 20.26 | 20.31 |
| 60 | - | - | - | - | 22.02 | 22.07 | 22.13 | 22.18 |
| 65 | - | - | - | - | 24.17 | 24.22 | 24.27 | 24.32 |

Model: SZ160

Capacity

Mass flow [kg/s]

| $t_c \setminus t_e$ | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|----------|
| 30 | 306.00 | 384.17 | 474.85 | 579.71 | 700.46 | 838.77 | 996.35 | 1 174.87 |
| 35 | 302.21 | 381.27 | 472.79 | 578.47 | 699.99 | 839.05 | 997.33 | 1 176.52 |
| 40 | 297.28 | 376.74 | 468.62 | 574.63 | 696.44 | 835.75 | 994.25 | 1 173.63 |
| 45 | - | 370.69 | 462.45 | 568.30 | 689.92 | 829.00 | 987.23 | 1 166.30 |
| 50 | - | - | 454.40 | 559.60 | 680.54 | 818.90 | 976.38 | 1 154.67 |
| 55 | - | - | - | 548.64 | 668.41 | 805.57 | 961.81 | 1 138.82 |
| 60 | - | - | - | - | 653.65 | 789.12 | 943.64 | 1 118.89 |
| 65 | - | - | - | - | 636.37 | 769.67 | 921.97 | 1 094.97 |

C.O.P. [W/W]

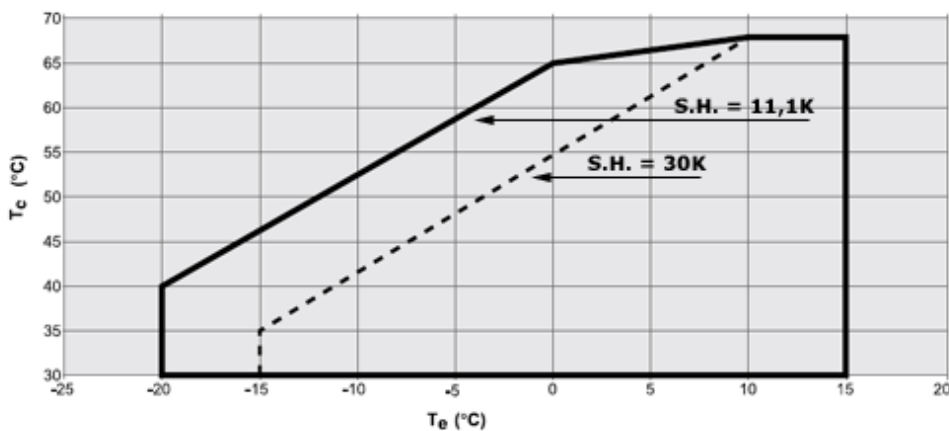
| $t_c \setminus t_e$ | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 |
|---------------------|------|------|------|------|------|------|------|------|
| 30 | 2.21 | 2.78 | 3.46 | 4.27 | 5.22 | 6.34 | 7.64 | 9.15 |
| 35 | 1.87 | 2.36 | 2.95 | 3.64 | 4.46 | 5.42 | 6.53 | 7.82 |
| 40 | 1.56 | 1.99 | 2.49 | 3.09 | 3.78 | 4.60 | 5.55 | 6.65 |
| 45 | - | 1.66 | 2.09 | 2.59 | 3.19 | 3.88 | 4.69 | 5.62 |
| 50 | - | - | 1.73 | 2.16 | 2.66 | 3.24 | 3.92 | 4.71 |
| 55 | - | - | - | 1.78 | 2.19 | 2.68 | 3.25 | 3.92 |
| 60 | - | - | - | - | 1.79 | 2.19 | 2.67 | 3.22 |
| 65 | - | - | - | - | 1.44 | 1.77 | 2.16 | 2.62 |

Operating conditions: suction superheat: 10 K, subcooling: 0 K

t_c - Condensing temperature [°C]

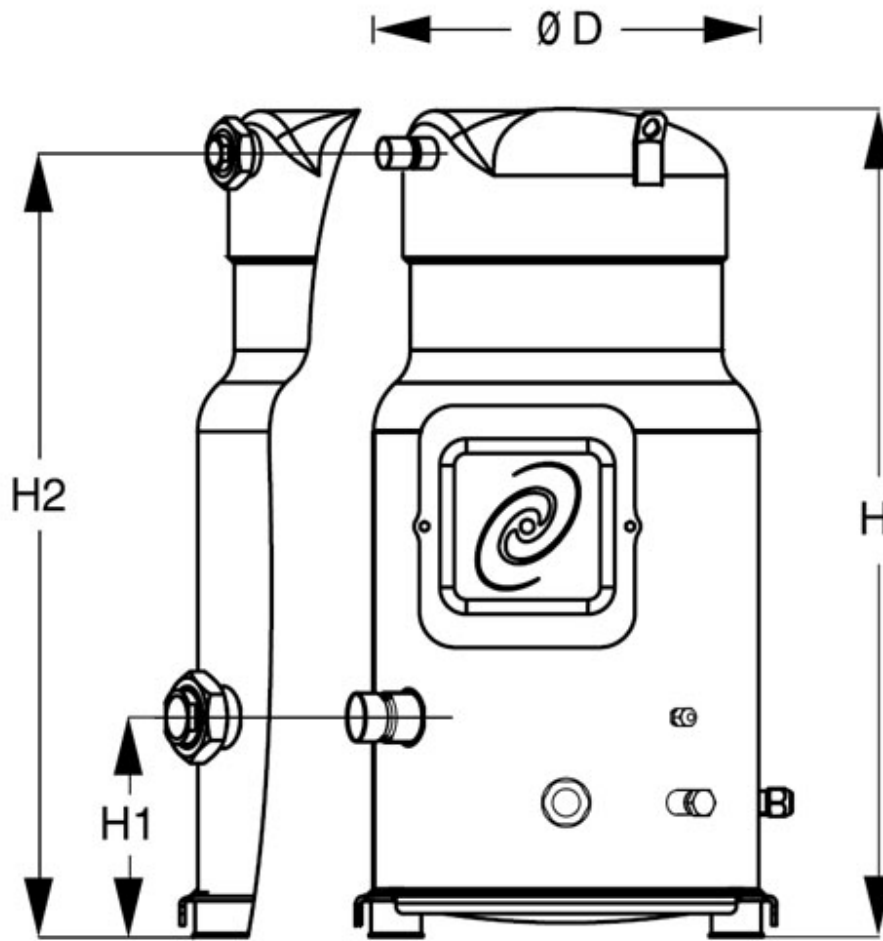
t_e - Evaporating temperature [°C]

Application range



Model: SZ160

Dimensions



| | |
|----|--------|
| D | 266 mm |
| H | 631 mm |
| H1 | 180 mm |
| H2 | 596 mm |

Model: SZ160

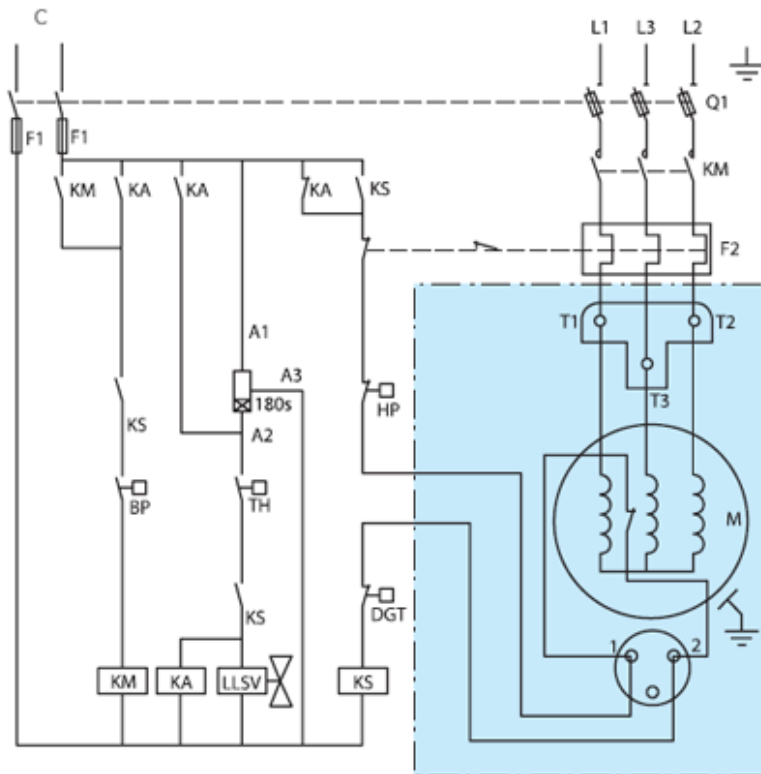
Image



Electrical data

| | |
|---|------|
| Starting current [A]: | 150 |
| Maximum Continuous Current (MCC) [A]: | - |
| Winding resistance (between phases) [Ω]: | 0,94 |

Connection diagram for systems with refrigerant suction

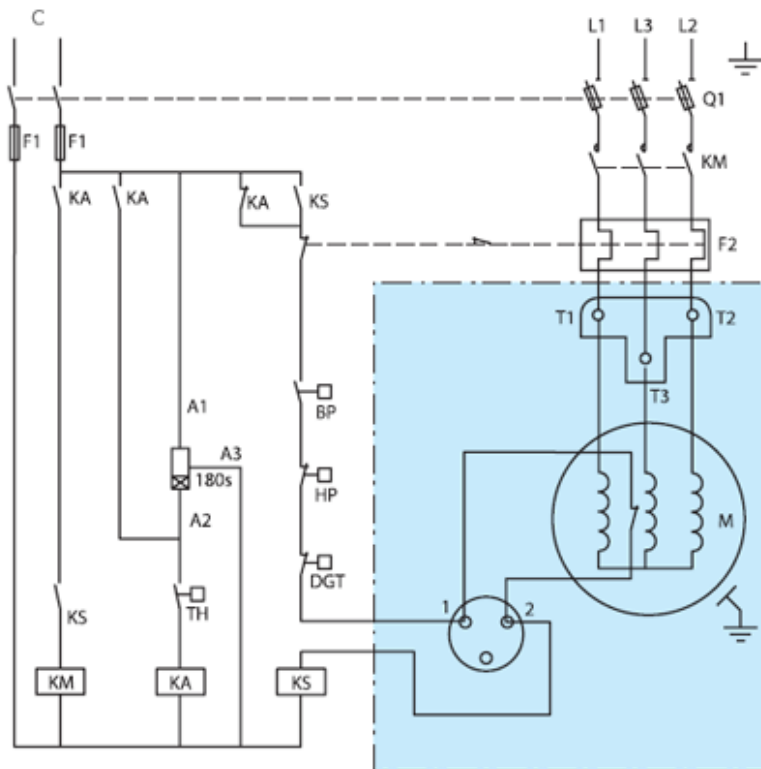


- TH: Thermostat
- 180 s: ATI electronic timer
- KA: Control transmitter CI 4-2
- LLSV: Electromagnetic liquid valve
- KM: Main contactor CI
- KS: Fuses' switch
- BP: Low pressure switch
- HP: High pressure switch
- Q1: Safety switch
- F1: Fuses / S: Thermal relay TI
- F2: Thermal relay TI
- M: Compressor's engine
- DGT: Discharge gas thermostat

Model: SZ160

Electrical

Connection diagram for systems without refrigerant suction



- TH: Thermostat
- 180 s: ATI electronic timer
- KA: Control transmitter CI 4-2
- LLSV: Electromagnetic liquid valve
- KM: Main contactor CI
- KS: Fuses' switch
- BP: Low pressure switch
- HP: High pressure switch
- Q1: Safety switch
- F1: Fuses / S: Thermal relay TI
- F2: Thermal relay TI
- M: Compressor's engine
- DGT: Discharge gas thermostat

Equipment

- ▶ oil equalization - thread adapter 3/8"
- ▶ belt type heater - crankcase heater 65W, 230V
- ▶ soft-start kit - electronic softstart MCI 25C
- ▶ accoustic hood - acoustic shield of Danfoss catalogue number 7755008
- ▶ discharge thermostatic protection - discharge temperature protection accessory - Danfoss catalogue number 7750009