



## Selection: Semi-hermetic Screw Compressors HS

### Input Values

|                           |                 |                          |             |
|---------------------------|-----------------|--------------------------|-------------|
| Compressor model          | HSK7471-90      | Frequency compressor     | --          |
| Refrigerant               | R404A           | Power supply             | 400V-3-50Hz |
| Reference temperature     | Dew point temp. | Useful superheat         | 100%        |
| Liq. subc. (in condenser) | 0 K             | Additional cooling       | Automatic   |
| Suct. gas superheat       | 10,00 K         | Max. discharge gas temp. | 80,0 °C     |
| Operating mode            | Standard        |                          |             |

### Result

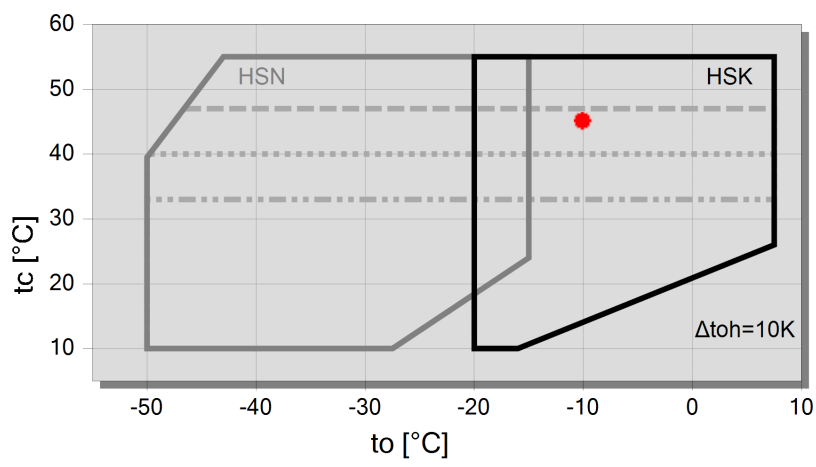
|            |                  |             |                           |
|------------|------------------|-------------|---------------------------|
| Q [W]      | Cooling capacity | mHP [kg/h]  | Mass flow HP              |
| P [kW]     | Power input      | Qac [kW]    | Additional cooling        |
| I [A]      | Current          | tcu [°C]    | Liquid temp.              |
| COP [-]    | COP/EER          | pm [bar(a)] | ECO pressure              |
| mLP [kg/h] | Mass flow LP     | Qsc [kW]    | sub cooler capacity (ECO) |

| tc          | to          | 5°C    | 0°C    | -5°C   | -10°C  | -15°C  | -20°C  | -25°C | -30°C |
|-------------|-------------|--------|--------|--------|--------|--------|--------|-------|-------|
| <b>30°C</b> | Q [W]       | 299426 | 249994 | 207249 | 170430 | 138854 | 111909 | --    | --    |
|             | P [kW]      | 56,3   | 54,6   | 53,0   | 51,4   | 50,0   | 48,8   |       |       |
|             | I [A]       | 97,5   | 95,1   | 92,8   | 90,7   | 88,7   | 87,0   |       |       |
|             | COP [-]     | 5,32   | 4,58   | 3,91   | 3,31   | 2,78   | 2,29   |       |       |
|             | mLP [kg/h]  | 8007   | 6824   | 5781   | 4863   | 4057   | 3351   |       |       |
|             | mHP [kg/h]  | 8007   | 6824   | 5781   | 4863   | 4057   | 3351   |       |       |
|             | Qac [kW]    | --     | --     | --     | --     | --     | --     |       |       |
|             | tcu [°C]    | 29,6   | 29,6   | 29,6   | 29,6   | 29,6   | 29,6   |       |       |
|             | pm [bar(a)] | --     | --     | --     | --     | --     | --     |       |       |
|             | Qsc [kW]    | --     | --     | --     | --     | --     | --     |       |       |
| <b>40°C</b> | Q [W]       | 258678 | 215045 | 177388 | 145021 | 117322 | 93740  | --    | --    |
|             | P [kW]      | 67,2   | 65,5   | 63,9   | 62,4   | 61,0   | 59,8   |       |       |
|             | I [A]       | 112,9  | 110,6  | 108,3  | 106,1  | 104,1  | 102,3  |       |       |
|             | COP [-]     | 3,85   | 3,28   | 2,77   | 2,32   | 1,92   | 1,57   |       |       |
|             | mLP [kg/h]  | 7859   | 6689   | 5655   | 4745   | 3944   | 3242   |       |       |
|             | mHP [kg/h]  | 7859   | 6689   | 5655   | 4745   | 3944   | 3242   |       |       |
|             | Qac [kW]    | --     | --     | --     | --     | --     | --     |       |       |
|             | tcu [°C]    | 39,6   | 39,6   | 39,6   | 39,6   | 39,6   | 39,6   |       |       |
|             | pm [bar(a)] | --     | --     | --     | --     | --     | --     |       |       |
|             | Qsc [kW]    | --     | --     | --     | --     | --     | --     |       |       |
| <b>50°C</b> | Q [W]       | 213191 | 175847 | 143719 | 116200 | 92741  | 72854  | --    | --    |
|             | P [kW]      | 81,0   | 79,4   | 77,9   | 76,4   | 75,0   | 73,6   |       |       |
|             | I [A]       | 133,6  | 131,2  | 128,9  | 126,6  | 124,5  | 122,4  |       |       |
|             | COP [-]     | 2,63   | 2,21   | 1,85   | 1,52   | 1,24   | 0,99   |       |       |
|             | mLP [kg/h]  | 7592   | 6437   | 5417   | 4516   | 3723   | 3026   |       |       |
|             | mHP [kg/h]  | 7592   | 6437   | 5417   | 4516   | 3723   | 3026   |       |       |
|             | Qac [kW]    | --     | --     | --     | 8,41   | 15,88  | 23,0   |       |       |
|             | tcu [°C]    | 49,7   | 49,7   | 49,7   | 49,7   | 49,7   | 49,7   |       |       |
|             | pm [bar(a)] | --     | --     | --     | --     | --     | --     |       |       |
|             | Qsc [kW]    | --     | --     | --     | --     | --     | --     |       |       |

-- No calculation possible (see message in single point selection)

\*According to EN12900 (10K suction gas superheat, 0K liquid subcooling)

## Application Limits Standard HSK7471-90



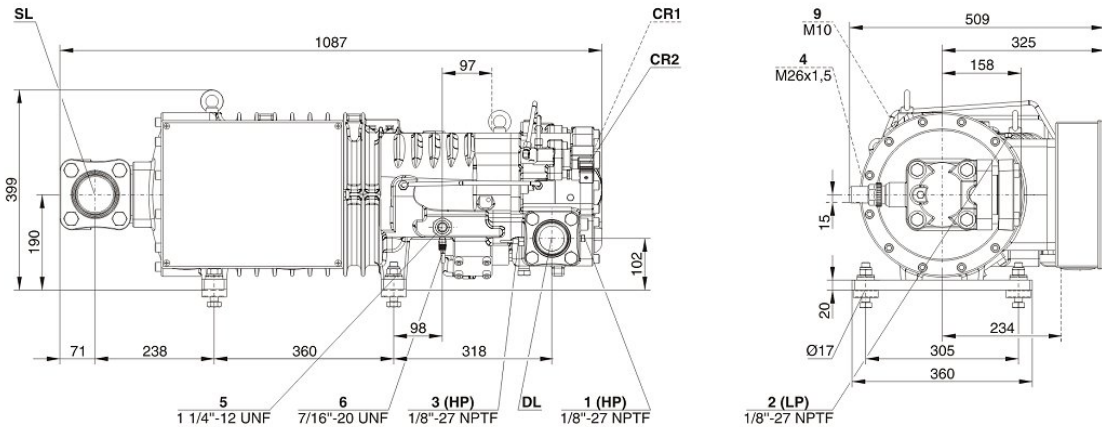
**Legend**

- max. tc for frequencies = 20Hz
- ..... max. tc for frequencies = 25Hz
- max. tc for frequencies = 35Hz
- A



## Technical Data: HSK7471-90

### Dimensions and Connections



### Technical Data

#### Technical Data

|  |                       |
|--|-----------------------|
| Displacement (2900 RPM 50 Hz)          | 250 m <sup>3</sup> /h |
| Displacement (3500 RPM 60 Hz)          | 302 m <sup>3</sup> /h |
| Weight                                 | 336 kg                |
| Max. pressure (LP/HP)                  | 19 / 28 bar           |
| Connection suction line                | 76 mm - 3 1/8"        |
| Connection discharge line              | 54 mm - 2 1/8"        |
| Adapter/shut-off valve for ECO         | 22 mm - 7/8" (Option) |
| Adapter for liquid injection           | 16 mm - 5/8" (Option) |
| Oil type R22                           | B150SH, B100 (Option) |
| Oil type R134a/R404A/R507A/R407A/R407F | BSE170 (Option)       |
| Oil type R448A/R449A                   | BSE170 (Option)       |

#### Motor data

|                                 |                        |
|---------------------------------|------------------------|
| Motor voltage (more on request) | 380-415V PW-3-50Hz     |
| Max operating current           | 162.0 A                |
| Starting current (Rotor locked) | 423.0 A D / 686.0 A DD |
| Max. Power input                | 92.0 kW                |

#### Extent of delivery (Standard)

|                                  |   |
|----------------------------------|---|
| Discharge gas temperature sensor | Standard  |
| Start unloading                  | Standard  |
| Oil flow control                 | SE-B2 (Standard)                                |
| Motor protection                 | SE-E1 (Standard), SE-E3 (Standard for 660-690V) |
| Suction shut-off valve           | Standard  |
| Capacity control                 | 100-75-50% (Standard)                           |
| Enclosure class                  | IP54  |

#### Available Options

|                                    |                  |
|------------------------------------|------------------|
| Discharge shut-off valve           | Option           |
| ECO connection with shut-off valve | Option           |
| Motor protection                   | SE-i1 (200-690V) |

#### Sound measurement

|  |            |
|--|------------|
| Sound power level (-10°C / 45°C)         | 87,0 dB(A) |
| Sound pressure level @ 1m (-10°C / 45°C) | 79,0 dB(A) |



## Semi-hermetic Screw Compressors HS

**HSK** = Application for air-conditioning and medium temperature cooling.

**HSN** = Application for low temperature cooling.

### Notes regarding application limits (see "Limits")

- \* Ranges are valid for standard operation and at full-load conditions.
- \* With high pressure conditions, part-load operation is partly limited (see application limits in applications manual SH-100).
- \* With Economizer operation the maximum admissible evaporation temperature is shifted by 10 K downward (otherwise there is a danger of excessive compression and overload of the motor because of a higher mass flow). At pull-down conditions from higher evaporation temperatures, the ECO injection must remain closed until the evaporation temperature is below the maximum admissible value and a stable operation is achieved (e.g. control of the ECO solenoid valve by means of a low pressure cut-out). The use of the ECO-system with higher evaporation temperatures requires individual consultation with Bitzer.

### HS 64/74

- \* Capacity control with ECO operation at the same time is limited to one single regulating step (CR 75 %). At CR 50 % the ECO injection should be closed.

### Data for sound emission

Data are based on 50 Hz application (IP-units 60 Hz) and R404A.

Sound pressure level: values are based on open air test sites with semi-spherical sound emissions at 1 meter distance. For further information see Technical Information "Sound Data".

### Legend of connection positions according to "Dimensions":

- 1 High pressure connection (HP)
  - 1a Additional high pressure connection
  - 1b Connection for high pressure transmitter (HP)
  - 2 Low pressure connection (LP)
  - 2a Additional low pressure transmitter (LP)
  - 2b Connection for low pressure transmitter (LP)
  - 3 Discharge gas temperature sensor connection (HP)
  - 4 Connection for economizer (ECO)
  - HS.85: ECO valve with connection pipe (option)
  - HS.95, OS.85, OS.95: ECO valve (option)
  - 5 Oil injection connection
  - 6 Oil pressure connection for HS.85 and OS.85:
  - Oil drain (compressor housing)
  - 7 Oil drain (motor housing)
  - 7a Oil drain (suction gas filter)
  - 7b Oil drain out of shaft seal (maintenance connection)
  - 7c Oil drain tube (shaft seal)
  - 8 Threaded bore for foot fastening
  - 9 Threaded bore for pipe support (ECO and LI line)
  - 10 Maintenance connection (oil filter)
  - 11 Oil drain (oil filter)
  - 12 Monitoring of oil stop valve
  - 13 Oil filter monitoring
  - 14 Oil flow switch
  - 15 Earth screw for housing
  - 16 Pressure relief (oil filter chamber)
  - 17 Maintenance connection for shaft seal
  - 18 Liquid injection (LI)
  - 19 Compressor module
  - 20 Slider position indicator
  - 21 Oil level switch
  - 22 Connection for oil pressure transmitter
  - 23 Connection for oil and gas return (for systems with flooded evaporator adapter optional)
  - 24 Access to oil circulation restrictor
  - SL Suction gas line
  - DL Discharge gas line
- Dimensions can show tolerances according to EN ISO 13920-B.