



## Selection: Semi-hermetic Screw Compressors HS

### Input Values

|                           |                 |                          |             |
|---------------------------|-----------------|--------------------------|-------------|
| Compressor model          | HSK7471-90      | Operating mode           | Standard    |
| Refrigerant               | R507A           | 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     |

### Result

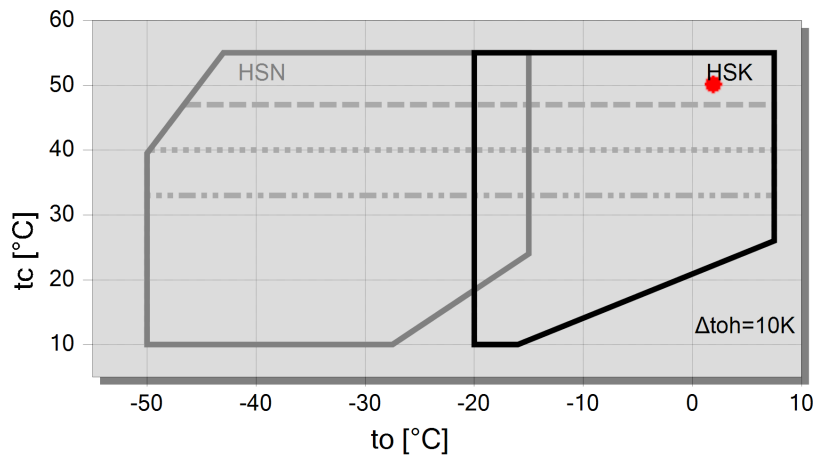
|            |                  |             |                           |
|------------|------------------|-------------|---------------------------|
| Q [W]      | Cooling capacity | mHP [kg/h]  | Mass flow HP              |
| P [kW]     | Power input      | Qac [kW]    | Additional cooling        |
| 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    | 2°C    | -1°C   | -4°C   | -7°C   | -10°C  | -13°C  | -16°C  |
|-------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>30°C</b> | Q [W]       | 306288 | 275218 | 246712 | 220592 | 196692 | 174857 | 154938 | 136799 |
|             | P [kW]      | 58/0   | 57/0   | 56/0   | 55/0   | 54/0   | 53/1   | 52/2   | 51/3   |
|             | I [A]       | 99/8   | 98/4   | 97/0   | 95/6   | 94/2   | 92/9   | 91/7   | 90/5   |
|             | COP [-]     | 5/28   | 4/83   | 4/41   | 4/01   | 3/64   | 3/30   | 2/97   | 2/67   |
|             | mLP [kg/h]  | 8472   | 7709   | 7000   | 6343   | 5733   | 5169   | 4647   | 4164   |
|             | mHP [kg/h]  | 8472   | 7709   | 7000   | 6343   | 5733   | 5169   | 4647   | 4164   |
|             | Qac [kW]    | --     | --     | --     | --     | --     | --     | --     | --     |
|             | tcu [°C]    | 30/0   | 30/0   | 30/0   | 30/0   | 30/0   | 30/0   | 30/0   | 30/0   |
|             | pm [bar(a)] | --     | --     | --     | --     | --     | --     | --     | --     |
|             | Qsc [kW]    | --     | --     | --     | --     | --     | --     | --     | --     |
| <b>40°C</b> | Q [W]       | 263321 | 235987 | 210939 | 188017 | 167070 | 147960 | 130550 | 114720 |
|             | P [kW]      | 69/1   | 68/1   | 67/1   | 66/2   | 65/2   | 64/3   | 63/5   | 62/6   |
|             | I [A]       | 115/7  | 114/3  | 112/9  | 111/5  | 110/1  | 108/8  | 107/6  | 106/4  |
|             | COP [-]     | 3/81   | 3/46   | 3/14   | 2/84   | 2/56   | 2/30   | 2/06   | 1/83   |
|             | mLP [kg/h]  | 8306   | 7551   | 6850   | 6199   | 5596   | 5037   | 4518   | 4039   |
|             | mHP [kg/h]  | 8306   | 7551   | 6850   | 6199   | 5596   | 5037   | 4518   | 4039   |
|             | Qac [kW]    | --     | --     | --     | --     | --     | --     | --     | --     |
|             | tcu [°C]    | 40/0   | 40/0   | 40/0   | 40/0   | 40/0   | 40/0   | 40/0   | 40/0   |
|             | pm [bar(a)] | --     | --     | --     | --     | --     | --     | --     | --     |
|             | Qsc [kW]    | --     | --     | --     | --     | --     | --     | --     | --     |
| <b>50°C</b> | Q [W]       | 215305 | 192035 | 170753 | 151317 | 133595 | 117464 | 102806 | 89513  |
|             | P [kW]      | 83/2   | 82/3   | 81/4   | 80/4   | 79/5   | 78/7   | 77/8   | 76/9   |
|             | I [A]       | 137/2  | 135/7  | 134/3  | 132/8  | 131/4  | 130/0  | 128/7  | 127/4  |
|             | COP [-]     | 2/59   | 2/33   | 2/10   | 1/88   | 1/68   | 1/49   | 1/32   | 1/16   |
|             | mLP [kg/h]  | 8012   | 7268   | 6576   | 5934   | 5338   | 4785   | 4272   | 3797   |
|             | mHP [kg/h]  | 8012   | 7268   | 6576   | 5934   | 5338   | 4785   | 4272   | 3797   |
|             | Qac [kW]    | --     | --     | --     | --     | 2/24   | 7/07   | 11/80  | 16/41  |
|             | tcu [°C]    | 50/0   | 50/0   | 50/0   | 50/0   | 50/0   | 50/0   | 50/0   | 50/0   |
|             | 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



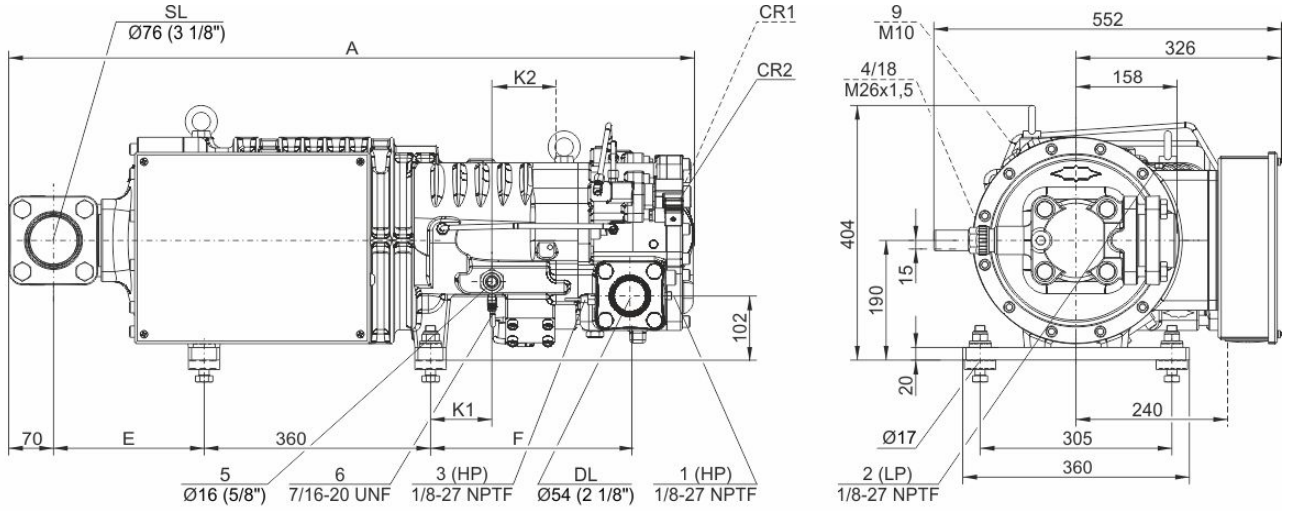
**Legend**

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



## Technical Data: HSK7471-90

### Dimensions and Connections



| Model                  | A    | E   | F   | K1 | K2  |
|------------------------|------|-----|-----|----|-----|
|                        | mm   | mm  | mm  | mm | mm  |
| HS.7451, HS.7461       | 1021 | 186 | 295 | 76 | 109 |
| HSK7471-70, HSN7471-75 | 1034 | 186 | 318 | 98 | 97  |
| HSK7471-90             | 1087 | 238 | 318 | 98 | 97  |



## 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                |
| Oil type R448A/R449A/R454C             | BSE170                |

### Motor data

|                                 |                        |
|---------------------------------|------------------------|
| Motor version                   | 1                      |
| 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-B3 (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 10K 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 50Hz application (IP-units 60Hz) 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)  
Connection for high pressure switch (HP)
- 1a Additional high pressure connection (HP)  
Not suitable for pressure switch or pressure transmitter!
- 1b Connection for high pressure transmitter (HP)
- 2 Low pressure connection (LP)  
Connection for low pressure switch
- 2a Additional low pressure connection (LP)
- 2b Connection for low pressure transmitter (LP)
- 2c Low pressure connection for the minimum pressure differential control valve
- 3 Connection for discharge gas temperature sensor (HP)
- 4 Connection for economiser (ECO)  
HS.85: ECO valve with connection line (option)  
OS.85, OS.95, OS.105, HS.95: ECO valve (option)
- 5 Connection/valve for oil injection
- 6 Oil pressure connection
- 7 Oil drain (compressor or motor housing)
- 7a Oil drain (suction gas filter)
- 7b Oil drain from shaft seal (maintenance connection)
- 7c Oil drain hose (shaft seal)
- 8 Threaded bore for foot fastening
- 9 Threaded bore for pipe fixture (ECO and LI lines)
- 10 Maintenance connection for oil filter
- 11 Oil drain (oil filter)
- 13 Oil filter monitoring
- 14 Oil flow switch
- 15 Earth screw for housing
- 16 Pressure blow-off (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 Oil pressure transmitter



- 23 Connection for oil and gas return (for systems with flooded evaporator adaptor optional)
- 24 Access to oil circulation restrictor
- 25 Oil inlet for shaft seal cooling
- 26 Oil outlet for shaft seal cooling
- 27 Temperature sensor in the shaft seal
- 28 Vibration sensor connection
- SL Suction gas line
- DL Discharge gas line

Dimensions can show tolerances according to EN ISO 13920-B.