



Selection: Semi-hermetic Screw Compressors HS

Input Values

| | | | |
|---------------------------|-----------------|--------------------------|-------------|
| Compressor model | HSK7451-70 | Operating mode | Standard |
| 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 |

Result

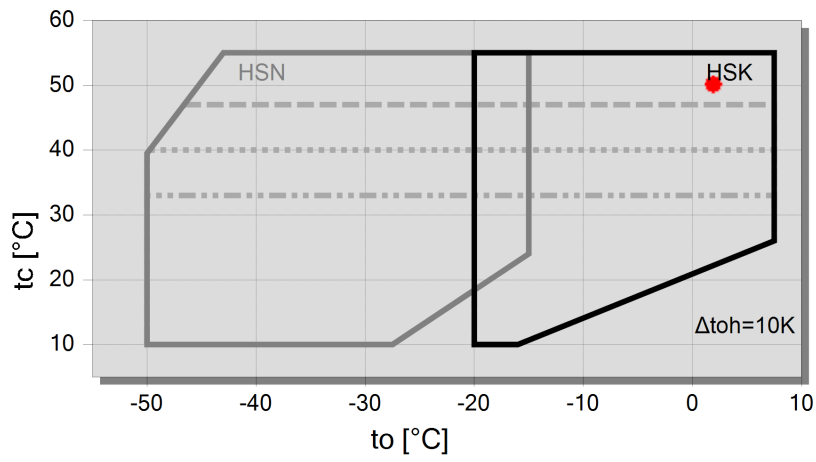
| | | | |
|------------|------------------|-------------|---------------------------|
| Q [W] | Cooling capacity | mHP [kg/h] | Mass flow HP |
| P [kW] | Power input | Qac [kW] | Additional cooling |
| I [A] | Current | tcu [°C] | Liquid temp. |
| COP [-] | COP/EER | pm [bar(a)] | ECO pressure |
| mLP [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 |
|-------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|
| 30°C | Q [W] | 243424 | 218312 | 195299 | 174241 | 155001 | 137453 | 121476 | 106959 |
| | P [kW] | 39/0 | 39/3 | 39/6 | 39/9 | 40/2 | 40/5 | 40/7 | 40/8 |
| | I [A] | 64/4 | 64/9 | 65/4 | 65/8 | 66/2 | 66/6 | 66/9 | 67/1 |
| | COP [-] | 6/24 | 5/55 | 4/93 | 4/36 | 3/85 | 3/40 | 2/99 | 2/62 |
| | mLP [kg/h] | 6509 | 5910 | 5354 | 4839 | 4363 | 3922 | 3515 | 3140 |
| | mHP [kg/h] | 6509 | 5910 | 5354 | 4839 | 4363 | 3922 | 3515 | 3140 |
| | Qac [kW] | -- | -- | -- | -- | -- | -- | -- | -- |
| | tcu [°C] | 29/6 | 29/6 | 29/6 | 29/6 | 29/6 | 29/6 | 29/6 | 29/6 |
| | pm [bar(a)] | -- | -- | -- | -- | -- | -- | -- | -- |
| | Qsc [kW] | -- | -- | -- | -- | -- | -- | -- | -- |
| 40°C | Q [W] | 208317 | 186335 | 166226 | 147860 | 131114 | 115874 | 102031 | 89485 |
| | P [kW] | 50/0 | 50/3 | 50/6 | 50/9 | 51/1 | 51/2 | 51/3 | 51/4 |
| | I [A] | 80/5 | 81/0 | 81/5 | 81/8 | 82/1 | 82/4 | 82/5 | 82/6 |
| | COP [-] | 4/17 | 3/70 | 3/28 | 2/91 | 2/57 | 2/26 | 1/99 | 1/74 |
| | mLP [kg/h] | 6329 | 5741 | 5195 | 4690 | 4223 | 3791 | 3393 | 3025 |
| | mHP [kg/h] | 6329 | 5741 | 5195 | 4690 | 4223 | 3791 | 3393 | 3025 |
| | Qac [kW] | -- | -- | -- | -- | -- | -- | -- | -- |
| | tcu [°C] | 39/6 | 39/6 | 39/6 | 39/6 | 39/6 | 39/6 | 39/6 | 39/6 |
| | pm [bar(a)] | -- | -- | -- | -- | -- | -- | -- | -- |
| | Qsc [kW] | -- | -- | -- | -- | -- | -- | -- | -- |
| 50°C | Q [W] | 169912 | 151297 | 134302 | 118812 | 104719 | 91924 | 80331 | 69853 |
| | P [kW] | 64/2 | 64/6 | 64/9 | 65/1 | 65/2 | 65/2 | 65/2 | 65/1 |
| | I [A] | 101/9 | 102/5 | 103/0 | 103/3 | 103/5 | 103/5 | 103/5 | 103/3 |
| | COP [-] | 2/65 | 2/34 | 2/07 | 1/83 | 1/61 | 1/41 | 1/23 | 1/07 |
| | mLP [kg/h] | 6051 | 5477 | 4945 | 4451 | 3995 | 3573 | 3183 | 2823 |
| | mHP [kg/h] | 6051 | 5477 | 4945 | 4451 | 3995 | 3573 | 3183 | 2823 |
| | Qac [kW] | -- | -- | -- | 2/34 | 6/98 | 11/44 | 15/71 | 19/80 |
| | tcu [°C] | 49/7 | 49/7 | 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 HSK7451-70



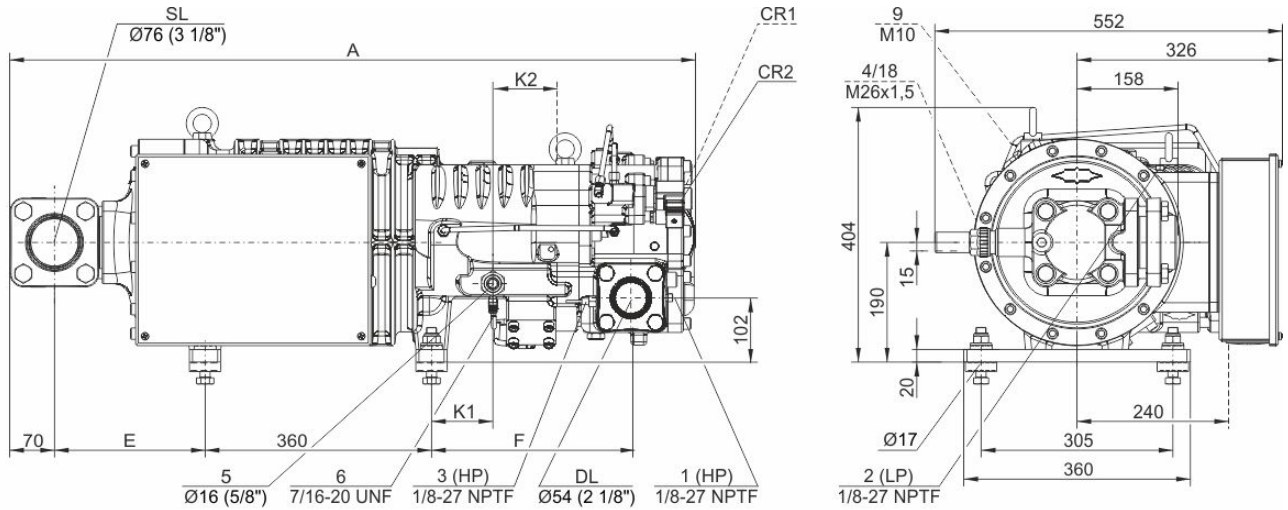
Legend

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



Technical Data: HSK7451-70

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) | 192 m ³ /h |
| Displacement (3500 RPM 60 Hz) | 232 m ³ /h |
| Weight | 305 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 | 124.0 A |
| Starting current (Rotor locked) | 290.0 A D / 485.0 A DD |
| Max. Power input | 75/0 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) | 86,0 dB(A) |
| Sound pressure level @ 1m (-10°C / 45°C) | 78,0 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.