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09128869515 - Darvishi
Sarma Tajhiz Saba

BITZER Software v6.18.0 rev2811

31/06/1402 / All data subject to change.

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Selection: Semi-hermetic Screw Compressors HS

Input Values

| | | | |
|---------------------------|-----------------|--------------------------|-------------|
| Compressor model | HSN7451-60 | 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

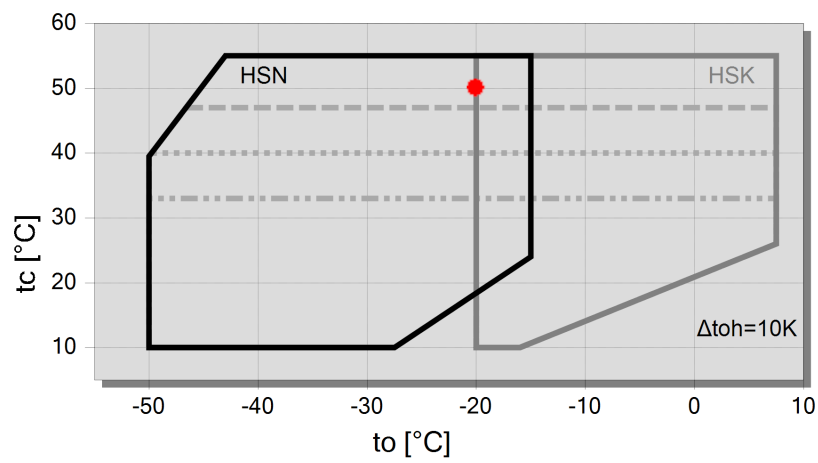
| | | | |
|------------|------------------|-------------|---------------------------|
| Q [W] | Cooling capacity | mHP [kg/h] | Mass flow HP |
| P [kW] | Power input | Qac [kW] | Additional cooling |
| I [A] | Current | tcu [°C] | Liquid temp. |
| COP [-] | COP/EER | pm [bar(a)] | ECO pressure |
| mLP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

| tc | to | -10°C | -15°C | -20°C | -25°C | -30°C | -35°C | -40°C | -45°C |
|------|-------------|-------|--------|-------|-------|-------|-------|-------|-------|
| 30°C | Q [W] | -- | 114123 | 92148 | 73557 | 57935 | 44909 | 34139 | 25317 |
| | P [kW] | -- | 42/8 | 39/8 | 37/6 | 36/0 | 34/8 | 33/8 | 32/6 |
| | I [A] | -- | 69/7 | 65/3 | 62/1 | 59/9 | 58/2 | 56/7 | 55/0 |
| | COP [-] | -- | 2/66 | 2/32 | 1/96 | 1/61 | 1/29 | 1/01 | 0/78 |
| | mLP [kg/h] | -- | 3456 | 2862 | 2346 | 1899 | 1515 | 1186 | 908 |
| | mHP [kg/h] | -- | 3456 | 2862 | 2346 | 1899 | 1515 | 1186 | 908 |
| | Qac [kW] | -- | -- | -- | -- | -- | 1/04 | 6/27 | 10/76 |
| | tcu [°C] | -- | 30/0 | 30/0 | 30/0 | 30/0 | 30/0 | 30/0 | 30/0 |
| | pm [bar(a)] | -- | -- | -- | -- | -- | -- | -- | -- |
| | Qsc [kW] | -- | -- | -- | -- | -- | -- | -- | -- |
| 40°C | Q [W] | -- | 95676 | 76765 | 60850 | 47556 | 36546 | 27513 | 20182 |
| | P [kW] | -- | 49/1 | 46/7 | 44/8 | 43/4 | 42/2 | 41/2 | 40/2 |
| | I [A] | -- | 79/0 | 75/4 | 72/6 | 70/5 | 68/8 | 67/3 | 65/9 |
| | COP [-] | -- | 1/95 | 1/64 | 1/36 | 1/10 | 0/87 | 0/67 | 0/50 |
| | mLP [kg/h] | -- | 3349 | 2767 | 2262 | 1825 | 1451 | 1131 | 861 |
| | mHP [kg/h] | -- | 3349 | 2767 | 2262 | 1825 | 1451 | 1131 | 861 |
| | Qac [kW] | -- | -- | -- | 1/26 | 6/66 | 11/79 | 16/50 | 20/6 |
| | tcu [°C] | -- | 40/0 | 40/0 | 40/0 | 40/0 | 40/0 | 40/0 | 40/0 |
| | pm [bar(a)] | -- | -- | -- | -- | -- | -- | -- | -- |
| | Qsc [kW] | -- | -- | -- | -- | -- | -- | -- | -- |
| 50°C | Q [W] | -- | 75115 | 59681 | 46778 | 36081 | 27297 | 20163 | 14439 |
| | P [kW] | -- | 58/5 | 56/3 | 54/3 | 52/6 | 51/3 | 50/3 | 49/8 |
| | I [A] | -- | 93/0 | 89/7 | 86/7 | 84/2 | 82/1 | 80/7 | 80/0 |
| | COP [-] | -- | 1/29 | 1/06 | 0/86 | 0/69 | 0/53 | 0/40 | 0/29 |
| | mLP [kg/h] | -- | 3164 | 2605 | 2119 | 1700 | 1340 | 1034 | 776 |
| | mHP [kg/h] | -- | 3164 | 2605 | 2119 | 1700 | 1340 | 1034 | 776 |
| | Qac [kW] | -- | 8/54 | 13/04 | 17/35 | 21/5 | 25/6 | 29/6 | 33/6 |
| | tcu [°C] | -- | 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)

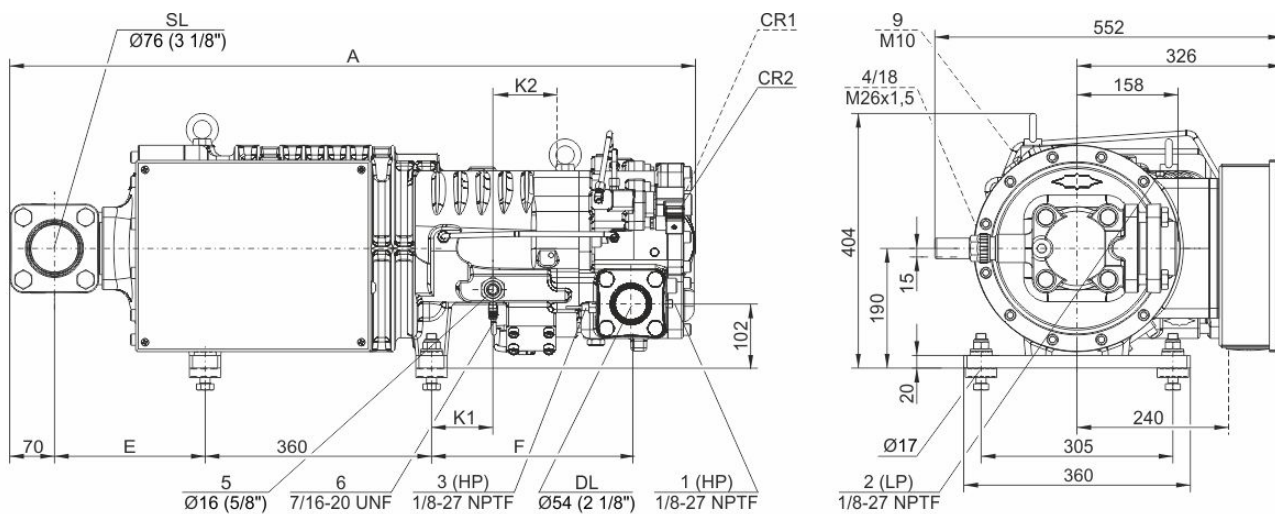
Application Limits Standard HSN7451-60





Technical Data: HSN7451-60

Dimensions and Connections



| Model | A | E | F | K1 | K2 |
|------------------------|------|-----|-----|----|-----|
| 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 m³/h |
| Displacement (3500 RPM 60 Hz) | 232 m³/h |
| Weight | 297 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) |
| 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 | 98.0 A |
| Starting current (Rotor locked) | 267.0 A D / 449.0 A DD |
| Max. Power input | 65/0 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 (-35°C / 40°C) | 86,5 dB(A) |
| Sound pressure level @ 1m (-35°C / 40°C) | 78,5 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.