Selection: Semi-hermetic Screw Compressors HS

Input Values

Compressor model	HSK6451-50	Operating mode	Standard
Refrigerant	R22	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

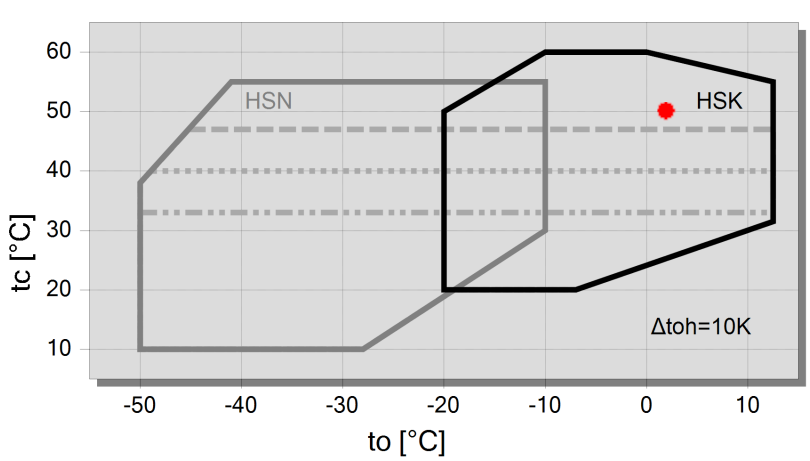
Result

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]	150585	135863	122251	109685	98105	87450	77666	68699
	P [kW]	26/3	25/9	25/6	25/3	25/1	24/8	24/6	24/4
	I [A]	44/2	43/7	43/3	42/9	42/5	42/2	41/9	41/6
	COP [-]	5/73	5/24	4/77	4/33	3/91	3/52	3/15	2/81
	mLP [kg/h]	3042	2763	2504	2262	2038	1830	1638	1460
	mHP [kg/h]	3042	2763	2504	2262	2038	1830	1638	1460
	Qac [kW]	--	--	--	--	--	0/47	2/22	3/92
	tcu [°C]	30/0	30/0	30/0	30/0	30/0	30/0	30/0	30/0
	pm [bar(a)]	--	--	--	--	--	--	--	--
	Qsc [kW]	--	--	--	--	--	--	--	--
40°C	Q [W]	135345	121761	109219	97659	87024	77258	68310	60127
	P [kW]	31/6	31/1	30/7	30/5	30/3	30/2	30/1	30/1
	I [A]	51/8	51/1	50/5	50/2	49/9	49/8	49/7	49/6
	COP [-]	4/28	3/91	3/55	3/20	2/87	2/56	2/27	2/00
	mLP [kg/h]	2949	2672	2415	2176	1954	1749	1559	1384
	mHP [kg/h]	2949	2672	2415	2176	1954	1749	1559	1384
	Qac [kW]	0/64	2/17	3/77	5/44	7/14	8/84	10/54	12/19
	tcu [°C]	40/0	40/0	40/0	40/0	40/0	40/0	40/0	40/0
	pm [bar(a)]	--	--	--	--	--	--	--	--
	Qsc [kW]	--	--	--	--	--	--	--	--
50°C	Q [W]	119061	106622	95159	84617	74942	66080	57983	50602
	P [kW]	37/5	37/3	37/2	37/1	37/1	37/1	37/1	37/1
	I [A]	60/3	60/1	59/9	59/8	59/8	59/8	59/8	59/8
	COP [-]	3/18	2/86	2/56	2/28	2/02	1/78	1/56	1/36
	mLP [kg/h]	2826	2551	2295	2058	1838	1635	1448	1275
	mHP [kg/h]	2826	2551	2295	2058	1838	1635	1448	1275
	Qac [kW]	11/88	13/37	14/89	16/43	17/97	19/49	21/0	22/4
	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 HSK6451-50



Legend

max. tc for frequencies = 20Hz

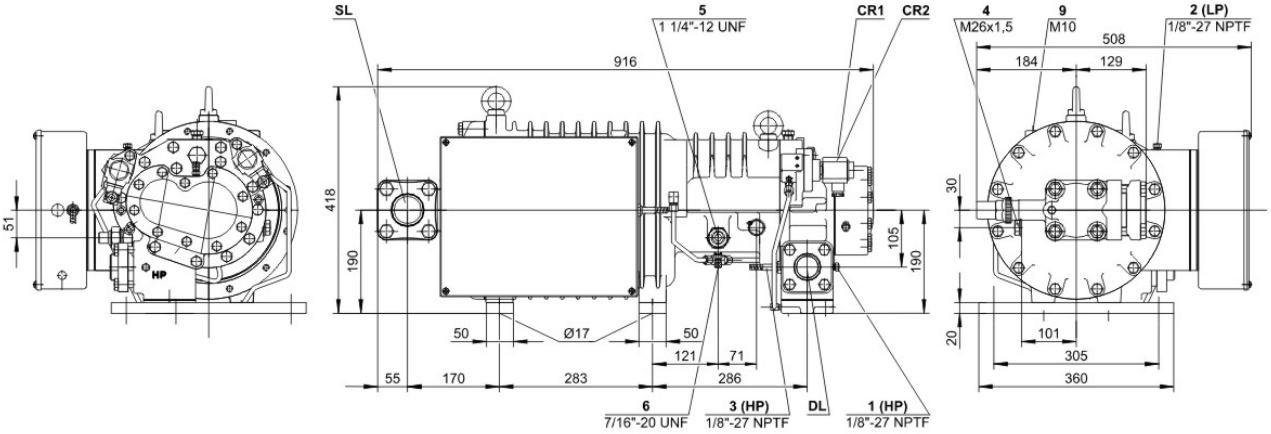
max. tc for frequencies = 25Hz

max. tc for frequencies = 35Hz

A

Technical Data: HSK6451-50

Dimensions and Connections



Technical Data

Technical Data	
Displacement (2900 RPM 50 Hz)	140 m³/h
Displacement (3500 RPM 60 Hz)	168 m³/h
Weight	238 kg
Max. pressure (LP/HP)	19 / 28 bar
Connection suction line	54 mm - 2 1/8"
Connection discharge line	42 mm - 1 5/8"
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	79.0 A
Starting current (Rotor locked)	206.0 A D / 355.0 A DD
Max. Power input	50/0 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 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)
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.