Selection: Semi-hermetic Screw Compressors HS

Input Values

Compressor model	HSN6451-40	Operating mode	Economizer
Refrigerant	R507A	Power supply	400V-3-50Hz
Reference temperature	Dew point temp.	Useful superheat	100%
Liq. subc. (in condenser)	0 K	Additional cooling	Automatic
Auto. subcooling	Auto	Max. discharge gas temp.	80,0 °C
Suct. gas superheat	10,00 K		

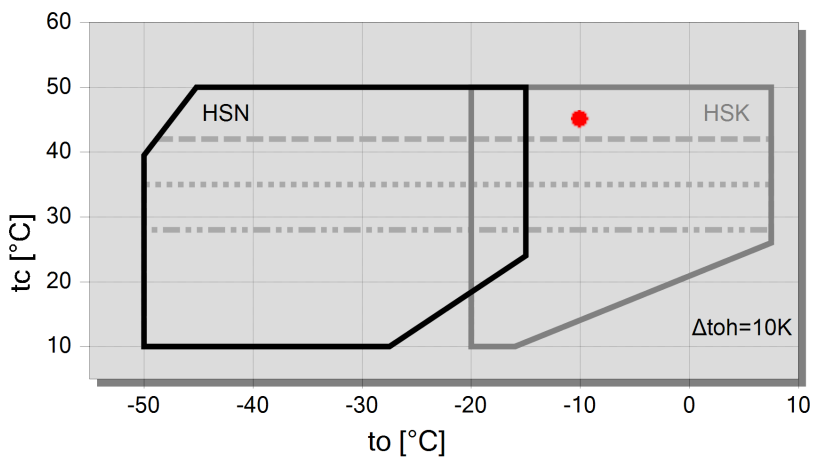
Result

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	-15°C	-20°C	-25°C	-30°C	-35°C	-40°C	-45°C	-50°C
30°C	Q [W]	94404	79749	66721	55184	45011	36082	28284	21515
	P [kW]	31,9	30,8	29,7	28,7	27,6	26,5	25,4	24,1
	I [A]	53,2	51,7	50,2	48,8	47,4	45,9	44,3	42,7
	COP [-]	2,96	2,59	2,25	1,92	1,63	1,36	1,12	0,89
	mLP [kg/h]	2365	1962	1611	1308	1046	823	633	472
	mHP [kg/h]	2819	2431	2078	1757	1466	1203	967	755
	Qac [kW]	--	--	--	--	--	--	3,45	6,44
	tcu [°C]	13,47	9,60	5,57	1,36	-3,00	-7,53	-12,21	-17,02
	pm [bar(a)]	7,01	6,22	5,46	4,75	4,09	3,48	2,93	2,43
	Qsc [kW]	16,32	16,59	16,20	15,29	13,99	12,41	10,64	8,77
40°C	Q [W]	88628	74813	62553	51704	42142	33755	26443	--
	P [kW]	39,0	38,0	36,9	35,8	34,5	33,2	31,8	
	I [A]	63,4	61,9	60,3	58,7	56,9	55,1	53,1	
	COP [-]	2,27	1,97	1,69	1,45	1,22	1,02	0,83	
	mLP [kg/h]	2329	1926	1576	1274	1015	794	608	
	mHP [kg/h]	3016	2603	2228	1886	1576	1297	1045	
	Qac [kW]	--	--	--	0,50	4,01	7,22	10,11	
	tcu [°C]	18,05	14,09	9,90	5,50	0,88	-3,94	-8,95	
	pm [bar(a)]	8,05	7,14	6,28	5,45	4,68	3,96	3,30	
	Qsc [kW]	22,1	21,4	20,2	18,51	16,57	14,44	12,19	
50°C	Q [W]	--	--	--	--	--	29928	23149	--
	P [kW]						42,0	40,2	
	I [A]						68,0	65,2	
	COP [-]						0,71	0,58	
	mLP [kg/h]						731	549	
	mHP [kg/h]						1369	1095	
	Qac [kW]						18,11	20,2	
	tcu [°C]						0,15	-5,42	
	pm [bar(a)]						4,56	3,76	
	Qsc [kW]						15,68	12,93	

-- No calculation possible (see message in single point selection)
*According to EN12900 (10K suction gas superheat, liquid subcooling in Economiser with 5K temperature difference)

Application Limits ECO HSN6451-40



Legend

max. tc for frequencies = 20Hz

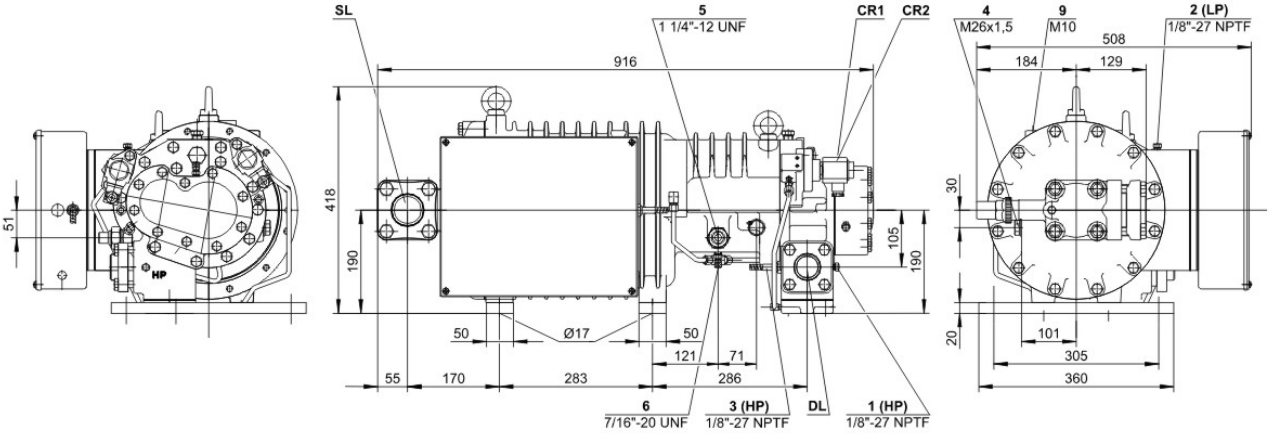
max. tc for frequencies = 25Hz

max. tc for frequencies = 35Hz

A

Technical Data: HSN6451-40

Dimensions and Connections



Technical Data

Technical Data	
Displacement (2900 RPM 50 Hz)	140 m³/h
Displacement (3500 RPM 60 Hz)	168 m³/h
Weight	234 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)
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	65.0 A
Starting current (Rotor locked)	187.0 A D / 313.0 A DD
Max. Power input	42,1 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 (-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 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.

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* 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.