

## Selection: Semi-hermetic Screw Compressors HS

#### Input Values

Compressor model Refrigerant	HSK7471-90 R404A		
Reference temperature	Dew point temp.		
Evaporating SST	0°C	4	40,0°C
Condensing SDT	40,0 °C		63,1°C
Liq. subc. (in condenser)	0 K	~~~~~	Ĺ
Suct. gas superheat	10,00 K	39,6°C	$\sim$
Operating mode	Standard	33,0 C	10.0°C
Power supply	400V-3-50Hz		
Useful superheat	100%	$\bigcirc$	
Additional cooling	Automatic	T	10,0°C
Max. discharge gas temp.	80,0 °C	HSK7471-90 (100%)	0,0°C

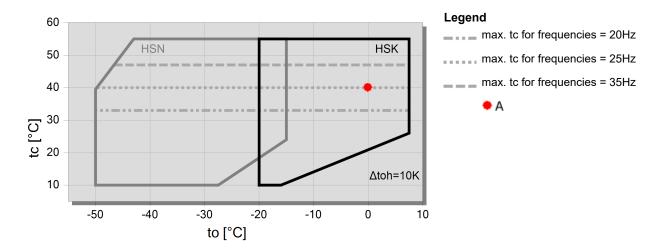
#### Result

Compressor	HSK7471-90-40P
Capacity steps	100%
Cooling capacity	215 kW
Cooling capacity *	215 kW
Evaporator capacity	215 kW
Power input	65,5 kW
Current (400V)	110,6 A
Voltage range	380-415V
Condenser capacity	281 kW
COP/EER	3,28
COP/EER *	3,28
Mass flow LP	6689 kg/h
Mass flow HP	6689 kg/h
Operating mode	Standard
Liquid temp.	39,6 °C
Oil volume flow	1,67 m³/h
Cooling method	
Discharge gas temp. w/o cooling	63,1 °C



\*Compressor performance data certified by ASERCOM (see T. Data/ Notes) \*According to EN12900 (10K suction gas superheat, 0K liquid subcooling)

### **Application Limits Standard HSK7471-90**

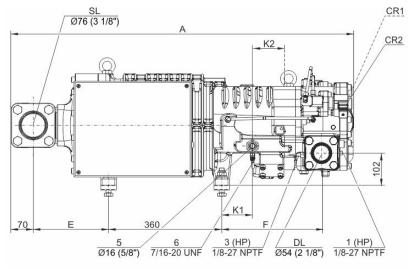


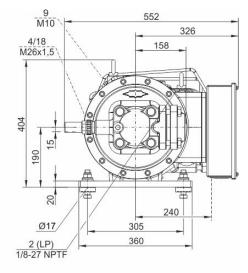


2/4

# Technical Data: HSK7471-90

## **Dimensions and Connections**





Model	Α	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**

Displacement (2900rpm 50 Hz)250 m³/hDisplacement (3500rpm 60 Hz)302 m³/hWeight336 kgMax. pressure (LP/HP)19 / 28 barConnection suction line76 mm - 3 1/8"Connection discharge line54 mm - 2 1/8"Adapter/shut-off valve for ECO22 mm - 7/8" (Option)Adapter for liquid injection16 mm - 5/8" (Option)Oil type R22B150SH, B100 (Option)Oil type R134a/R404A/R507A/R407A/R407FBSE 170Oil type R134a/R404A/R507A/R407A/R407FBSE 170Motor data1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E3 (Standard)Motor protectionSE-E3 (Standard)Motor protectionSE-E1 (Standard)Suction shut-off valveOptionECO connection with shut-off valveOptionECO connection with shut-off valveOptionECO connection with shut-off valveSE-11 (200-690V)Sound prover level ( $_2$ 10° C / 45°C)87,0 dB(A)	Technical Data				
Displacement (3500rpm 60 Hz) 302 m³/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" Connection discharge discharg		250 m³/h			
Max. pressure (LP/HP)19 / 28 barConnection suction line76 mm - 3 1/8"Connection discharge line54 mm - 2 1/8"Adapter/shut-off valve for ECO22 mm - 7/8" (Option)Adapter for liquid injection16 mm - 5/8" (Option)Oil type R22B150SH, B100 (Option)Oil type R134a/R404A/R507A/R407A/R407FBSE170Oil type R448A/R449A/R454CBSE170Motor data1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax, power input92.0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor voltage (more)SE-B3 (Standard)Suction shut-off valveDiptaCapacity controlIP54Available optionsIP54Available optionsSE-11 (200-690V)Sound power level (-10°C / 45°C)87,0 dB(A)	Displacement (3500rpm 60 Hz)	302 m³/h			
Connection suction line76 mm - 3 1/8"Connection discharge line54 mm - 2 1/8"Adapter/shut-off valve for ECO22 mm - 7/8" (Option)Adapter/shut-off valve for ECO22 mm - 7/8" (Option)Adapter for liquid injection16 mm - 5/8" (Option)Oil type R22B150SH, B100 (Option)Oil type R48A/R404A/R507A/R407A/R407FBSE170Motor data1Motor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveOptionEnclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionECO connection with shut-off valveOptionECO connection with shut-off valveOptionECO connection with shut-off valveOptionBischarge shut-off valveOptionECO connection with shut-off valveOptionScund power level (-10°C / 45°C)87,0 dB(A)	Weight	336 kg			
Connection discharge line54 mm - 2 1/8"Adapter/shut-off valve for ECO22 mm - 7/8" (Option)Adapter for liquid injection16 mm - 5/8" (Option)Oil type R22B150SH, B100 (Option)Oil type R134a/R404A/R507A/R407A/R407FBSE170Oil type R488A/R449A/R454CBSE170Motor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStandardStandardOil flow controlSE-B3 (Standard)Motor ottoloSE-E1 (Standard)Discharge shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsIP54Discharge shut-off valveOptionConnection with shut-off valveOptionConnection with shut-off valveOptionScound power level (-10°C / 45°C)87,0 dB(A)	Max. pressure (LP/HP)				
Adapter/shut-off valve for ECO22 mm - 7/8" (Option)Adapter for liquid injection16 mm - 5/8" (Option)Oil type R22B150SH, B100 (Option)Oil type R134a/R404A/R507A/R407A/R407FBSE170Oil type R448A/R449A/R454CBSE170Motor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92.0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardOil flow controlSE-B3 (Standard)Motor yotectionSE-E1 (Standard)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Discharge shut-off valveOptionConnection with shut-off valveOptionECO connection with shut-off valveOptionECO connection with shut-off valveOptionSe-II (Standard)SE-II (Standard)Sound power level (-10°C / 45°C)87,0 dB(A)	Connection suction line	76 mm - 3 1/8"			
Adapter for liquid injection16 mm - 5/8" (Option)Oil type R22B150SH, B100 (Option)Oil type R134a/R404A/R507A/R407A/R407FBSE170Motor dataBSE170Motor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil type controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity controlIP54Available optionsIP54Discharge shut-off valveOptionCC connection with shut-off valveOptionSe-I (Stondard)SE-IScharge shut-off valveSptionSound power level (-10°C / 45°C)87,0 dB(A)	Connection discharge line	54 mm - 2 1/8"			
Oil type R22B150SH, B100 (Option)Oil type R134a/R404A/R507A/R407A/R407FBSE170Oil type R448A/R449A/R454CBSE170Motor data1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92.0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Discharge shut-off valveOptionConnection with shut-off valveOptionECO connection with shut-off valveOptionSound power level (-10°C / 45°C)87,0 dB(A)	Adapter/shut-off valve for ECO	22 mm - 7/8" (Option)			
Oil type R134a/R404A/R507A/R407ABSE170Oil type R448A/R449A/R454CBSE170Motor data	Adapter for liquid injection				
Oil type R448A/R449A/R454CBSE170Motor dataIMotor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsSE-i1 (200-690V)Sound power level (-10°C / 45°C)87,0 dB(A)		B150SH, B100 (Option)			
Motor dataMotor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionSound power level (-10°C / 45°C)87,0 dB(A)	Oil type R134a/R404A/R507A/R407A/R407F	BSE170			
Motor version1Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsSE-i1 (200-690V)Sound protectionSE-i1 (200-690V)Sound power level (-10°C / 45°C)87,0 dB(A)	Oil type R448A/R449A/R454C	BSE170			
Motor voltage (more on request)380-415V PW-3-50HzMax. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardOil flow controlSE-B3 (Standard)Oil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveOptionConnection with shut-off valveOptionOptionSound measurementSound power level (-10°C / 45°C)87,0 dB(A)	Motor data				
Max. operating current162.0 AStarting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionSconnection with shut-off valveOptionSound measurementSE-i1 (200-690V)Sound power level (-10°C / 45°C)87,0 dB(A)	Motor version	1			
Starting current (Rotor locked)423.0 A D / 686.0 A DDMax. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionConnection with shut-off valveOptionSound measurementST,0 dB(A)		380-415V PW-3-50Hz			
Max. power input92,0 kWExtent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsOptionDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementS7,0 dB(A)	Max. operating current	162.0 A			
Extent of delivery (standard)Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurement87,0 dB(A)		423.0 A D / 686.0 A DD			
Discharge gas temperature sensorStandardStart unloadingStandardOil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsOptionDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementS7,0 dB(A)		92,0 kW			
Start unloading Standard   Oil flow control SE-B3 (Standard)   Motor protection SE-B3 (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   Discharge shut-off valve Option   ECO connection with shut-off valve Option   Motor protection SE-i1 (200-690V)   Sound measurement Standard   Sound power level (-10°C / 45°C) 87,0 dB(A)					
Oil flow controlSE-B3 (Standard)Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementSound power level (-10°C / 45°C)Sound power level (-10°C / 45°C)87,0 dB(A)		Standard			
Motor protectionSE-E1 (Standard), SE-E3 (Standard for 660-690V)Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsDischarge shut-off valveDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementSound power level (-10°C / 45°C)87,0 dB(A)Standard (Standard)	Start unloading				
Suction shut-off valveStandardCapacity control100-75-50% (Standard)Enclosure classIP54Available optionsOptionDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementSound power level (-10°C / 45°C)87,0 dB(A)Standard	Oil flow control				
Capacity control100-75-50% (Standard)Enclosure classIP54Available optionsOptionDischarge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementSound power level (-10°C / 45°C)87,0 dB(A)Standard)	Motor protection	SE-E1 (Standard), SE-E3 (Standard for 660-690V)			
Enclosure class IP54   Available options Discharge shut-off valve   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) State of the second sec	Suction shut-off valve				
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)		100-75-50% (Standard)			
Discharge shut-off valveOptionECO connection with shut-off valveOptionMotor protectionSE-i1 (200-690V)Sound measurementSound power level (-10°C / 45°C)87,0 dB(A)	Enclosure class	IP54			
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) 87,0 dB(A)					
Motor protectionSE-i1 (200-690V)Sound measurementSound power level (-10°C / 45°C)87,0 dB(A)	Discharge shut-off valve	Option			
Sound measurement Sound power level (-10°C / 45°C) 87,0 dB(A)	ECO connection with shut-off valve				
Sound power level (-10°C / 45°C) 87,0 dB(A)	Motor protection	SE-i1 (200-690V)			
	Sound measurement				
Sound pressure level @ 1m (-10°C / 45°C) 79,0 dB(A)		87,0 dB(A)			
	Sound pressure level @ 1m (-10°C / 45°C)	79,0 dB(A)			

3/4



# 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".