



### Selection: Open Screw Compressors OS

#### Input Values

Compressor model	OSN7471-K	Operating mode	Economizer
Refrigerant	R404A	Speed	2900 /min
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

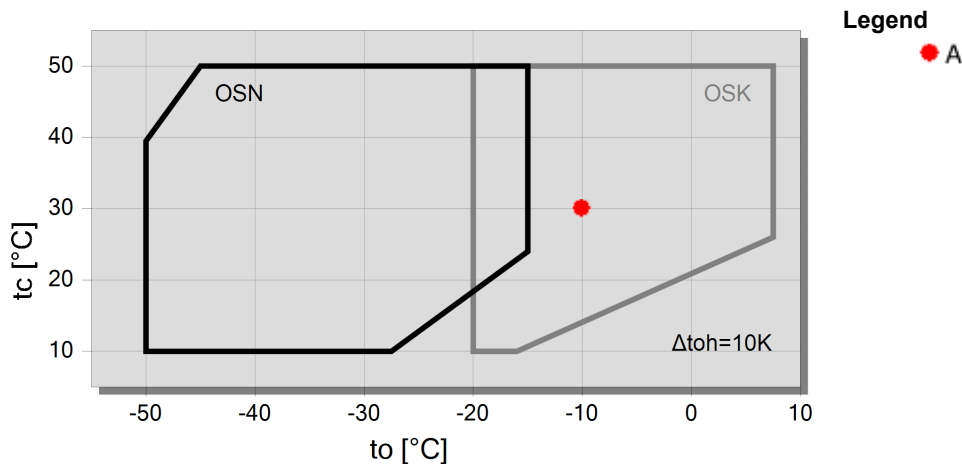
Q [W]	Cooling capacity	Qac [kW]	Additional cooling
P [kW]	Power input	tcu [°C]	Liquid temp.
COP [-]	COP/EER	pm [bar(a)]	ECO pressure
mLP [kg/h]	Mass flow LP	Qsc [kW]	sub cooler capacity (ECO)
mHP [kg/h]	Mass flow HP		

tc	to	-15°C	-20°C	-25°C	-30°C	-35°C	-40°C	-45°C	-50°C
30°C	Q [W]	161190	135262	112562	92748	75506	60550	47628	36513
	P [kW]	50,5	48,4	46,3	44,3	42,2	40,1	37,9	35,6
	COP [-]	3,19	2,80	2,43	2,09	1,79	1,51	1,26	1,02
	mLP [kg/h]	4080	3381	2774	2249	1799	1415	1090	816
	mHP [kg/h]	4651	3982	3382	2845	2365	1939	1560	1225
	Qac [kW]	--	--	--	--	--	--	2,44	6,91
	tcu [°C]	17,02	13,74	10,21	6,39	2,28	-2,15	-6,91	-12,01
	pm [bar(a)]	7,51	6,79	6,08	5,38	4,69	4,03	3,40	2,81
	Qsc [kW]	21,6	22,4	22,3	21,5	20,1	18,18	15,97	13,52
	40°C	Q [W]	149362	125467	104553	86279	70341	56476	44451
P [kW]		60,9	58,6	56,3	54,0	51,7	49,4	47,1	
COP [-]		2,45	2,14	1,86	1,60	1,36	1,14	0,94	
mLP [kg/h]		4046	3347	2740	2217	1768	1385	1062	
mHP [kg/h]		4896	4200	3576	3016	2515	2068	1669	
Qac [kW]		--	--	--	--	2,73	7,80	12,49	
tcu [°C]		23,3	19,92	16,24	12,22	7,84	3,10	-2,03	
pm [bar(a)]		9,02	8,18	7,33	6,48	5,64	4,82	4,05	
Qsc [kW]		29,0	28,7	27,6	26,0	23,8	21,2	18,36	
50°C		Q [W]	132728	111598	93038	76731	62400	49811	38760
	P [kW]	74,0	71,6	69,1	66,6	64,1	61,8	59,9	
	COP [-]	1,79	1,56	1,35	1,15	0,97	0,81	0,65	
	mLP [kg/h]	3924	3233	2634	2116	1671	1291	970	
	mHP [kg/h]	5079	4365	3722	3142	2619	2146	1718	
	Qac [kW]	--	5,18	10,36	15,21	19,81	24,3	28,7	
	tcu [°C]	30,5	27,0	23,1	18,74	13,97	8,71	2,92	
	pm [bar(a)]	11,04	10,02	8,97	7,90	6,84	5,80	4,80	
	Qsc [kW]	35,0	33,8	31,9	29,4	26,5	23,2	19,61	

-- No calculation possible (see message in single point selection)

\*According to EN12900 (10K suction gas superheat, liquid subcooling in Economiser with 5K temperature difference)

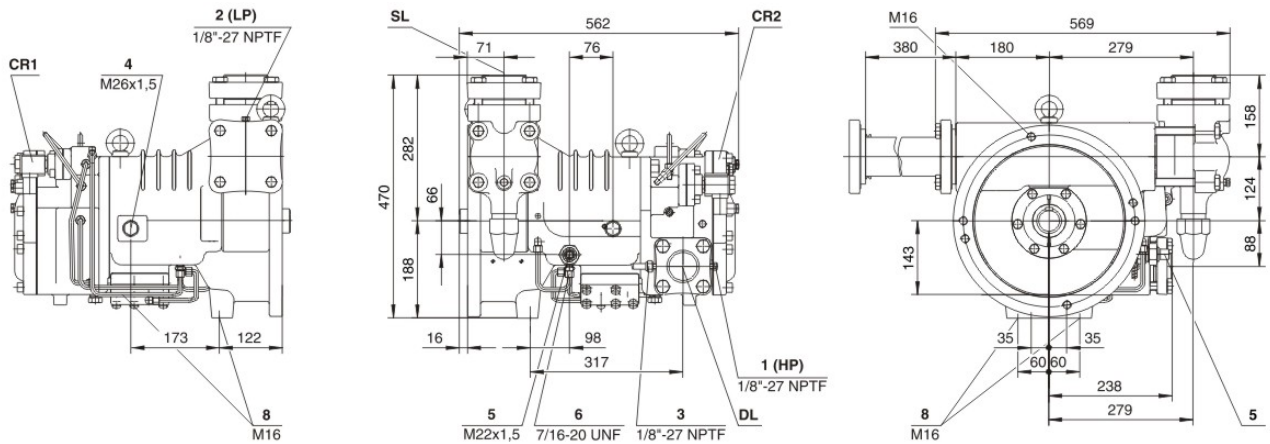
### Application Limits ECO OSN7471





## Technical Data: OSN7471-K

### Dimensions and Connections



### Technical Data

#### Technical Data

Displacement (2900 RPM 50 Hz)	250 m <sup>3</sup> /h
Displacement (3500 RPM 60 Hz)	302 m <sup>3</sup> /h
Allowed speed range	1450 .. 4000 min-1
Sens of rotation (compressor)	links / counter-clockwise
Weight	188 kg
Max. pressure (LP/HP)	19 / 28 bar
Connection suction line	76 mm - 3 1/8"
Connection suction line (NH3)	DN 80
Connection discharge line	54 mm - 2 1/8"
Connection discharge line (NH3)	DN 50
Oil type R22	B150SH, B100 (Option)
Oil type R134a/R404A/R507A/R407A/R407F	BSE170 (Option)

#### Extent of delivery (Standard)

Suction shut-off valve	Standard
Pressure relief valve	Standard
Check valve	Standard
Oil injection kit	Standard
Built in oil filter	Standard
discharge gas temperature monitoring	SE-B2
Discharge gas temperature sensor	Standard
Start unloading	Standard
Capacity control	100-75-50% (Standard)
Sight glass	Standard
Protective charge	Standard

#### Available Options

Oil flow control	Option
Discharge shut-off valve	Option
ECO connection with shut-off valve	Option
Adapter/shut-off valve for ECO	22 mm - 7/8" (Option)
Coupling housing	Option



## Open Screw Compressors OS

**OSK** = Application for air-conditioning and medium temperature cooling.

**OSN** = Application for low temperature cooling.

**OSH** = Application for air-conditioning and heat pumps.

### Notes regarding application limits (see "T.Data - Limits")

\* Ranges are valid for standart operation and at full-load conditions.

\* With high pressure conditions, part-laod operation is partly limited (see application limits in applications manual SH-500 / SH-510).

\* With Economizer operation the maximum admissible evaporation temperature is shifted by 10 K downward (otherwise there is a danger of excessive compression and overlaod 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.

\* Combined operation (ECO + CR 50 %) is possible under certain conditions, control and system design, however, require individual consultation with Bitzer.

### Motor Selection

The required driving motor is selected for starting conditions at direct start as well as at star-delta-start with start unloading (50 % capcaity regulation). The starting conditions refer to the following defined operation points resp. to the maximum application limit of the compressor. Should the evaporation- or the condensing temperature of the plant be higher at the start, an individual motor selection is necessary.

	Evaporation temperature for motor selection			
	HH	H	M	L
R134a	+20 °C	+12,5 °C	-5 °C	
R404A / R507A		+7,5 °C	-5 °C	-15 °C
R22		+12,5 °C	-5 °C	-10 °C
R407C		+12,5 °C	-5 °C	
NH□	+25 °C	+12,5 °C	-5 °C	-10 °C

The stated motor data refer to IEC motors at which the pull-up torque should not fall below 90 % of the max. torque. In addition the following starting torque (referring to direct start) must be reached:

\* open screw compressors 120 %

Should the motor not fulfil these criteria, an individual selection is also necessary.

### Lubricants and additional cooling for NH3 applications

	Type	Viscosity	Discharge gas temp. (°C)	Oil injection temp. (°C)
Reniso KM32	MO	32	ca. 60 .. max. 100	max. 50
Reniso KS46	MO	46	ca. 60 .. max. 80 (100 [1])	max. 60
Reniso KC68	MO	68		
Reflo 68A	MO (HT)	58		
SHC226E	PAO	68		

[1] 100°C only after consultation with BITZER

Further information on the selection of lubricants can be found in the Application Manuals SH-500 and SH-510.

### 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 economiser (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  
OS.85: Monitoring rotation direction and 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 adaptor optional)  
24 Acces to oil circulation restrictor  
SL Suction gas line  
DL Discharge gas line  
Dimensions can show tolerances according to EN ISO 13920-B.