

# Compressor Special Calculation

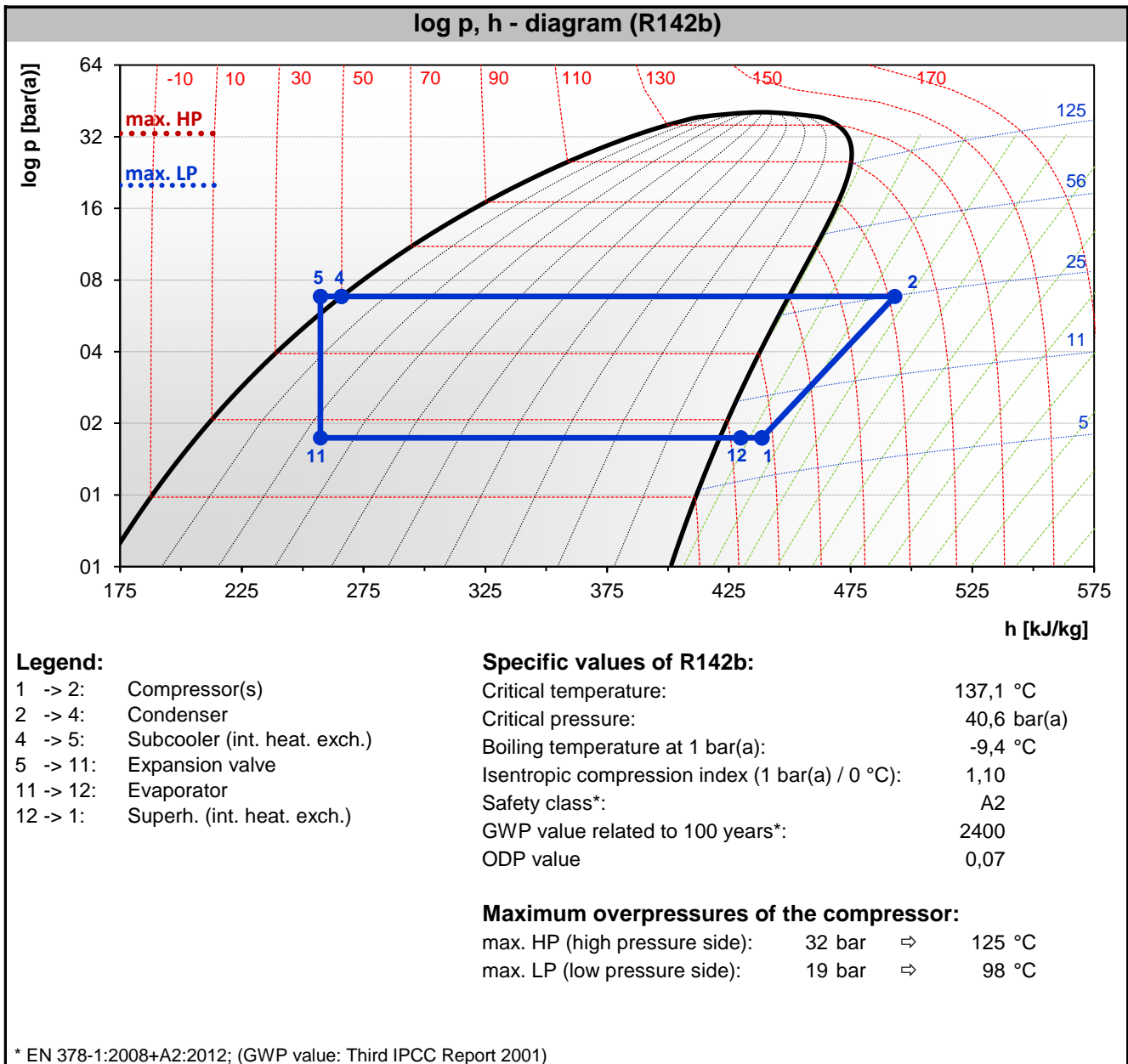


Operating conditions / given values			
<b>Type of system</b>	<b>Single stage</b>		
<b>Refrigerant</b>	<b>R142b*</b>		
Evaporating temperature	5,0 °C	(1,7 bar(a))	
Superheat evaporator	10,0 K		
Superheat suction line	0,0 K		
Superheat int. heat. exch.	10,0 K		
<b>Superheat total</b>	<b>20,0 K</b>	<b>(25 °C)</b>	
Condensing temperature	50,0 °C	(6,8 bar(a))	
Subcooling condenser	0,0 K		
Subcooling int. heat. exch.	6,3 K		
Subcooling external	0,0 K		
<b>Subcooling total</b>	<b>6,3 K</b>	<b>(43,7 °C)</b>	
Power supply frequency	50 Hz		
Performance data**			
<b>Compressor model</b>	<b>4DESP-7P</b>		
Cooling capacity, compressor	7,9 kW		
Cooling capacity, evaporator	7,9 kW		
Power input	2,5 kW		
Current (400 V)	6,9 A		
COP / EER	4,17		
<b>Condenser capacity (2 -&gt; 4)</b>	<b>10,4 kW</b>		
Refrigerant mass flow (HP)	165 kg/h		
Discharge gas temp. without cooling	93 °C		
Int. heat exch. - Capacity / $\Delta T_{log}$	0,4 kW	/	26,8 K
* Refrigerant data calculated by Refprop library			
** Listed performance data are based on calculations and measured data. Under worst conditions given values might differ from common tolerances			

BITZER supplies compressors for applications with the refrigerant R142b exclusively to customers with the necessary experience in this field. Moreover, BITZER supports the development and optimisation of such systems by own investigations.

In case of a compressor failure, the decision on a potential warranty claim remains reserved to a diagnosis and examination of the compressor at the BITZER factory. Design, operation, and monitoring of the system is in the responsibility of the designer or executing company.

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## Application range (Preliminary)



## Application related remarks:

BITZER recommends a suction gas superheat of approximately 20 K to reduce the solubility of R142b in the oil and increase thereby the viscosity of the oil inside the compressor. If necessary, an internal heat exchanger between the suction and liquid line can be installed. Alternatively, a crankcase heater can be utilized.

In R142b applications BITZER has achieved good results with the oil type BSE32.

The refrigerant R142b is a flammable refrigerant. The safety precautions and maximum refrigerant charges in accordance with EN-378 and other adequate standards or regulations in view of the classification into safety group "A2" must be abided. Additionally, the ATEX directive must be applied to every refrigeration system on flammable refrigerants in Europe. In other regions of the world the local explosion-proof directives must be considered. Refrigerant concentration in the air in case of leak must be kept under the explosion limit of the mixture. At a dangerous concentration of refrigerant in the air, all electrical devices must be cut off. There cannot be any source of ignition like e.g. electric sparks in the area around the system, where refrigerant can leak.