

Selection: Open-Type Reciprocating Compressors

Input Values

Compressor model Refrigerant Reference temperature Liq. subc. (in condenser) Suct. gas superheat Result			W4TA-K R717 Dew point temp. 0 K 1,00 K		Useful superheat Motor speed Drive Capacity control			100% 1450 /min Coupling (1:1) 100%	
Q [W] Q* [W] P [kW] Qc [W]	Cooling capacity Cooling capacity * Power input Condenser capacity				COP [-] COP* [-] m [kg/h] n [/min]	CC CC Ma Co	0P/EER 0P/EER * ss flow mpr. speed		
tc	to	10°C	5°C	0°C	-5°C	-10°C	-15°C	-20°C	-25°C
30°C	Q [W] Q* [W]	53450 52909	43748 43310	35237 34887	27797 27522	21315 21104	15683 15528		
	P [kW]	5,64	5,91	5,96	5,80	5,46	4,94		
	Qc [W]	59089	49658	41197	33601	26773	20621		
	COP [-]	9,48	7,40	5,91	4,79	3,90	3,18		
	COP* [-]	9,38	7,33	5,85	4,74	3,87	3,14		
	m [kg/h]	169,9	139,6	113,0	89,5	69,0	51,1		
	n [/min]	1450	1450	1450	1450	1450	1450		
40°C	Q [W] Q* [W]	50275 49787	40943 40550	32706 32394	25444 25202	19044 18863			
	P [kW]	7,77	7,71	7,42	6,92	6,23			
	Qc [W]	58050	48652	40125	32364	25270			
	COP [-]	6,47	5,31	4,41	3,68	3,06			
	COP* [-]	6,40	5,26	4,37	3,64	3,03			
	m [kg/h]	166,8	136,4	109,5	85,6	64,4			
	n [/min]	1450	1450	1450	1450	1450			
50°C	Q [W] Q* [W]	47140 46704	38114 37765	30068 29794					
	P [kW]	9,60	9,15	8,47					
	Qc [W]	56743	47267	38542					
	COP [-]	4,91	4,16	3,55					
	COP* [-]	4,86	4,13	3,52					
	m [kg/h]	163,8	133,0	105,5					
	n [/min]	1450	1450	1450					

-- No calculation possible (see message in single point selection) *According to EN12900 (5K suction gas superheat, 0K liquid subcooling)

Application Limits Standard W4TA





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Technical Data: W4TA-K

Dimensions and Connections



Technical Data

Technical Data				
Displacement (1450 RPM 50Hz)	39,36 m3/h			
Displacement (1750 RPM 60Hz)	47,5 m3/h			
No. of cylinder x bore x stroke	4 x 60 mm x 40 mm			
Allowed speed range	750 1750 1/min			
Weight	77 kg			
Max. pressure (LP/HP)	19 / 25 bar			
Connection suction line	NW 32			
Connection discharge line	NW 25			
Oil type NH3	Reniso KC68 (Standard)			
Extent of delivery (Standard)				
Oil charge	4,0 dm3			
Protective charge	Standard			
Suction shut-off valve	Standard			
Discharge shut-off valve	Standard			
Water-cooled cylinder heads	Standard			
Available Options				
Coupling (K) w. A/C + medium	KK411 [<11kW] / KK420 [<22kW] (Option)			
Coupling (K) w. low temp.	KK415 [<7.5kW] / KK425 [<22kW] (Option)			
Coupling housing	Option			
Motor pulley (S)	190, 210, 230 mm (Option)			
V-belts	3 x SPA (Option)			
Discharge gas temperature sensor	Option (incl. INT69VS)			
Start unloading	Option			
Connection cooling water	R 1/2"			
Capacity control	100-50% (Option)			
Oil service valve	Option			
Crankcase heater	100 W (Option)			
Oil pressure monitoring	MP55A (Option)			
on pressure monitoring				



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Motor Selection

The required driving motor is selected for starting conditions at direct start as well as at star-delta- or PW-start with start unloading (bypass + check valve). 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									
	НН	н	М	L					
R134a	+20 °C	+12,5°C	-5°C	-20°C					
R404A / R507A R407F / R407A		+7,5°C	-5°C	-20°C					
R22		+12,5°C	-5°C	-20°C					
NH₃	+15°C	+10°C	-5°C						

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

- * 2-cylinder compressors 220%
- * 4-cylinder compressors 180%
- * 6-cylinder compressors 160%

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

Condenser capacity

The condenser capacity can be calculated with or without heat rejection. This option can be set in the menu Program \Box Options. The heat rejection is constantly 5% of the power consumption. The condensing capacity is to be found in the line cond.cap. (with HR) resp. cond.cap.

Legend of connection positions according to "Dimensions":

1 High pressure connection (HP) 2 Connection for discharge gas temperature sensor (HP) (for 4VE(S)-6Y .. 4NE(S)-20(Y) connection for CIC sensor as alternative) 3 Low pressure connection (LP) 4 CIC system: injection nozzle (LP) 4b Connection for CIC sensor 4c Connection for CIC sensor (MP / operation with liquid subcooler) 5 Oil fill plug 6 Oil drain 7 Oil filter (magnetic screw) 8 Oil return (oil separator) 8* Oil return with NH3 and insoluble oil 9 Connection for oil and gas equalization (parallel operation) 9a Connection for gas equalization (parallel operation) 9b Connection for oil equalization (parallel operation) 10 Oil heater connection 11 Oil pressure connection + 12 Oil pressure connection -13 Cooling water connection 14 Intermediate pressure connection (MP) 15 Liquid injection (operation without liquid subcooler and with thermostatic expansion valve) 16 Connection for oil monitoring (opto-electrical oil monitoring "OLC-K1" or differential oil pressure switch "Delta-PII") 17 Refrigerant inlet at liquid subcooler 18 Referigerant outlet at liquid subcooler 19 Clamp space 20 Terminal plate 21 Maintenance connection for oil valve 22 Pressure relief valve to the atmosphere (discharge side) 23 Pressure relief valve to the atmosphere (suction side)

SL Suction gas line



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DL Discharge gas line Dimensions can show tolerances according to EN ISO 13920-B.