Discus™ Digital (3Cylinder) Reciprocating Compressor

With Continuous Capacity Modulation

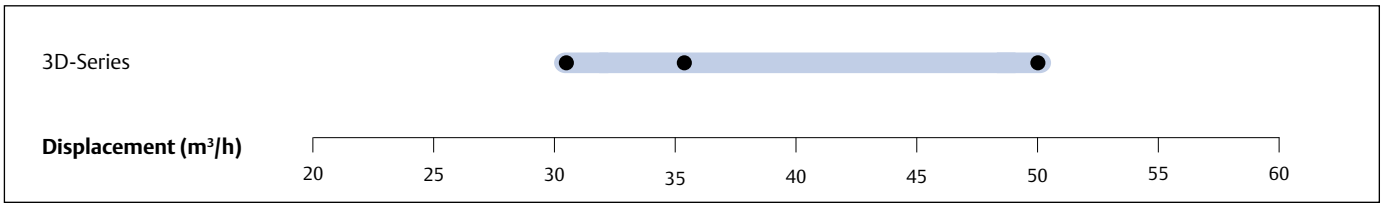
Discus Digital series with 3 cylinder compressors provide an alternative means of continuous modulation to inverter. Digital modulation is the most simple and precise method of capacity control and helps to contain applied costs associated with modulation.

Digital technology is based on controlling a high-cycle solenoid valve fitted on one of the cylinder heads based on cycle time. The valve actuates a piston that controls the flow of gas into the suction area of the Discus valve plate.

The compressor always run at constant speed which resolves the challenges related to oil return, mechanical and electrical stress on the system.

Discus Digital 3 Cylinder Compressor

Discus Digital Compressor Line-up

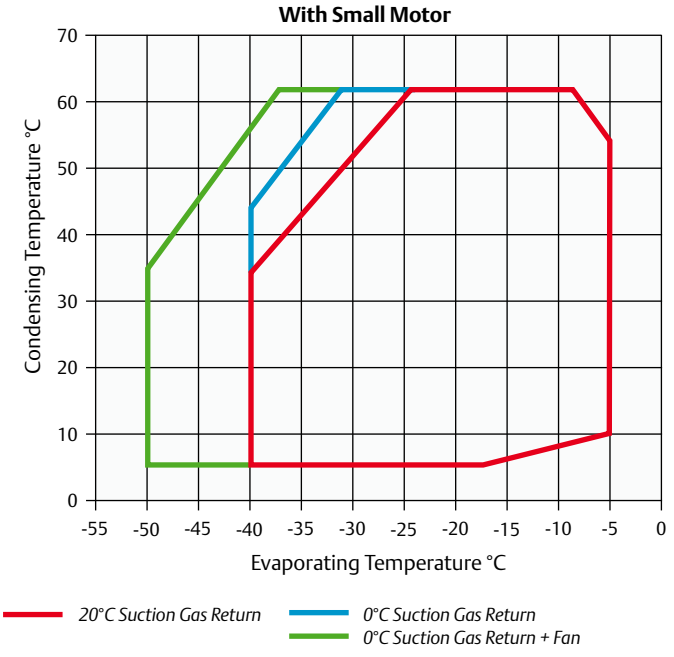


Features and Benefits

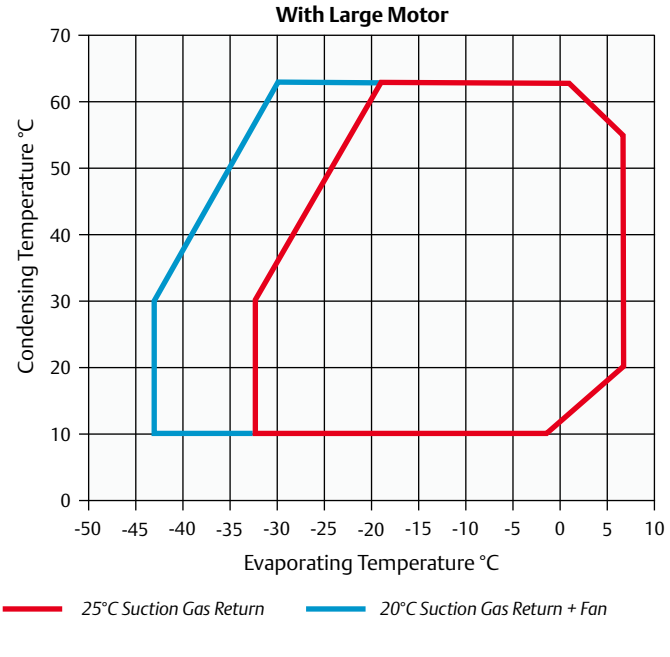
- Range of 6 models from 32 to 50 m³/h
- Compatible with R407A/F/C, R448A/ R449A, R404A, R134a, R450A and R513A.
- Continuous modulation from 10–100% ensuring a perfect match of capacity and power to refrigeration load
- Economical and reliable alternative to frequency inverters
- Precise suction pressure control with associated energy savings and stable evaporating temperatures
- Quick and easy integration into refrigeration equipment, similar to any other standard compressor
- Possibility to easily retrofit existing installations with digital cylinder head kit
- No vibrations or mechanical stress on system piping and compressor parts
- Reduced compressor cycling for longer contactor and compressor life

Operating Envelope R404A

With Small Motor

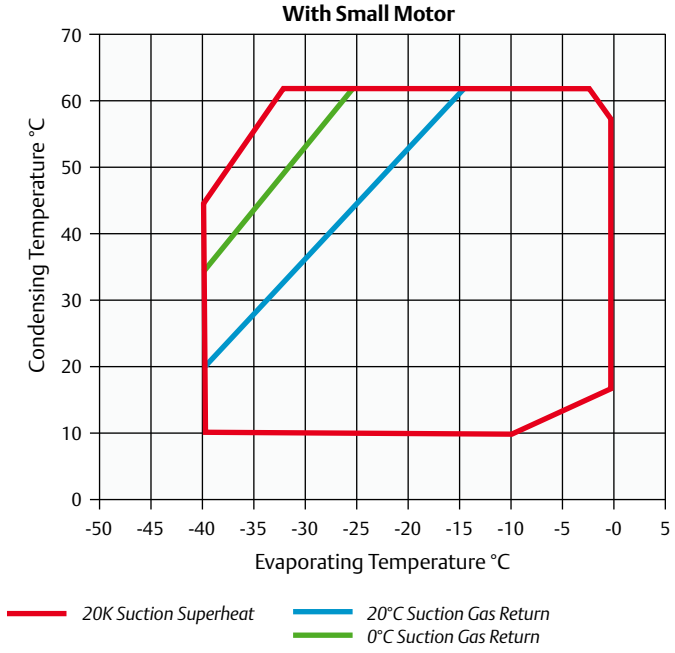


With Large Motor



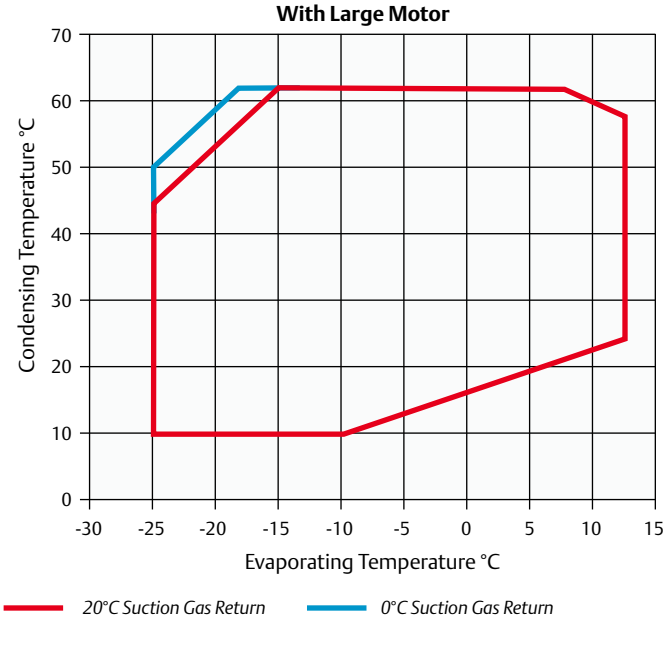
Operating Envelope R407A

With Small Motor



20K Suction Superheat
20°C Suction Gas Return
0°C Suction Gas Return

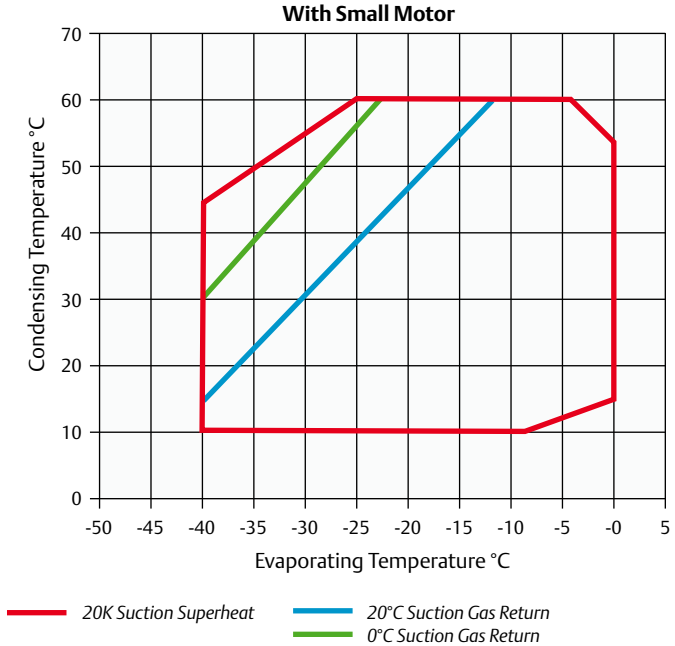
With Large Motor



20°C Suction Gas Return
0°C Suction Gas Return

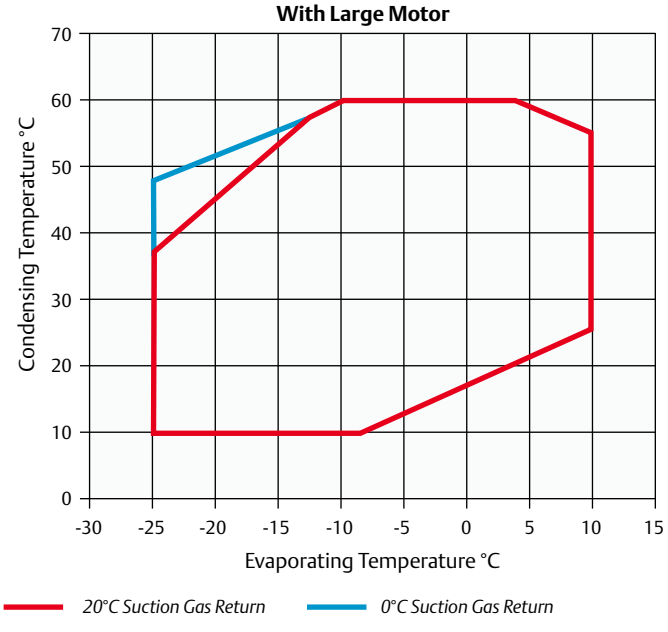
Operating Envelope R407F

With Small Motor



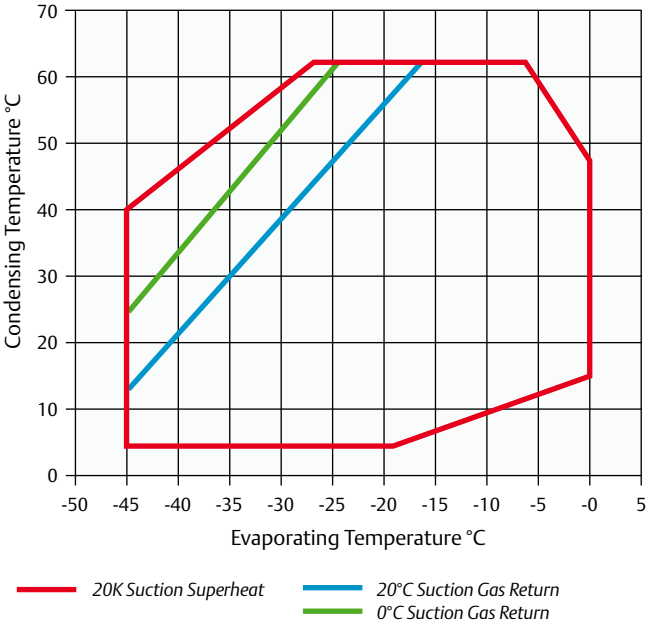
20K Suction Superheat
20°C Suction Gas Return
0°C Suction Gas Return

With Large Motor

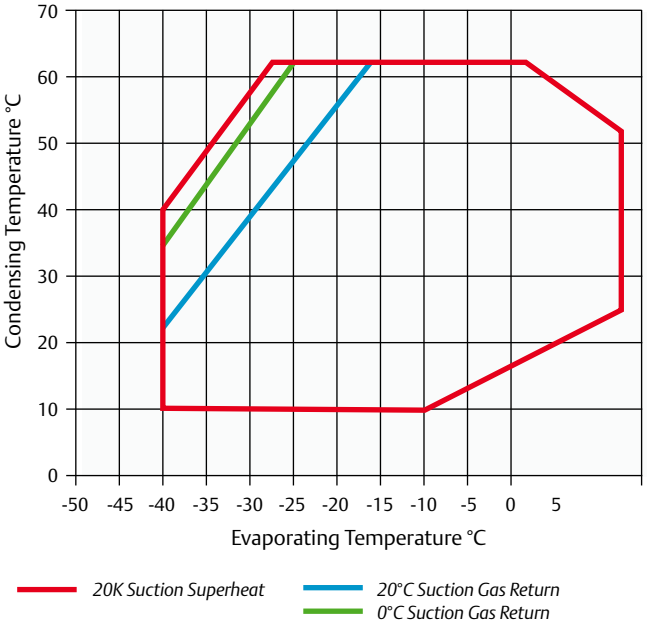


20°C Suction Gas Return
0°C Suction Gas Return

Operating Envelope R448A/R449A



20K Suction Superheat
20°C Suction Gas Return
0°C Suction Gas Return



20K Suction Superheat
20°C Suction Gas Return
0°C Suction Gas Return

Technical Overview

Models	Nominal hp	Displacement (m^3/h)	Oil Quantity (l)	Length/Width/ Height (mm)	Net Weight (kg)	Motor Version/ Code	Maximum Operating Current (A)	Locked Rotor Current (A)	Sound Pressure @1 m - dB(A)***
						3 Ph**	3 Ph**	3 Ph**	
3DAD-50X	5.0	32.2	3.7	655/370/480	146.0	AWM	15.7	55.0	65.0
3DAD-75X	7.5	32.2	3.7	680/370/480	152.0	AWM	18.6	106.0	67.0
3DCD-75X	7.5	38.0	3.7	655/370/480	150.0	AWM	18.5	70.0	67.0
3DCD-100X	10.0	38.0	3.7	680/370/480	164.0	AWM	21.6	121.0	68.0
3DSD-100X	10.0	49.9	3.7	680/370/480	162.0	AWM	24.4	121.0	69.0
3DSD-150X	15.0	49.9	3.7	710/370/490	166.0	AWM	29.7	129.0	69.0

** 3 Ph: 380-420V/ 50Hz
*** @ 1m: sound pressure level at 1m distance from the compressor, free field condition

Capacity Data

R407A	Cooling Capacity (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X	5.3*	10.3	16.2	19.9			
3DAD-75X		10.2	16.4	20.4	30.4	36.5	
3DCD-100X		12.4	20.0	24.7	36.6	43.9	
3DCD-75X	6.4*	12.3	19.4	23.8			
3DSD-100X	8.9*	16.7	25.9	31.6			
3DSD-150X		16.5	26.2	32.2	47.6	57.0	

R407A	Power Input (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X	3.8*	5.0	6.1	6.5			
3DAD-75X		5.0	6.0	6.4	6.9	6.9	
3DCD-100X		5.8	7.1	7.6	8.3	8.3	
3DCD-75X	4.6*	6.0	7.2	7.8			
3DSD-100X	6.1*	7.9	9.6	10.3			
3DSD-150X		7.8	9.6	10.3	11.2	11.3	

Suction Gas Return 20°C / Subcooling 0K, 100% loaded
*Suction Superheat 10K, Subcooling 0K

R407F	Cooling Capacity (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X	6.0*	11.2	17.8	21.9			
3DAD-75X		11.3	18.2	22.6	33.6	40.4	
3DCD-75X	7.4*	13.7	21.5	26.4			
3DCD-100X		13.9	21.9	27.0	39.8	47.8	
3DSD-100X	10.0*	18.2	28.5	35.0			
3DSD-150X		18.4	29.2	36.0	53.0	63.4	

R407F	Power Input (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X	4.0*	5.2	6.4	6.8			
3DAD-75X		5.2	6.3	6.8	7.2	7.2	
3DCD-75X	4.8*	6.2	7.5	8.1			
3DCD-100X		6.0	7.3	7.9	8.6	8.6	
3DSD-100X	6.3*	8.3	10.1	10.8			
3DSD-150X		8.2	10.1	10.9	11.9	12.0	

Suction Gas Return 20°C / Subcooling 0K, 100% loaded
*Suction Superheat 10K, Subcooling 0K

Capacity Data

R448A/ R449A	Cooling Capacity (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X	5.6*	10.2	16.1	19.8			
3DAD-75X	6.7*	11.9	18.3	22.2	31.8	37.6	
3DCD-75X	6.9*	12.4	19.4	23.8			
3DCD-100X	7.3*	13.4	21.1	26.0	38.0	45.4	
3DSD-150X	10.2*	17.8	27.6	33.7	49.1	58.4	
3DSD-100X	9.5*	16.9	26.5	32.5			

R448A/ R449A	Power Input (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X	3.9*	5.0	6.2	6.6			
3DAD-75X	4.4*	5.7	6.8	7.2	7.5	7.4	
3DCD-75X	4.6*	6.0	7.3	7.8			
3DCD-100X	4.7*	6.1	7.2	7.6	8.0	7.9	
3DSD-150X	6.4*	8.2	9.8	10.5	11.5	11.8	
3DSD-100X	6.2*	8.1	9.8	10.6			

Suction Gas Return 20°C / Subcooling 0K, 100% loaded
*Suction Superheat 10K, Subcooling 0K
Preliminary data

R404A	Cooling Capacity (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-75X	7.1	11.9	18.3	22.2	31.8		
3DAD-50X	7.3	11.8	17.8	21.5			
3DCD-75X	8.8	14.1	21.2	25.6			
3DCD-100X	8.6	14.3	21.8	26.5	37.9		
3DSD-150X	12.1	19.1	28.6	34.6	49.3		
3DSD-100X	11.9	18.9	28.3	34.1			

R404A	Power Input (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-75X	4.4	5.7	6.8	7.2	7.5		
3DAD-50X	4.6	5.9	6.9	7.3			
3DCD-75X	5.5	7.0	8.2	8.6			
3DCD-100X	5.3	6.8	8.0	8.4	8.9		
3DSD-150X	7.3	9.2	11.0	11.6	12.3		
3DSD-100X	7.4	9.3	10.9	11.6			

Suction Gas Return 20°C / Subcooling 0K, 100% loaded
☐ High Discharge Temp - Additional Cooling Required

R134a	Cooling Capacity (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X		6.3	10.4	13.0	19.8	24.1	
3DAD-75X		5.5*	9.8*	12.6*	20.0	24.5	29.6
3DCD-75X		7.5	12.4	15.6	23.5	28.5	
3DCD-100X		6.8*	11.9*	15.2*	23.8	29.0	34.9
3DSD-100X		10.2	16.6	20.6	31.0	37.5	
3DSD-150X		9.1*	15.7*	19.9*	31.0	37.5	44.9

R134a	Power Input (kW)						
	Condensing Temperature 40°C						
	Evaporating Temperature (°C)						
Model	**-30**	**-20**	**-10**	**-5**	**5**	**10**	**15**
3DAD-50X		3.0	3.8	4.1	4.5	4.6	
3DAD-75X		3.1*	3.8*	4.1*	4.5	4.5	4.5
3DCD-75X		3.6	4.5	4.9	5.4	5.5	
3DCD-100X		3.7*	4.5*	4.8*	5.2	5.3	5.3
3DSD-100X		4.8	6.0	6.4	7.1	7.3	
3DSD-150X		4.8*	6.0*	6.6*	7.3	7.4	7.3

Suction Gas Return 20°C / Subcooling 0K, 100% loaded
*Suction Superheat 10K, Subcooling 0K