Discus™ Reciprocating Compressor Range

From 2, 3 and 8 cylinder semi-hermetic reciprocating compressors for medium/low temperature refrigeration and high temperature applications like process cooling or air-conditioning.

The key difference between Discus and traditional reciprocating technologies lies in the valve plate design. The Discus valve plate allows gas to flow into the cylinders with a minimum heat gain, while suction cavities are designed to smoothly route the gas to minimize losses. These effects lead to:

- Superior cooling capacity due to no re-expansion volume
- Up to 10% higher efficiency compared to conventional "cost-effective" reed type compressors
- Lower operating costs for the end-user

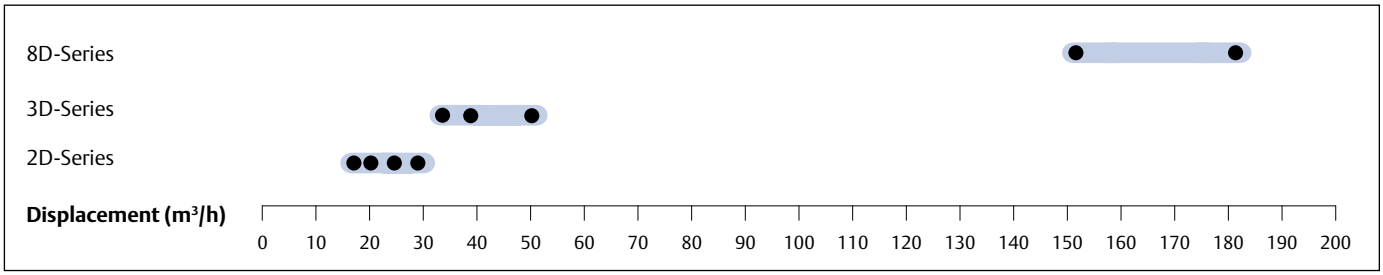
The Discus ranges from 5 to 60 hp with a displacement of 16.8 to 181. These compressors are qualified for R407A/F/C, R448A/R449A, R404A, R134a, R450A and R513A. All Discus compressors are designed to deliver maximum performance and reliability:

- Discus "puck" valve integrated into the valve plate for highest performance whatever the operating condition
- Positive displacement high flow oil pump guarantees high oil feeding pressure for good lubrication and bearings' cooling

Discus Compressor

- PTFE-coated bearings for especially low friction and good protection at start-up
- Electronic motor protection module
- Availability of two motor sizes per displacement. The small motor covers all refrigeration applications while the large motor can be used in comfort, process cooling or inverter applications

Discus Compressor Line-up



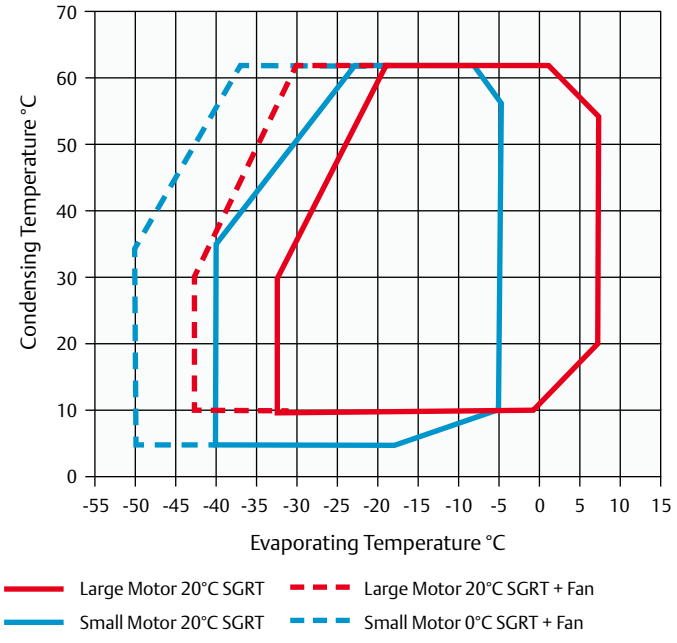
Features and Benefits

- Highest level of efficiency available on the market, whatever the refrigerant and operating condition
- Integrated oil pump and Electronic Oil Pressure Switch OPS2 for maximum reliability
- Two motor sizes per displacement, optimized for different applications
- Large operating envelope that allows medium and low temperature applications to be covered by one single model with condensing limit as low as 5°C
- Provide cooling capacity modulation either by cylinder head blocked suction or with use of frequency inverters from 25 to 60Hz
- Multi-refrigerant compressor range – one model to cover all standard refrigerants
- Option to use 2 and 3 cylinder models with additional Demand Cooling function in order to achieve extended low temperature operating envelope without any superheat restriction for new refrigerants R407A/F, R448A and R449A

Maximum Allowable Pressure (PS)

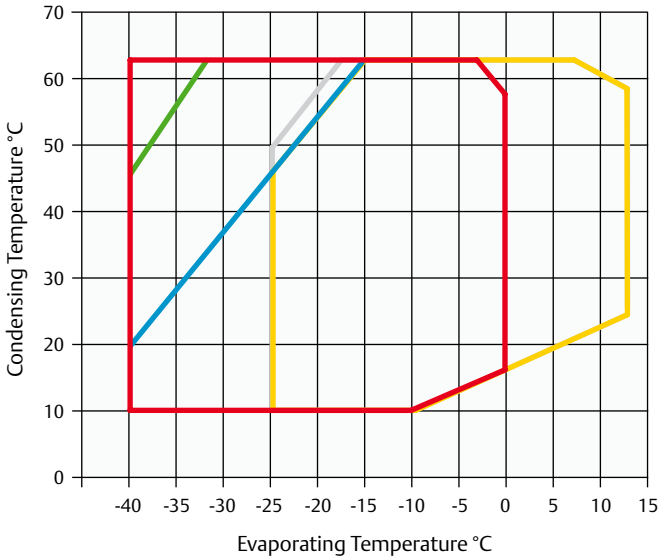
- Low Side PS 22.5 bar (g)/ High Side PS 28 bar (g)

Operating Envelope R404A



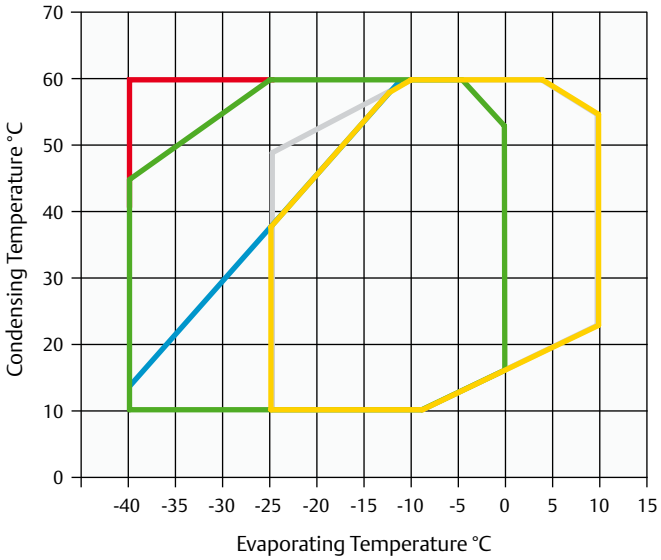
For individual model details please refer to Select Software.

Operating Envelope R407A



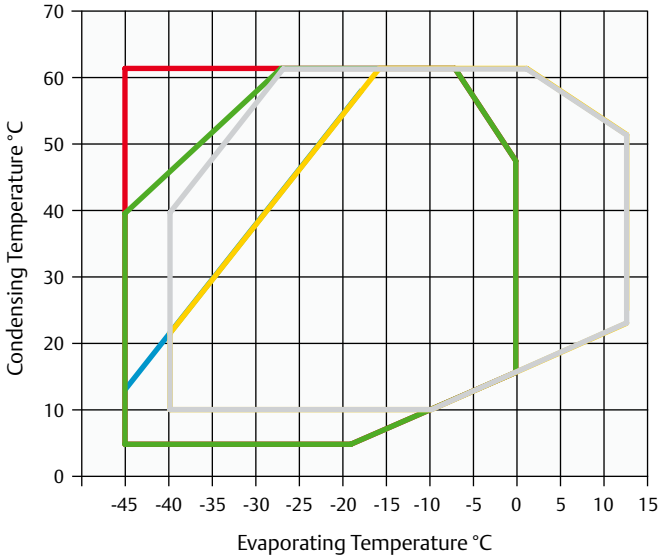
Large Motor 0°C SGRT
Large Motor 20°C SGRT
Small Motor 20K Suction Superheat
Small Motor 20°C SGRT
20°C Demand Cooling

Operating Envelope R407F



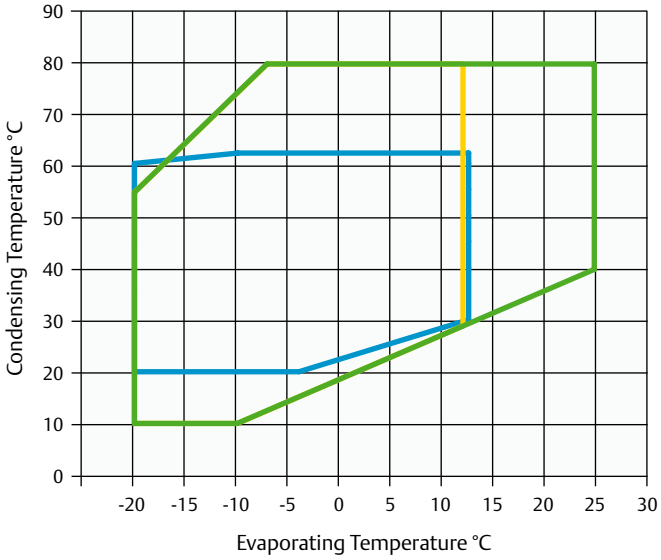
Large Motor 0°C SGRT
Large Motor 20°C SGRT
Small Motor 20K Suction Superheat
Small Motor 20°C SGRT
20°C Demand Cooling

Operating Envelope R448A/R449A



Large Motor 20K Superheat
Large Motor 20°C SGRT
Small Motor 20K Suction Superheat
Small Motor 20°C SGRT
20°C Demand Cooling

Operating Envelope R134a



Small Motor 25°C SGRT
Large Motor 20K Superheat
Large Motor 20°C SGRT

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**	
2DC-50X	5	16.8	2.3	590/330/470	132	AWM	9	55	65
2DD-50X	5	19.3	2.3	590/330/470	132	AWM	10.3	55	65
2DL-40X	4	23.7	2.3	590/330/470	131	AWM	11.1	55	64
2DL-75X	7.5	23.7	2.3	590/330/470	136	AWM	13.8	70	66
2DB-50X	5	28	2.3	590/330/470	131	AWM	13.4	55	64
2DB-75X	7.5	28	2.3	590/330/470	136	AWM	16.1	70	66
3DA-50X	5	32.2	3.7	655/370/480	146	AWM	15.9	55	69
3DA-75X	7.5	32.2	3.7	680/370/480	152	AWM	17.5	106	69
3DC-75X	7.5	38	3.7	655/370/480	150	AWM	18.3	70	71
3DC-100X	10	38	3.7	680/370/480	164	AWM	20.5	121	70
3DS-100X	10	49.9	3.7	680/370/480	162	AWM	24.4	121	70
3DS-150X	15	49.9	3.7	710/370/490	166	AWM	29	125.7	70
8DH-500X	50	151	7.6	835/475/610	330	AWM	88.2	458	79
8DL-370X	37	151	7.6	835/475/610	323	AWM	74.3	349	76
8DJ-600X	60	181	7.6	835/475/610	331	AWM	108	476	79
8DT-450X	45	181	7.6	835/475/610	335	AWM	90.7	441	78

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

Capacity Data

Condensing Temperature: 40°C															
R407A	**Cooling Capacity (kW)**							**R407A**	**Power Input (kW)**						
	Evaporating Temperature (°C)								**Evaporating Temperature (°C)**						
Model	**-45**	**-35**	**-30**	**-20**	**-10**	**-5**	**+5**	**Model**	**-45**	**-35**	**-30**	**-20**	**-10**	**-5**	**+5**
2DC-50X		1.7	2.4	4.5	7.8	10.0	15.5	**2DC-50X**		1.4	1.7	2.3	2.9	3.2	3.6
2DD-50X		2.1	3.1	5.8	9.5	12.0	18.1	**2DD-50X**		1.7	2.1	2.7	3.4	3.7	4.1
2DL-40X		2.5*	3.7*	7.4	11.9	14.8		**2DL-40X**		2.3*	2.7*	3.5	4.3	4.6	
2DL-75X				7.2	11.9	14.8	22.1	**2DL-75X**				3.5	4.2	4.5	4.8
2DB-50X		3.3*	4.6*	9.0	14.4	17.8		**2DB-50X**		2.8*	3.3*	4.3	5.2	5.6	
2DB-75X				9.0	14.3	17.7	26.1	**2DB-75X**				4.4	5.3	5.7	6.1
3DA-50X		3.8*	5.4*	10.4	16.4	20.2		**3DA-50X**		3.2*	3.8*	5.0	6.1	6.5	
3DA-75X				10.3	16.7	20.7	30.8	**3DA-75X**				5.0	6.0	6.4	6.9
3DC-75X		4.7*	6.5*	12.4	19.6	24.2		**3DC-75X**		3.9*	4.6*	6.0	7.2	7.8	
3DC-100X				12.6	20.3	25.1	37.0	**3DC-100X**				5.8	7.1	7.6	8.1
3DS-100X		6.4*	9.1*	16.9	26.3	32.1		**3DS-100X**		5.2*	6.1*	7.9	9.6	10.3	
3DS-150X				16.8	26.6	32.7	48.0	**3DS-150X**				7.9	9.6	10.2	11.1
8DH-500X				49.1	78.8	97.7	146.0	**8DH-500X**				24.1	28.8	31.0	33.9
8DL-370X		20.7*	28.8*	53.6	85.3	105.5		**8DL-370X**		17.4*	19.8*	25.2	30.5	33.0	
8DJ-600X				60.3	95.5	118.0	174.5	**8DJ-600X**				28.9	35.1	37.9	42.2
8DT-450X		24.0*	32.6*	59.6	93.3	114.5		**8DT-450X**		20.1*	23.2*	29.5	35.8	38.6	

Suction Gas Return 20°C / Subcooling 0K
* 10K border

Capacity Data

R407F	Cooling Capacity (kW)						
	Evaporating Temperature (°C)						
Model	-45	-35	-30	-20	-10	-5	+5
2DC-50X		1.1*	1.9*	4.7	8.0	10.1	15.4
2DD-50X		1.6*	2.6*	5.9	9.7	12.1	18.1
2DL-40X		2.6*	3.9*	7.7	12.4	15.3	
2DL-75X				7.6	12.5	15.6	23.4
2DB-50X		3.9*	5.4*	9.8	15.3	18.8	
2DB-75X				9.6	15.3	18.9	27.9
3DA-50X		4.3*	6.1*	11.3	17.9	22.1	
3DA-75X				11.4	18.4	22.8	33.8
3DC-75X		5.4*	7.5*	13.8	21.6	26.6	
3DC-100X				14.0	22.1	27.3	40.2
3DS-100X		7.3*	10.2*	18.4	28.8	35.3	
3DS-150X				18.8	29.7	36.4	53.2
8DL-370X		20.8*	28.9*	53.6	85.3	105.5	
8DH-500X				53.0	84.6	105.0	156.5
8DJ-600X				63.7	101.0	125.0	187.5
8DT-450X		26.8*	35.9*	64.1	100.5	123.5	

R407F	Power Input (kW)						
	Evaporating Temperature (°C)						
Model	-45	-35	-30	-20	-10	-5	+5
2DC-50X		1.4*	1.7*	2.4	3.1	3.3	3.6
2DD-50X		1.7*	2.1*	2.9	3.6	3.8	4.1
2DL-40X		2.4*	2.8*	3.7	4.5	4.9	
2DL-75X				3.7	4.4	4.6	5.0
2DB-50X		2.9*	3.4*	4.5	5.4	5.8	
2DB-75X				4.6	5.6	6.0	6.3
3DA-50X		3.4*	4.0*	5.2	6.4	6.8	
3DA-75X				5.2	6.3	6.8	7.2
3DC-75X		4.2*	4.8*	6.2	7.5	8.1	
3DC-100X				6.1	7.4	7.9	8.5
3DS-100X		5.5*	6.4*	8.3	10.0	10.8	
3DS-150X				8.2	10.1	10.8	11.8
8DL-370X		17.4*	19.8*	25.2	30.5	33.0	
8DH-500X				25.8	30.5	32.2	34.9
8DJ-600X				30.6	36.9	39.8	43.9
8DT-450X		21.8*	24.7*	31.2	37.7	40.7	

Suction Gas Return 20°C / Subcooling 0K
* 10K border

Condensing Temperature 40°C							
R448A/ R449	Cooling Capacity (kW)						
	Evaporating Temperature (°C)						
Model	-45	-35	-30	-20	-10	-5	+5
2DC-50X		1.4*	2.4*	5.1	8.4	10.6	15.9
2DD-50X		1.7*	2.7*	5.8	9.7	12.1	18.2
2DL-40X	1.0*	2.7*	3.9*	7.5	12.2	15.2	
2DL-75X		2.5*	3.7*	7.3	12.1	15.2	23.2
2DB-50X	1.4*	3.6*	5.0*	9.2	14.7	18.2	
2DB-75X		3.8*	5.2*	9.4	15.0	18.6	27.6
3DA-50X	1.9*	4.1*	5.6*	10.2	16.1	19.8	
3DA-75X		3.9*	5.8*	11.0	17.6	21.8	32.3
3DC-75X	2.7*	5.1*	6.9*	12.4	19.4	23.8	
3DC-100X		4.4*	6.9*	13.3	21.1	25.9	37.7
3DC-75X DC	2.6	5.4	7.3	12.4	19.5	23.9	
3DS-100X	3.8*	7.1*	9.5*	16.9	26.5	32.5	
3DS-150X		7.5*	10.2*	17.8	27.6	33.7	49.1
8DH-500X		18.7*	27.4*	51.0	80.6	99.2	145.0
8DL-370X	7.4*	18.4*	26.2*	49.3	79.0	97.6	
8DJ-600X		24.2*	34.0*	61.7	96.9	119.0	174.5
8DT-450X	12.2*	25.4*	34.7*	62.0	97.7	120.0	

R448A/ R449	Power Input (kW)						
	Evaporating Temperature (°C)						
Model	-45	-35	-30	-20	-10	-5	+5
2DC-50X		1.4*	1.7*	2.4	3.0	3.3	3.5
2DD-50X		1.6*	2.0*	2.8	3.5	3.8	4.1
2DL-40X	1.5*	2.3*	2.7*	3.5	4.4	4.9	
2DL-75X		2.3*	2.7*	3.5	4.3	4.6	5.1
2DB-50X	2.0*	2.8*	3.3*	4.4	5.4	5.8	
2DB-75X		3.0*	3.5*	4.4	5.3	5.7	6.2
3DA-50X	2.3*	3.3*	3.9*	5.0	6.2	6.6	
3DA-75X		3.3*	4.0*	5.2	6.1	6.5	6.8
3DC-75X	2.9*	4.0*	4.6*	6.0	7.3	7.8	
3DC-100X		3.6*	4.4*	6.0	7.2	7.6	8.1
3DC-75X DC	2.9	4.0	4.6	6.0	7.3	7.8	
3DS-100X	4.0*	5.4*	6.2*	8.1	9.8	10.6	
3DS-150X		5.6*	6.4*	8.2	9.8	10.5	11.5
8DH-500X		15.9*	18.8*	24.4	29.3	31.3	34.0
8DL-370X	11.5*	16.6*	19.3*	24.6	29.3	31.4	
8DJ-600X		19.3*	22.5*	29.2	35.6	38.4	42.9
8DT-450X	14.9*	20.1*	23.2*	29.6	36.0	38.8	

Conditions: Suction Gas Return 20°C / Subcooling 0K
*Conditions: Suction Superheat 10K, Subcooling 0K
Preliminary data

Capacity Data

Condensing Temperature: 40°C																		
R404A	**Cooling Capacity (kW)**							**R404A**	**Power Input (kW)**									
	Evaporating Temperature (°C)								**Evaporating Temperature (°C)**									
Model	**-45**	**-35**	**-30**	**-20**	**-10**	**-5**	**+5**	**Model**	**-45**	**-35**	**-30**	**-20**	**-10**	**-5**	**+5**
2DC-50X		2.1°	3.0°	5.4	8.8	11.0	16.5	**2DC-50X**		1.7°	2.1°	2.7	3.3	3.6	3.8
2DD-50X		2.8°	3.9°	6.8	10.8	13.2	19.3	**2DD-50X**		2.2°	2.5°	3.3	3.9	4.1	4.3
2DL-40X	1.2*	3.8	5.1	8.5	13.2	16.2		**2DL-40X**	1.8*	2.7	3.2	4.1	4.9	5.3	
2DL-75X		3.6°	4.9°	8.4	13.4	16.5	24.1	**2DL-75X**		2.7°	3.1°	4.0	4.8	5.1	5.5
2DB-50X	1.7*	4.6	6.2	10.4	16.0	19.4		**2DB-50X**	2.2*	3.2	3.8	4.9	5.9	6.3	
2DB-75X		4.9°	6.4°	10.5	16.2	19.8	28.6	**2DB-75X**		3.5°	4.0°	5.1	6.1	6.5	7.0
3DA-50X	2.0*	5.7	7.4	11.9	17.9	21.7		**3DA-50X**	2.7*	4.0	4.7	5.9	6.9	7.3	
3DA-75X		5.2°	7.2°	12.2	18.9	23.1	33.4	**3DA-75X**		3.9°	4.6°	5.9	6.9	7.3	7.6
3DC-75X	2.8*	7.0	9.1	14.4	21.6	26.1		**3DC-75X**	3.4*	4.9	5.6	7.0	8.2	8.7	
3DC-100X		6.6°	8.9°	14.9	22.7	27.5	39.3	**3DC-100X**		4.6°	5.4°	6.9	8.1	8.5	8.9
3DS-100X	4.0*	9.6	12.5	19.8	29.5	35.5		**3DS-100X**	4.7*	6.5	7.5	9.4	11.1	11.7	
3DS-150X		9.1°	12.2°	19.9	30.2	36.5	51.9	**3DS-150X**		6.3°	7.4°	9.4	11.1	11.6	12.0
8DH-500X		26.3°	35.7°	58.8	89.3	108.0	153.5	**8DH-500X**		19.1°	22.1°	27.9	32.8	34.7	37.3
8DL-370X	10.8*	28.0	36.9	59.3	88.8	106.5		**8DL-370X**	13.2*	19.5	22.4	27.9	32.7	34.7	
8DJ-600X		32.7°	44.0°	71.3	107.0	128.5	181.0	**8DJ-600X**		23.0°	26.8°	33.7	39.5	41.9	45.5
8DT-450X	14.2*	34.7	44.9	70.6	105.0	125.5		**8DT-450X**	16.9*	23.7	27.2	34.0	40.2	42.8	

Suction Gas Return 20°C / Subcooling 0K
° High Discharge Temp - Additional Cooling Required
* 10K border

Condensing Temperature: 40°C																		
R134a	**Cooling Capacity (kW)**							**R134a**	**Power Input (kW)**									
	Evaporating Temperature (°C)								**Evaporating Temperature (°C)**									
Model	**-45**	**-35**	**-30**	**-20**	**-10**	**-5**	**+5**	**Model**	**-45**	**-35**	**-30**	**-20**	**-10**	**-5**	**+5**
2DC-50X				2.4*	4.7*	6.3*	10.3	**2DC-50X**				1.5*	2.0*	2.1*	2.3
2DD-50X				3.1*	5.8*	7.6*	12.2	**2DD-50X**				1.9*	2.3*	2.5*	2.7
2DL-40X				4.0	7.2	9.2	14.4	**2DL-40X**				2.3	2.8	3.1	3.4
2DL-75X				3.6*	6.8*	8.9*	14.3	**2DL-75X**				2.1*	2.7*	3.0*	3.3
2DB-50X				5.2	9.1	11.6	17.9	**2DB-50X**				2.6	3.3	3.6	4.0
2DB-75X				4.5*	8.2*	10.6*	17.0	**2DB-75X**				2.6*	3.3*	3.5*	3.9
3DA-50X				6.0	10.2	12.9	19.8	**3DA-50X**				3.0	3.7	4.0	4.4
3DA-75X				5.1*	9.6*	12.5*	20.1	**3DA-75X**				3.1*	3.8*	4.1*	4.5
3DC-75X				7.4	12.5	15.7	23.9	**3DC-75X**				3.6	4.5	4.8	5.3
3DC-100X				6.8*	12.0*	15.3*	24.2	**3DC-100X**				3.7*	4.5*	4.8*	5.2
3DS-100X				9.7	16.2	20.4	31.0	**3DS-100X**				4.7	5.9	6.4	7.2
3DS-150X				9.7*	16.3*	20.6*	31.7	**3DS-150X**				5.0	6.2*	6.6*	7.3
8DH-500X				28.6*	47.9*	60.9*	95.6	**8DH-500X**				15.5*	18.8*	20.2*	22.2
8DJ-600X				34.4*	57.5*	72.9*	114.0	**8DJ-600X**				18.1*	22.2*	24.0*	26.8
8DL-370X				31.4	51.6	64.5	97.3	**8DL-370X**				15.1	18.5	19.9	22.2
8DT-450X				38.7	62.1	77.1	115.0	**8DT-450X**				18.4	22.5	24.4	27.5

Suction Gas Return 20°C / Subcooling 0K
* 10K border