

# Discus® Reciprocating Compressor Range

From 2 to 8 cylinder semi-hermetic reciprocating compressors for medium / low temperature refrigeration applications.

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 70 hp and provide cooling capacities from 8 to 96 kW in medium temperature (R404A, -10/45°C) and 2 to 35 kW in low temperature (R404A, -35/40°C). These compressors are qualified for R404A, R507, R134a and R22. All Discus® compressors are designed to deliver maximum performance and reliability:

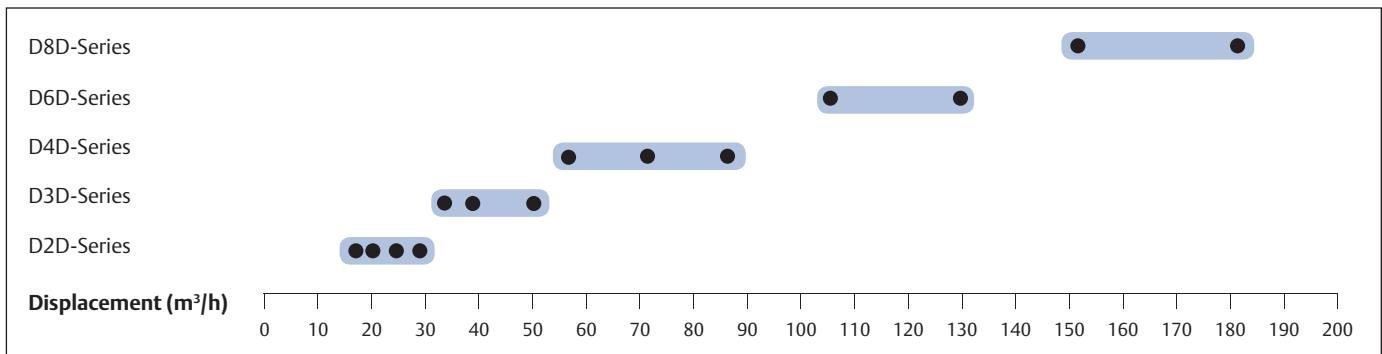
- Discus® “puck” valve integrated into the valve plate for highest performance whatever the operating condition
- Positive displacement high flow oil pump guarantees high oil feeding pressure for good lubrication and bearings’ cooling



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 or inverter applications

## Discus® Compressor Line-up



Conditions: EN12900, R404A: Evaporating -10°C, Condensing 40°C, Suction Gas Temperature 20°C, Subcooling 0K

## Features and Benefits

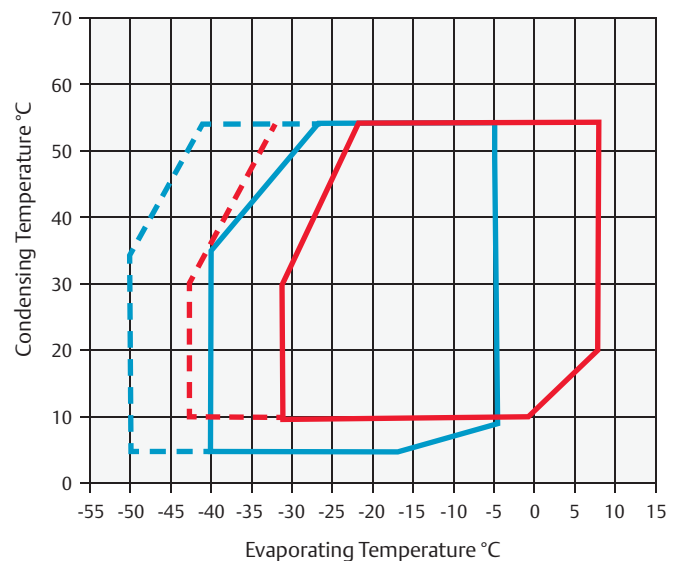
- Highest level of efficiency available on the market, whatever the refrigerant and operating condition
- Integrated oil pump and Electronic Oil Pressure Switch OPS2 for maximum reliability
- Two motor sizes per displacement, optimized for different applications
- Large operating envelope that allows 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

## Maximum Allowable Pressure (PS)

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

Refer to Emerson's Select 7.5 selection software for individual model operating envelopes and other refrigerants.

## Operating Envelope R404A



- Large Motor 25°C SGRT
- - - Large Motor 25°C SGRT + Fan
- Small Motor 25°C SGRT
- - - Small Motor 0°C SGRT + Fan

## Technical Overview

R404A	Nominal hp	Capacity (kW) 1)	COP 1)	Capacity (kW) 2)	COP 2)	Displacement (m <sup>3</sup> /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 (dBA) **
										3 Ph*	3 Ph*	3 Ph*	
D2DC-50X	5.0	7.9	2.3	2.1	1.2	16.8	2.30	590/330/470	132	AWM	9	55	65
D2DD-50X	5.0	9.7	2.4	2.8	1.3	19.3	2.30	590/330/470	132	AWM	10	55	65
D2DL-40X	4.0	12.0	2.3	3.8	1.4	23.7	2.30	590/330/470	131	AWM	11	55	64
D2DL-75X	7.5	12.2	2.4	3.6	1.3	23.7	2.30	590/330/470	136	AWM	14	70	66
D2DB-50X	5.0	14.6	2.3	4.6	1.4	28.0	2.30	590/330/470	131	AWM	13	55	64
D2DB-75X	7.5	14.9	2.4	5.0	1.5	28.0	2.30	590/330/470	136	AWM	16	70	66
D3DA-50X	5.0	16.3	2.2	5.7	1.4	32.2	3.70	655/370/480	146	AWM	16	55	69
D3DA-75X	7.5	17.2	2.4	5.2	1.3	32.2	3.70	680/370/480	152	AWM	18	106	70
D3DC-100X	10.0	20.6	2.5	6.5	1.4	38.0	3.70	680/370/480	164	AWM	21	121	70
D3DC-75X	7.5	19.8	2.3	7.0	1.4	38.0	3.70	655/370/480	150	AWM	18	70	71
D3DS-100X	10.0	27.1	2.3	9.6	1.5	49.9	3.70	680/370/480	162	AWM	24	121	71
D3DS-150X	15.0	27.5	2.3	9.1	1.4	49.9	3.70	710/370/490	166	AWM	29	129	71
D4DF-100X	10.0	29.1	2.3	9.7	1.4	56.0	3.30	680/535/605	179	AWM	27	105	76
D4DA-200X	20.0	30.2	2.4	9.2	1.4	56.0	3.30	650/535/495	196	AWM	33	175	72
D4DH-250X	25.0	38.6	2.4	12.2	1.4	70.8	3.30	670/535/495	209	AWM	42	199	72
D4DL-150X	15.0	38.4	2.3	13.1	1.4	70.8	3.30	680/535/605	205	AWM	35	156	77
D4DT-220X	22.0	46.5	2.3	16.2	1.5	84.7	3.30	700/535/795	215	AWM	43	175	78
D4DJ-300X	30.0	46.6	2.3	15.4	1.4	84.7	3.30	690/535/495	214	AWM	53	221	74
D6DH-350X	35.0	56.6	2.3	18.7	1.4	160.0	3.30	760/580/490	246	AWM	64	304	76
D6DL-270X	27.0	54.4	2.2	19.0	1.4	106.0	3.30	740/580/490	242	AWM	54	199	80
D6DJ-400X	40.0	68.1	2.3	22.3	1.4	127.0	6.80	760/580/545	261	AWM	83	304	76
D6DT-320X	30.0	66.2	2.2	23.6	1.4	127.0	6.80	740/580/700	261	AWM	62	255	81
D8DH-500X	50.0	81.7	2.4	26.3	1.4	151.0	7.60	835/475/610	330	AWM	88	458	79
D8DL-370X	37.0	81.4	2.3	28.0	1.4	151.0	7.60	835/475/610	323	AWM	74	349	77
D8DJ-600X	60.0	98.0	2.3	32.7	1.4	181.0	7.60	835/475/610	331	AWM	108	476	80
D8DT-450X	45.0	96.0	2.3	34.7	1.5	181.0	7.60	835/475/610	335	AWM	91	441	78

(1) MT= Conditions EN12900 : Evaporating -10°C, Condensing 45°C, Suction Gas Temperature 20°C, Subcooling 0K

(2) LT= Conditions EN12900 : Evaporating -35°C, Condensing 40°C, Suction Gas Temperature 20°C, Subcooling 0K

\* 3 Ph: 380-420V/ 50Hz

\*\* @ 1m: sound pressure level at 1m distance from the compressor, free field condition

## 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
D2DC-50X		2.1	3.0	5.4	8.8	11.0	16.5	D2DC-50X		1.7	2.1	2.7	3.3	3.6	3.8
D2DD-50X		2.8	3.9	6.8	10.8	13.2	19.3	D2DD-50X		2.2	2.5	3.3	3.9	4.1	4.3
D2DL-40X	1.2*	3.8	5.1	8.5	13.2	16.2		D2DL-40X	1.8*	2.7	3.2	4.1	4.9	5.3	
D2DL-75X		3.6	4.9	8.4	13.4	16.5	24.1	D2DL-75X		2.7	3.1	4.0	4.8	5.1	5.5
D2DB-50X	1.7*	4.6	6.2	10.4	16.0	19.4		D2DB-50X	2.2*	3.2	3.8	4.9	5.9	6.3	
D2DB-75X		5.0	6.6	10.7	16.4	20.0	28.8	D2DB-75X		3.4	3.9	5.0	5.9	6.3	6.9
D3DA-50X	2.0*	5.7	7.4	11.9	17.9	21.7		D3DA-50X	2.7*	4.0	4.7	5.9	6.9	7.3	
D3DA-75X		5.2	7.2	12.2	18.9	23.1	33.4	D3DA-75X		3.9	4.6	5.9	6.9	7.3	7.6
D3DC-100X		6.5	8.9	14.7	22.7	27.6	39.7	D3DC-100X		4.5	5.3	6.8	7.9	8.4	8.7
D3DC-75X	2.8*	7.0	9.1	14.4	21.6	26.1		D3DC-75X	3.4*	4.9	5.6	7.0	8.2	8.7	
D3DS-100X	4.0*	9.6	12.5	19.8	29.5	35.5		D3DS-100X	4.7*	6.5	7.5	9.4	11.1	11.7	
D3DS-150X		9.1	12.2	19.9	30.2	36.5	51.9	D3DS-150X		6.3	7.4	9.4	11.1	11.6	12.0
D4DF-100X	3.5*	9.7	12.8	20.9	32.0	38.7		D4DF-100X	4.4*	6.8	8.0	10.2	12.0	12.7	
D4DA-200X		9.2	12.8	21.6	33.2	40.4	57.9	D4DA-200X		6.5	7.8	10.1	11.9	12.6	13.3
D4DH-250X		12.2	16.6	27.6	42.4	51.6	73.9	D4DH-250X		8.8	10.3	13.1	15.4	16.3	17.5
D4DL-150X	5.1*	13.1	17.2	27.6	41.7	50.5		D4DL-150X	6.2*	9.1	10.5	13.3	15.6	16.6	
D4DT-220X	6.6*	16.3	21.2	33.7	50.7	61.1		D4DT-220X	7.7*	11.2	13.0	16.2	19.0	20.1	
D4DJ-300X		15.4	20.7	33.8	51.0	61.5	86.9	D4DJ-300X		10.6	12.5	15.9	18.8	19.9	21.4
D6DL-270X	7.5*	19.1	24.8	39.7	59.8	72.1		D6DL-270X	9.2*	13.6	15.7	19.8	23.4	24.9	
D6DH-350X		18.8	25.2	41.0	61.9	74.7	106.0	D6DH-350X		13.0	15.3	19.5	22.9	24.2	26.1
D6DJ-400X		22.3	30.0	49.1	74.8	90.7	130.0	D6DJ-400X		15.8	18.6	23.7	28.0	29.9	32.8
D6DT-320X	9.0*	23.6	30.9	48.9	72.3	86.2		D6DT-320X	11.3*	16.4	18.9	23.6	27.9	29.8	
D8DH-500X		26.3	35.7	58.8	89.3	108.0	153.5	D8DH-500X		19.1	22.1	27.9	32.8	34.7	37.3
D8DL-370X	10.8*	28.0	36.9	59.3	88.8	106.5		D8DL-370X	13.2*	19.5	22.4	27.9	32.7	34.7	
D8DJ-600X		32.7	44.0	71.3	107.0	128.5	181.0	D8DJ-600X		23.0	26.8	33.7	39.5	41.9	45.5
D8DT-450X	14.2*	34.7	44.9	70.6	105.0	125.5		D8DT-450X	16.9*	23.7	27.2	34.0	40.2	42.8	

Suction Gas Return 20°C / Subcooling 0K

\*Suction Superheat 10K / Subcooling 0K

High Discharge Temp - Additional cooling required

Condensing Temperature 40°C															
R407C	Cooling Capacity (kW)							R407C	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
	Model	-30	-20	-10	-5	5	10		15	Model	-30	-20	-10	-5	5
D2DC-50X		4.1	7.4	9.6	15.1	18.5		D2DC-50X		2.1	2.7	2.9	3.3	3.3	
D2DD-50X		4.9	8.7	11.2	17.4	21.3		D2DD-50X		2.5	3.1	3.4	3.8	3.9	
D2DL-75X		6.3	10.9	13.9	21.5	26.2		D2DL-75X		3.1	3.9	4.2	4.8	4.9	
D2DB-75X		8.3	13.5	16.9	25.4	30.7		D2DB-75X		3.9	4.7	5.1	5.7	5.8	
D3DA-75X		9.2	15.4	19.5	29.9	36.3		D3DA-75X		4.5	5.5	5.9	6.4	6.5	
D3DC-100X		11.3	18.5	23.2	35.3	42.7		D3DC-100X		5.3	6.4	6.9	7.6	7.7	
D3DS-150X		15.8	24.8	30.8	46.0	55.4		D3DS-150X		7.4	8.8	9.4	10.3	10.5	
D4DA-200X		17.2	28.0	34.9	52.3	63.1		D4DA-200X		7.7	9.4	10.3	11.4	11.7	
D4DH-250X		22.7	35.7	44.5	66.3	79.2		D4DH-250X		10.9	12.6	13.5	15.0	15.5	
D4DJ-300X		26.5	41.2	50.8	74.8	89.6		D4DJ-300X		12.9	15.7	17.0	19.2	20.0	
D6DH-350X		33.6	53.1	66.0	98.4	118.0		D6DH-350X		15.6	19.0	20.5	22.8	23.3	
D6DJ-400X		38.9	61.8	77.0	115.5	138.5		D6DJ-400X		18.5	22.8	24.9	28.1	29.1	
D8DH-500X		40.0*	70.6	88.9	135.0	163.5		D8DH-500X		22.0*	26.6	28.7	31.8	32.5	
D8DJ-600X		47.9*	84.6	106.5	162.0	195.5		D8DJ-600X		25.9*	31.8	34.6	39.2	40.6	

Suction Gas Return 20°C / Subcooling 0K

\*Suction Superheat 10K / Subcooling 0K

## Capacity Data

Condensing Temperature 40°C															
R134a	Cooling Capacity (kW)							R134a	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-30	-20	-10	-5	5	10	15	Model	-30	-20	-10	-5	5	10	15
D2DC-50X		2.4*	4.7*	6.3*	10.3	12.7	15.4	D2DC-50X		1.6*	2.0*	2.1*	2.3	2.3	2.3
D2DD-50X		3.1*	5.8*	7.6*	12.2	15.0	18.1	D2DD-50X		1.9*	2.3*	2.5*	2.7	2.7	2.6
D2DL-40X		4.0	7.2	9.2	14.4	17.6		D2DL-40X		2.3	2.8	3.1	3.4	3.5	
D2DL-75X		3.6*	6.8*	8.9*	14.3	17.5	21.2	D2DL-75X		2.1*	2.7*	3.0*	3.3	3.4	3.4
D2DB-50X		5.2	9.1	11.6	17.9	21.8		D2DB-50X		2.6	3.3	3.6	4.0	4.1	
D2DB-75X		4.5*	8.2*	10.6*	17.0	20.7	25.0	D2DB-75X		2.6*	3.3*	3.5*	3.9	4.0	4.0
D3DA-50X		6.0	10.2	12.9	19.8	24.1		D3DA-50X		3.0	3.7	4.0	4.4	4.5	
D3DA-75X		5.1*	9.6*	12.5*	20.1	24.5	29.7	D3DA-75X		3.1*	3.8*	4.1*	4.5	4.6	4.5
D3DC-100X		6.8*	12.0*	15.3*	24.2	29.5	35.6	D3DC-100X		3.7*	4.5*	4.8*	5.2	5.2	5.2
D3DC-75X		7.4	12.5	15.7	23.9	29.0		D3DC-75X		3.6	4.5	4.8	5.3	5.4	
D3DS-100X		9.7	16.2	20.4	31.0	37.5		D3DS-100X		4.7	5.9	6.4	7.2	7.4	
D3DS-150X		9.7*	16.3*	20.6*	31.7	38.3	45.8	D3DS-150X		5.0*	6.2*	6.6*	7.3	7.4	7.3
D4DF-100X		11.2	18.6	23.4	35.7	43.4		D4DF-100X		5.5	6.6	7.1	7.9	8.1	
D4DA-200X		11.0*	18.6*	23.6*	36.6	44.3	53.2	D4DA-200X		5.1*	6.4*	7.0*	7.9	8.2	8.4
D4DH-250X		13.5*	22.9*	29*	44.9	54.4	65.2	D4DH-250X		7.0*	8.7*	9.4*	10.4	10.6	10.6
D4DL-150X		15.0	24.5	30.5	45.7	55.2		D4DL-150X		7.0	8.7	9.4	10.5	10.9	
D4DJ-300X		16.5*	27.8*	35.1*	54.3	65.7	78.9	D4DJ-300X		8.3*	10.4*	11.4*	13.2	14.0	14.5
D4DT-220X		18.4	29.7	37.0	55.4	66.9		D4DT-220X		8.6	10.5	11.4	12.7	13.1	
D6DH-350X		19.8*	33.5*	42.5*	66.2	80.3	96.6	D6DH-350X		10.4*	13.1*	14.3*	16.0	16.5	16.6
D6DL-270X		21.4	35.7	44.9	68.1	82.5		D6DL-270X		10.1	12.5	13.6	15.4	15.9	
D6DJ-400X		24.6*	40.5*	50.9*	78.5	94.7	113.5	D6DJ-400X		12.2*	15.3*	16.9*	19.6	20.6	21.2
D6DT-320X		26.8	43.2	53.7	80.1	96.5		D6DT-320X		12.7	15.6	16.9	19.1	19.9	
D8DH-500X		28.6*	47.9*	60.9*	95.6	116.5	140.5	D8DH-500X		15.5*	18.8*	20.2*	22.2	22.7	22.9
D8DL-370X		31.4	51.6	64.5	97.3	117.5		D8DL-370X		15.1	18.5	19.9	22.2	22.8	
D8DJ-600X		34.4*	57.5*	72.9*	114.0	138.0	166.5	D8DJ-600X		18.1*	22.2*	24.0*	26.8	27.7	28.2
D8DT-450X		38.7	62.1	77.1	115.0	139.0		D8DT-450X		18.4	22.5	24.4	27.5	28.5	

Suction Gas Return 20°C / Subcooling 0K

\*Suction Superheat 10K / Subcooling 0K

## Capacity Data

Condensing Temperature 40°C															
R22	Cooling Capacity (kW)							R22	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
D2DC-50X				4.9	8.4	10.6	15.9	D2DC-50X				2.4	2.9	3.1	3.4
D2DD-50X				5.8	9.8	12.3	18.4	D2DD-50X				2.8	3.4	3.6	3.9
D2DL-400 DC	1.4	3.1	4.3	7.4	11.7			D2DL-400 DC	1.7	2.5	2.9	3.7	4.4		
D2DL-75X				7.4	12.2	15.2	22.7	D2DL-75X				3.5	4.2	4.5	4.9
D2DB-500 DC	1.9	4.0	5.4	9.1	14.2			D2DB-500 DC	2.3	3.2	3.6	4.5	5.2		
D2DB-75X				9.5	15.0	18.4	26.7	D2DB-75X				4.3	5.1	5.4	5.8
D3DA-500 DC	2.1	4.5	6.0	10.1				D3DA-500 DC	2.2	3.4	4.0	5.0			
D3DA-75X				10.7	17.3	21.4	31.6	D3DA-75X				5.0	5.9	6.3	6.6
D3DC-750 DC	2.7	5.4	7.3	12.5				D3DC-750 DC	2.8	4.0	4.7	6.1			
D3DC-100X				12.9	20.6	25.4	37.2	D3DC-100X				5.9	7.0	7.4	7.8
D3DS-1000 DC	3.4	7.5	10.2	17.2				D3DS-1000 DC	3.9	5.7	6.6	8.4			
D3DS-150X				17.7	27.4	33.4	48.3	D3DS-150X				8.1	9.4	10.0	10.6
D4DF-1000 DC	3.8	7.8	10.5	17.4				D4DF-1000 DC	3.7	5.8	6.8	8.8			
D4DA-200X				20.1	31.3	38.2	55.5	D4DA-200X				8.7	10.4	11.0	11.9
D4DL-1500 DC	6.0	11.6	15.2	23.6				D4DL-1500 DC	5.9	8.5	9.8	12.2			
D4DH-250X				25.7	39.5	48.1	69.3	D4DH-250X				11.5	13.6	14.4	15.6
D4DT-2200 DC	7.6	13.9	17.9	28.2				D4DT-2200 DC	7.2	10.0	11.5	14.3			
D4DJ-300X				30.7	46.4	56.2	80.4	D4DJ-300X				13.9	16.5	17.7	19.5
D6DH-350X				38.4	59.0	71.9	103.5	D6DH-350X				17.5	20.5	21.8	23.6
D6DL-2700 DC	7.5	15.0	19.9	32.1				D6DL-2700 DC	8.0	11.8	13.7	17.0			
D6DT-3200 DC	9.7	18.7	24.4	37.8				D6DT-3200 DC	10.0	14.4	16.6	20.1			
D6DJ-400X				44.6	69.0	84.3	122.0	D6DJ-400X				20.8	24.9	26.7	29.3
D8DH-500X				48.4*	79.3	97.6	143.0	D8DH-500X				24.6*	28.9	30.7	33.1
D8DJ-600X				58.0*	95.1	117.0	171.5	D8DJ-600X				29.2*	34.8	37.3	41.0

Suction Gas Return 20°C / Subcooling OK

\*Suction Superheat 10K / Subcooling OK

High Discharge Temp - Additional cooling required