



# Semi-Hermetic Reciprocating Compressors

Emerson offers different ranges of semi-hermetic reciprocating compressors with distinct levels of performance and technical characteristics depending on the application requirements.

## The Stream Series

Emerson has introduced Stream, a line of semi-hermetic 4 and 6 cylinder compressors. The series provides best in class performance for today's HFC-based and uprising natural and low GWP refrigerants, significantly reducing cost of operation and environmental impact compared to competing products.

The range consists of 4 and 6 cylinder models, available with both inverter and continuous capacity modulation options.

The new Emerson line-up of 4 cylinder compressors for CO<sub>2</sub>-transcritical applications is the ideal solution for R744 medium temperature cascade and booster systems. It is characterised by a design pressure of 135 bar. Refrigerant flow and heat transfer have been optimized for best performance. In combination with the CO<sub>2</sub>-subcritical scroll for the low temperature refrigeration side, Emerson offers the most energy efficient package available on the market today.

With advanced protection and diagnostics features for system reliability, reduced service costs and increased equipment uptime, the Stream series is built to last in today's modern and changing world.



Stream 4 Cylinder



Stream 6 Cylinder



Stream 4 Cylinder for R744



Stream Digital 4 Cylinder



Stream Digital 6 Cylinder



## The S-Series

Its design is based on traditional “reed” valve plates similar to what is used in reciprocating compressors offered by other manufacturers. The performance of such compressors meets basic market requirements but cannot compete with Discus compressors in terms of efficiency. The S-Series ranges from 1.5 to 70 hp and is composed of K and L presented in this catalogue.



S-Series

## The Discus Range

It is broadly recognized as the most efficient compressor whatever the running condition. This range is mainly used in medium and low temperature refrigeration applications where system efficiency is a priority for the end-user. The key difference between Discus and other reciprocating compressors lies in its valve plate design. Traditional “reed” valves are replaced by ‘puck” type valves that are integrated in the valve plate. This special design eliminates the dead volume at the end of the compression and allows for the highest compressor efficiency. To date, no other reciprocating compressor is able to match Discus in terms of performance. Available from 4 to 60 hp, they are referred to as 2D, 3D and 8D in this catalogue.



Discus 2 Cylinder

## K and L Reciprocating Compressor Range

Small 2-cylinder semi-hermetic reciprocating compressors for medium and low temperature refrigeration applications and transport refrigeration.

Designed on the principle of standard reed valve type technology, these compressors feature an internal oil pump that guarantees optimum reliability in all operating conditions.

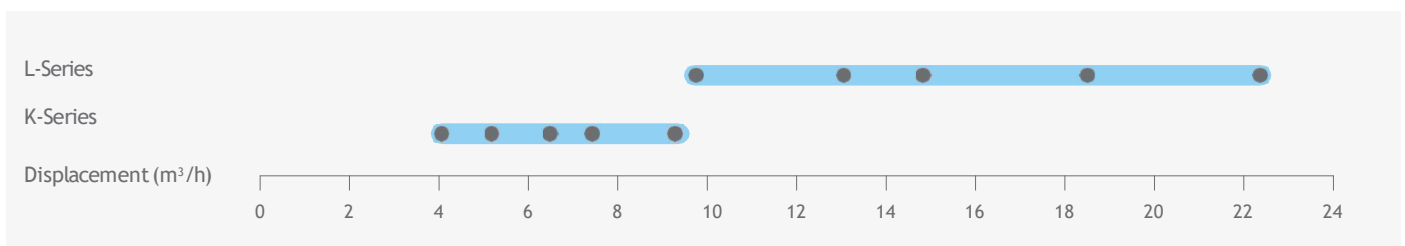
The K-series ranges from 0.5 to 2 hp and the L-series from 2 to 5 hp with a displacement of 4 to 22.5 m<sup>3</sup>/h.

These compressors are qualified for R407A/F/C, R448A/R449A, R404A and R134a.



K-Series compressor

## K & L Compressor Line-Up



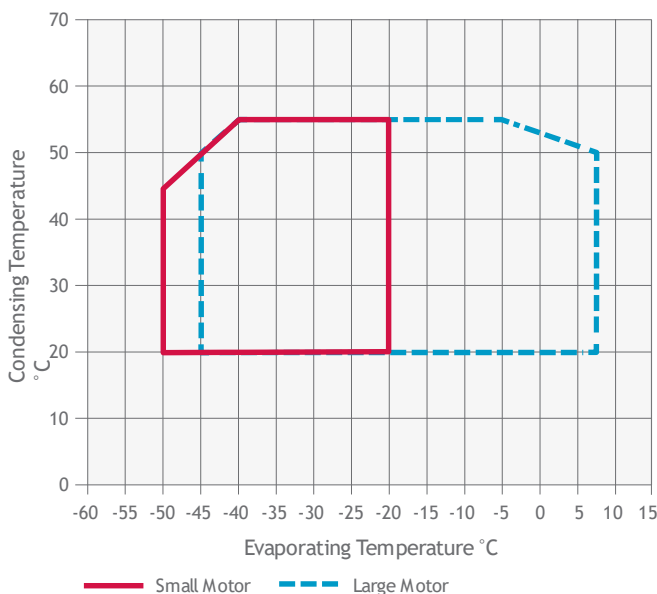
## Features and Benefits

- Large operating envelope from 5°C to -45°C evaporating and up to 55°C condensing
- Two motor sizes per displacement, optimized for different applications
- Compact and light compressors
- Ideal for refrigeration unit or transport applications
- Integrated oil pump for maximum reliability

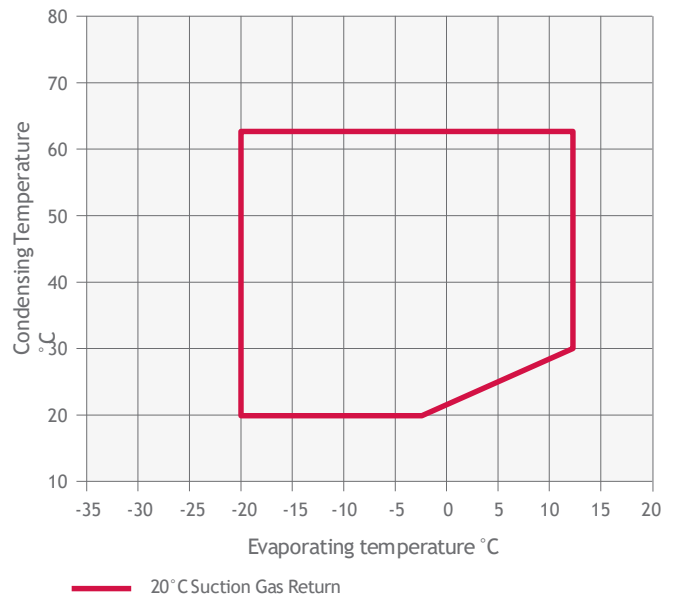
## Maximum Allowable Pressure (PS)

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

## Operating Envelope R404A



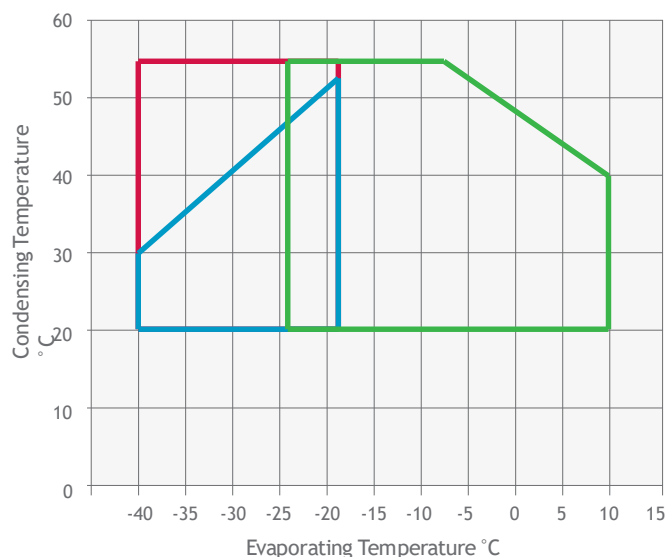
## Operating Envelope R134a



For individual model details please refer to select software.



## Operating Envelope R448A/R449A



- Small Motor 0°C Suction Gas Return + Fan
- Large Motor 20°C Suction Gas Return + Fan
- Small Motor 20°C Suction Gas Return + Fan

## Technical Overview

Models	Nominal hp	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 - dB(A) ***
						1 Ph*	3 Ph**	1 Ph*	3 Ph**	1 Ph*	3 Ph**	
KM-5X	0.5	4.0	0.7	365/235/280	39	CAG	EWL	4.8	1.8	24.0	12.2	45
KM-7X	0.8	4.0	0.7	365/235/280	39	CAG	EWL	6.0	2.4	34.5	12.2	45
KJ-7X	0.8	5.1	0.7	365/235/280	39	CAG	EWL	5.8	2.3	34.5	12.2	45
KJ-10X	1.0	5.1	0.7	365/235/280	39	CAG	EWL	7.1	3.2	32.4	15.5	45
KSJ-10X	1.0	6.3	0.7	365/235/280	40	CAG	EWL	6.7	2.7	32.4	15.5	50
KSJ-15X	1.5	6.3	0.7	365/235/280	40	CAG	EWL	9.0	3.4	43.0	19.1	53
KL-15X	1.5	7.4	0.7	365/235/280	39	CAG	EWL	8.4	3.4	43.0	19.1	47
KL-20X	2.0	7.4	0.7	365/235/280	39		EWL		3.8		20.4	
KSL-20X	2.0	9.1	0.7	365/235/280	40		EWL		4.7		20.4	
LE-20X	2.0	9.9	2.0	470/330/385	78		EWL		5.7		37.6	51
LF-20X	2.0	12.9	2.0	470/330/385	80		EWL		5.5		37.6	51
LF-30X	3.0	12.9	2.0	470/330/385	80		EWL		7.2		53.0	51
LJ-20X	2.0	14.5	2.0	470/330/385	78		EWL		5.6		37.6	52
LJ-30X	3.0	14.5	2.0	470/330/385	83		EWL		8.1		53.0	52
LL-30X	3.0	18.2	2.0	470/330/385	85		EWL		7.3		50.6	52
LL-40X	4.0	18.2	2.0	470/330/385	87		EWL		9.5		58.9	63
LSG-40X	4.0	22.5	2.0	470/330/385	77		EWL		8.9		58.9	63

\* 1 Ph: 230V/ 50Hz

\*\* 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	-5	+5
KM-5X	0.2°	0.6°	0.8°	1.3°				KM-5X	0.3°	0.5°	0.6°	0.7°			
KM-7X	0.2°	0.5°	0.8°	1.3°	2.0°	2.5°	3.6°	KM-7X	0.3°	0.5°	0.6°	0.8°	0.9°	1.0°	1.0°
KJ-7X	0.4°	0.8°	1.1°	1.8°				KJ-7X	0.5°	0.7°	0.8°	1.0°			
KJ-10X	0.3°	0.8°	1.0°	1.8°	2.8°	3.4°	4.9°	KJ-10X	0.4°	0.7°	0.8°	1.0°	1.2°	1.3°	1.4°
KSJ-10X	0.5°	1.0°	1.4°	2.3°				KSJ-10X	0.7°	0.9°	1.1°	1.3°			
KSJ-15X	0.5°	1.0°	1.4°	2.3°	3.5°	4.2°	6.1°	KSJ-15X	0.6°	0.9°	1.0°	1.3°	1.6°	1.7°	1.8°
KL-15X	0.6°	1.2°	1.6°	2.6°				KL-15X	0.8°	1.0°	1.2°	1.5°			
KL-20X	0.5°	1.1°	1.5°	2.6°	4.1°	5.0°		KL-20X	0.6°	0.9°	1.1°	1.4°	1.7°	1.8°	
KSL-20X	0.8°	1.5°	2.0°	3.3°	5.1°	6.1°		KSL-20X	0.8°	1.2°	1.4°	1.9°	2.3°	2.5°	
LE-20X		1.1°	1.7°	3.2°	5.1°	6.4°	9.4°	LE-20X		1.0°	1.2°	1.6°	2.0°	2.2°	2.5°
LF-20X		1.8°	2.3°	4.0°				LF-20X		1.4°	1.7°	2.2°			
LF-30X	0.7°	1.9°	2.6°	4.6°	7.2°	8.8°	12.8°	LF-30X	1.0°	1.6°	1.9°	2.4°	2.9°	3.1°	3.4°
LJ-20X		1.9°	2.8°	5.0°				LJ-20X		1.6°	1.9°	2.6°			
LJ-30X	0.8°	2.1°	2.9°	5.1°	8.0°	9.8°	14.2°	LJ-30X	1.1°	1.8°	2.1°	2.8°	3.3°	3.6°	3.9°
LL-30X	0.9°	2.6°	3.7°	6.5°				LL-30X	1.1°	2.0°	2.4°	3.3°			
LL-40X	1.1°	2.7°	3.7°	6.4°	10.2°	12.6°	18.4°	LL-40X	1.4°	2.2°	2.6°	3.3°	4.0°	4.3°	4.9°
LSG-40X	1.4°	3.5°	4.8°	8.2°				LSG-40X	1.6°	2.6°	3.1°	4.1°			

Conditions: Suction Gas Return 20 °C / Subcooling OK  
 \*High Discharge Temperature - Additional Cooling Required

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
KM-5X				0.7°	1.2°	1.5°	2.3°	KM-5X				0.5°	0.6°	0.6°	0.7°
KJ-7X				0.9°	1.6°	2.0°	3.0°	KJ-7X				0.6°	0.7°	0.8°	0.8°
KSJ-10X				1.2°	2.0°	2.5°	3.8°	KSJ-10X				0.7°	0.8°	0.9°	1.0°
KL-15X				1.4°	2.2°	2.8°	4.3°	KL-15X				0.8°	1.0°	1.1°	1.3°
KSL-15X				1.7°	2.8°	3.5°	5.3°	KSL-15X				1.0°	1.3°	1.4°	1.6°
KSL-20X				1.7°	2.9°	3.7°	5.6°	KSL-20X				1.0°	1.2°	1.4°	1.6°
LE-20X				1.5°	2.8°	3.6°	5.6°	LE-20X				1.0°	1.3°	1.4°	1.5°
LF-20X				2.2°	3.8°	4.9°	7.5°	LF-20X				1.2°	1.6°	1.7°	1.9°
LJ-20X				2.6°	4.3°	5.4°	8.3°	LJ-20X				1.6°	1.9°	2.1°	2.4°
LL-30X				3.2°	5.5°	7.0°	10.9°	LL-30X				1.9°	2.4°	2.6°	3.0°
LSG-40X				4.3°	7.2°	9.0°	13.7°	LSG-40X				2.3°	2.9°	3.2°	3.7°

Conditions: Suction Gas Return 20 °C / Subcooling OK  
 \*High Discharge Temperature - Additional Cooling Required

For more details about other refrigerants please refer to Select software.

# Capacity Data

Condensing Temperature 40°C															
R407A	Cooling Capacity (kW)							R407A	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
KM-5X	0.5°	1.1°	1.8°	2.3°				KM-5X	0.5°	0.7°	0.8°	0.9°			
KM-7X		1.0°	1.7°	2.2°	3.5°	4.2°		KM-7X		0.7°	0.8°	0.9°	1.0°	1.0°	
KJ-7X	0.8°	1.5°	2.4°	3.0°				KJ-7X	0.7°	0.9°	1.1°	1.2°			
KJ-10X		1.5°	2.5°	3.2°	4.8°	5.8°		KJ-10X		0.9°	1.1°	1.2°	1.4°	1.4°	
KSJ-10X	1.1°	1.9°	3.1°	3.8°				KSJ-10X	0.9°	1.1°	1.4°	1.5°			
KSJ-15X		1.9°	3.2°	4.0°	6.0°	7.2°		KSJ-15X		1.2°	1.5°	1.6°	1.8°	1.8°	
KL-15X	1.2°	2.2°	3.6°	4.5°				KL-15X	0.9°	1.2°	1.6°	1.7°			
KL-20X		2.5°	3.9°	4.8°	7.0°	8.4°		KL-20X		1.3°	1.6°	1.7°	1.9°	2.0°	
KSL-20X		2.9°	4.5°	5.6°	8.3°	10.1°		KSL-20X		1.6°	1.9°	2.1°	2.4°	2.4°	
LE-20X	1.5°	2.8°	4.8°	6.0°	9.0°	10.9°		LE-20X	1.2°	1.6°	2.1°	2.3°	2.6°	2.7°	
LF-20X	2.1°	3.9°	6.4°	8.0°				LF-20X	1.6°	2.2°	2.7°	2.9°			
LF-30X		4.2°	6.7°	8.2°	12.2°	14.7°		LF-30X		2.3°	2.8°	3.0°	3.5°	3.6°	
LJ-20X	2.5°	4.7°	7.7°	9.6°				LJ-20X	1.9°	2.5°	3.1°	3.4°			
LJ-30X		5.0°	7.8°	9.5°	13.9°	16.6°		LJ-30X		2.6°	3.1°	3.4°	3.8°	4.0°	
LL-30X	2.9°	5.5°	9.1°	11.4°				LL-30X	2.1°	2.9°	3.6°	4.0°			
LL-40X		5.5°	9.1°	11.4°	16.9°	20.4°		LL-40X		2.8°	3.5°	3.8°	4.4°	4.6°	
LSG-40X	3.9°	7.0°	11.3°	14.0°				LSG-40X	2.7°	3.7°	4.7°	5.2°			

Conditions: Suction Gas Return 20°C / Subcooling 0K

Preliminary Data

\*High Discharge Temperature - Additional Cooling Required

Condensing Temperature 40°C															
R407F	Cooling Capacity (kW)							R407F	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
KM-5X	0.6°	1.1°	1.9°					KM-5X	0.5°	0.7°	0.9°				
KM-7X		1.1°	1.9°	2.4°	3.8°	4.6°		KM-7X		0.7°	0.9°	0.9°	1.1°	1.1°	
KJ-7X	0.9°	1.6°	2.6°	3.2°				KJ-7X	0.7°	0.9°	1.2°	1.3°			
KJ-10X		1.6°	2.7°	3.4°	5.1°	6.2°		KJ-10X		1.0°	1.2°	1.3°	1.5°	1.5°	
KSJ-10X	1.2°	2.1°	3.3°	4.1°				KSJ-10X	0.9°	1.2°	1.5°	1.6°			
KSJ-15X		2.0°	3.4°	4.2°	6.3°	7.5°		KSJ-15X		1.2°	1.5°	1.7°	1.9°	1.9°	
KL-15X	1.3°	2.4°	3.9°	4.9°				KL-15X	1.0°	1.3°	1.7°	1.8°			
KL-20X		2.6°	4.1°	5.1°	7.5°	8.9°		KL-20X		1.4°	1.7°	1.8°	2.0°	2.1°	
KSL-20X		3.1°	4.9°	6.0°	8.9°	10.7°		KSL-20X		1.7°	2.1°	2.2°	2.5°	2.6°	
LE-20X	1.6°	3.1°	5.2°	6.4°	9.6°	11.6°		LE-20X	1.3°	1.8°	2.2°	2.4°	2.7°	2.9°	
LF-20X	2.3°	4.2°	6.9°	8.6°				LF-20X	1.7°	2.3°	2.8°	3.1°			
LF-30X		4.6°	7.2°	8.9°	13.0°	15.6°		LF-30X		2.4°	2.9°	3.1°	3.5°	3.7°	
LJ-20X	2.7°	5.1°	8.3°	10.4°				LJ-20X	2.0°	2.7°	3.3°	3.6°			
LJ-30X		5.3°	8.3°	10.2°	14.8°	17.7°		LJ-30X		2.8°	3.4°	3.6°	4.1°	4.3°	
LL-30X	3.2°	5.8°	9.5°	11.9°				LL-30X	2.3°	3.1°	4.0°	4.4°			
LL-40X		5.9°	9.7°	12.1°	18.0°	21.7°		LL-40X		3.0°	3.7°	4.1°	4.7°	4.9°	
LSG-40X	4.3°	7.6°	12.2°					LSG-40X	2.9°	4.0°	5.0°				

Conditions: Suction Gas Return 20°C / Subcooling 0K

Preliminary Data

\*High Discharge Temperature - Additional Cooling Required

## Capacity Data

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	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
KM-5X	0.7°	1.2°						KM-5X	0.5°	0.6°					
KM-7X		1.2°	1.9°	2.4°	3.5°	4.3°		KM-7X		0.7°	0.8°	0.9°	1.0°	1.0°	
KJ-7X	0.9°	1.6°						KJ-7X	0.7°	0.9°					
KJ-10X		1.6°	2.6°	3.2°	4.8°	5.7°		KJ-10X		1.0°	1.1°	1.2°	1.3°	1.4°	
KSJ-10X	1.3°	2.1°						KSJ-10X	1.0°	1.2°					
KSJ-15X		2.1°	3.3°	4.1°	6.0°	7.1°		KSJ-15X		1.2°	1.5°	1.6°	1.7°	1.7°	
KL-15X	1.5°	2.4°						KL-15X	1.0°	1.3°					
LE-20X		3.0°	5.0°	6.2°	5.3°	11.3°		LE-20X		1.5°	1.9°	2.0°	2.3°	2.4°	
LF-30X		4.4°	6.9°	8.4°	12.4°	14.8°		LF-30X		2.4°	2.9°	3.1°	3.5°	3.6°	
LF-20X	2.1°	3.8°						LF-20X	1.5°	2.0°					
LJ-20X	2.6°	4.7°						LJ-20X	1.7°	2.3°					
LJ-30X		4.7°	7.6°	9.4°	13.9°	16.6°		LJ-30X		2.5°	3.1°	3.3°	3.6°	3.7°	
LL-30X		6.1°						LL-30X	2.1°	3.0°					
LL-40X		5.9°	9.7°	12.0°	18.0°	21.7°		LL-40X		3.0°	3.6°	4.0°	4.5°	4.8°	
LSG-40X	4.4°	7.6°						LSG-40X	2.7°	3.7°					

Conditions: Suction Gas Return 20°C / Subcooling 0K

Preliminary Data

\*High Discharge Temperature - Additional Cooling Required







## 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:

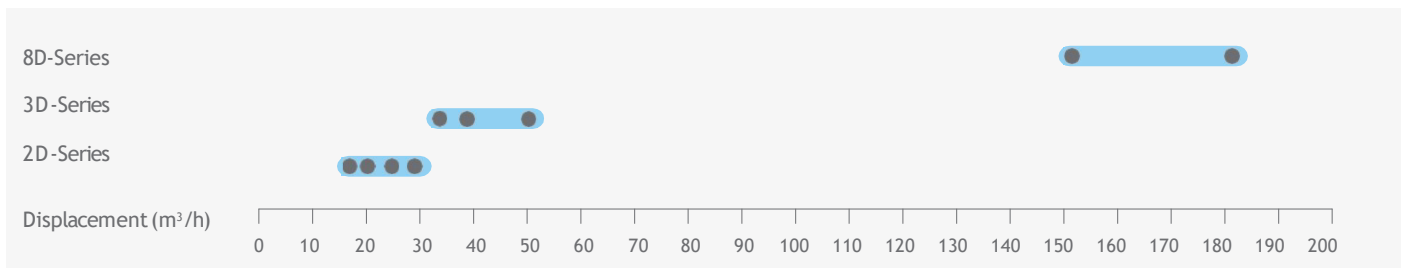
- Discus “puck” valve integrated into the valve plate for highest performance whatever the operating condition
- Positive displacement high flow oil pump guarantees high oil feeding pressure for good lubrication and bearings’ cooling



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

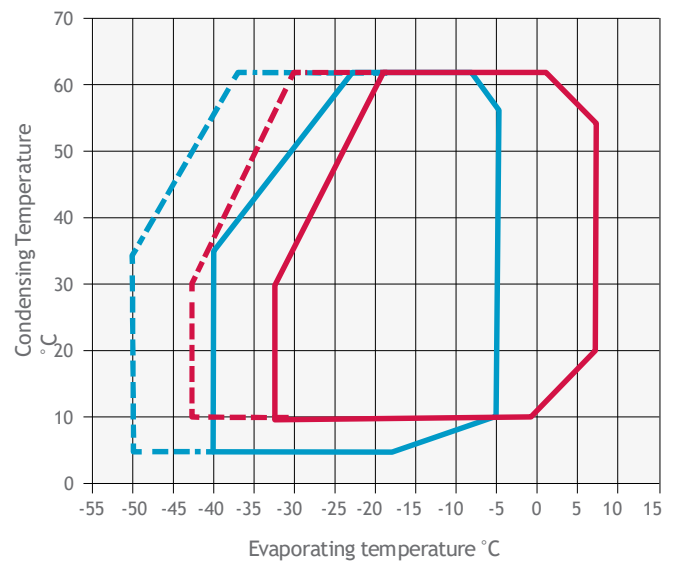
## Discus Compressor Line-Up



## 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

## Operating Envelope R404A



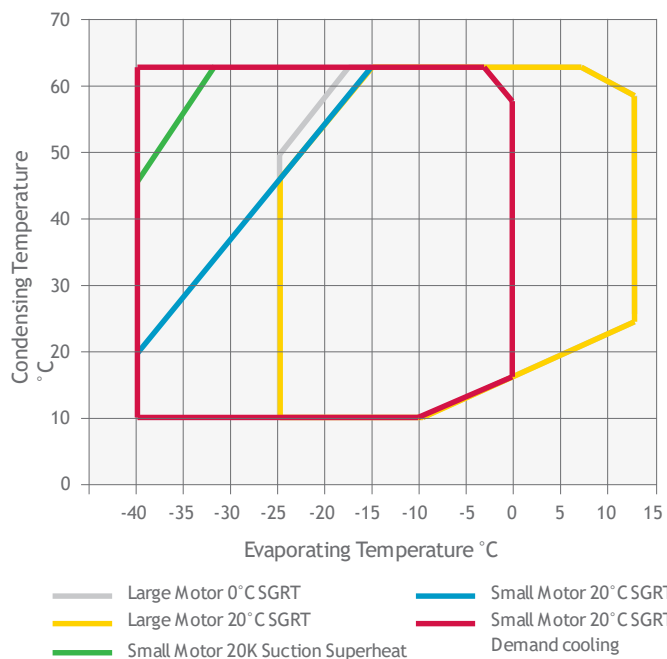
- Large Motor 20°C SGRT
- Large Motor 20°C SGRT + Fan
- Small Motor 20°C SGRT
- Small Motor 0°C SGRT + Fan

For individual model details please refer to select software.

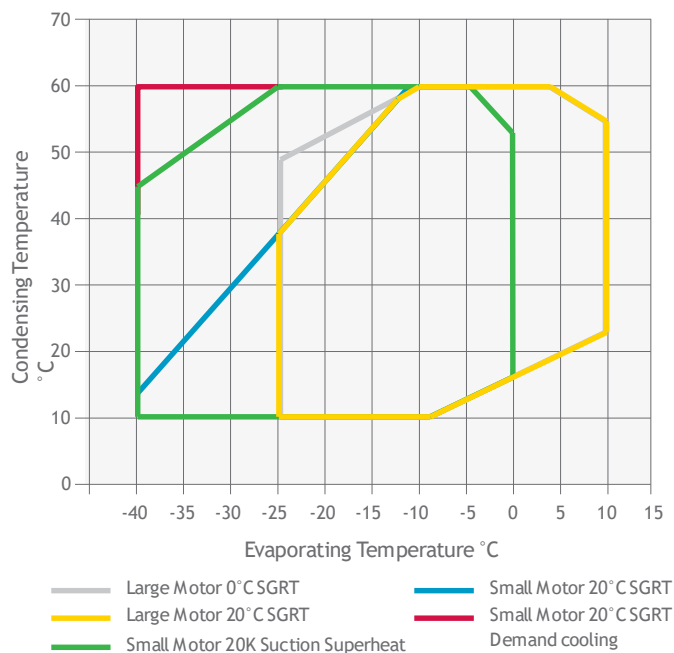
## Maximum Allowable Pressure (PS)

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

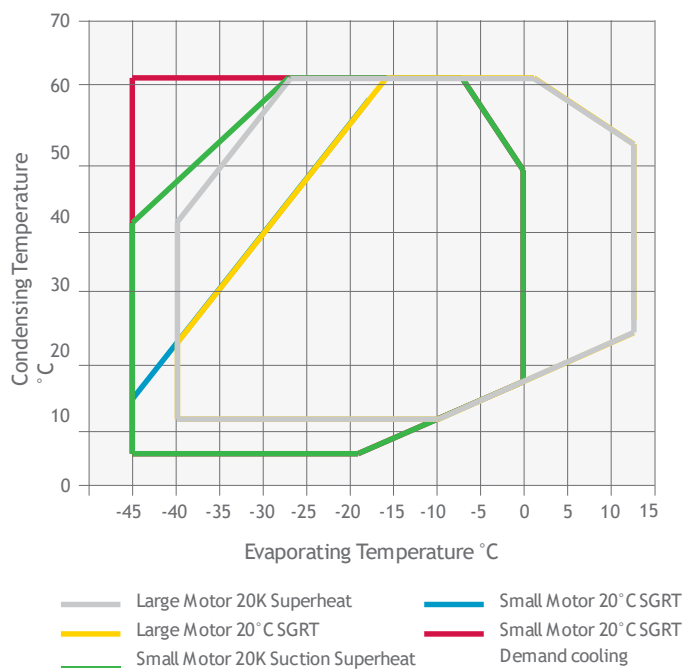
## Operating Envelope R407A



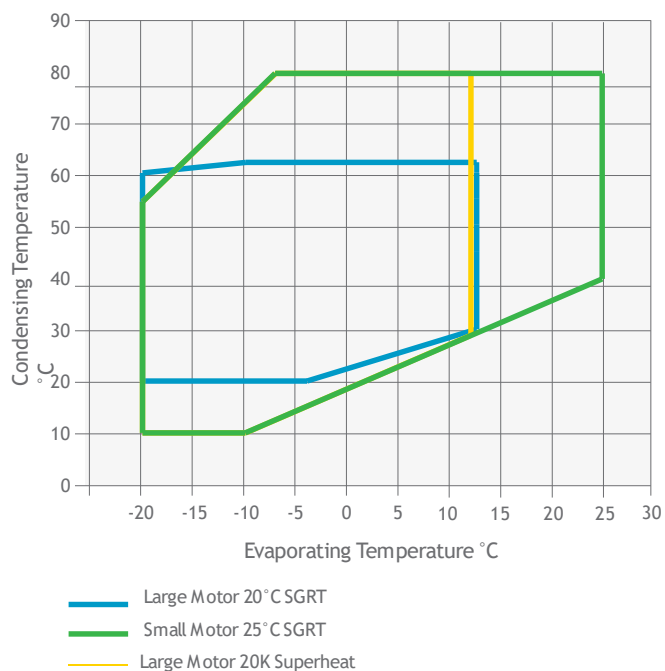
## Operating Envelope R407F



## Operating Envelope R448A/R449A



## Operating Envelope R134a



## Technical Overview

Models	Nominal hp	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 - dB(A)***
						3 Ph**	3 Ph**	3 Ph**	
2DC-50X	5.0	16.8	2.3	590/330/470	132	AWM	9	55	65
2DD-50X	5.0	19.3	2.3	590/330/470	132	AWM	10	55	65
2DL-40X	4.0	23.7	2.3	590/330/470	131	AWM	11	55	64
2DL-75X	7.5	23.7	2.3	590/330/470	136	AWM	13	70	66
2DB-50X	5.0	28.0	2.3	590/330/470	131	AWM	13	55	64
2DB-75X	7.5	28.0	2.3	590/330/470	136	AWM	16	70	66
3DA-50X	5.0	32.2	3.7	655/370/480	146	AWM	15	55	69
3DA-75X	7.5	32.2	3.7	680/370/480	152	AWM	17	106	69
3DC-75X	7.5	38.0	3.7	655/370/480	150	AWM	18	70	71
3DC-100X	10.0	38.0	3.7	680/370/480	164	AWM	20	121	70
3DS-100X	10.0	49.9	3.7	680/370/480	162	AWM	24	121	70
3DS-150X	15.0	49.9	3.7	710/370/490	166	AWM	29	125	70
8DH-500X	50.0	151.0	7.6	835/475/610	330	AWM	88	458	79
8DL-370X	37.0	151.0	7.6	835/475/610	323	AWM	74	349	76
8DJ-600X	60.0	181.0	7.6	835/475/610	331	AWM	108	476	79
8DT-450X	45.0	181.0	7.6	835/475/610	335	AWM	90	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	

Conditions: Suction Gas Return 20°C / Subcooling OK

\* 10K Border



# Capacity Data

R407F	Cooling Capacity (kW)							R407F	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		1.1*	1.9*	4.7	8.0	10.1	15.4	2DC-50X		1.4*	1.7*	2.4	3.1	3.3	3.6
2DD-50X		1.6*	2.6*	5.9	9.7	12.1	18.1	2DD-50X		1.7*	2.1*	2.9	3.6	3.8	4.1
2DL-40X		2.6*	3.9*	7.7	12.4	15.3		2DL-40X		2.4*	2.8*	3.7	4.5	4.9	
2DL-75X				7.6	12.5	15.6	23.4	2DL-75X				3.7	4.4	4.6	5.0
2DB-50X		3.9*	5.4*	9.8	15.3	18.8		2DB-50X		2.9*	3.4*	4.5	5.4	5.8	
2DB-75X				9.6	15.3	18.9	27.9	2DB-75X				4.6	5.6	6.0	6.3
3DA-50X		4.3*	6.1*	11.3	17.9	22.1		3DA-50X		3.4*	4.0*	5.2	6.4	6.8	
3DA-75X				11.4	18.4	22.8	33.8	3DA-75X				5.2	6.3	6.8	7.2
3DC-75X		5.4*	7.5*	13.8	21.6	26.6		3DC-75X		4.2*	4.8*	6.2	7.5	8.1	
3DC-100X				14.0	22.1	27.3	40.2	3DC-100X				6.1	7.4	7.9	8.5
3DS-100X		7.3*	10.2*	18.4	28.8	35.3		3DS-100X		5.5*	6.4*	8.3	10.0	10.8	
3DS-150X				18.8	29.7	36.4	53.2	3DS-150X				8.2	10.1	10.8	11.8
8DL-370X		20.8*	28.9*	53.6	85.3	105.5		8DL-370X		17.4*	19.8*	25.2	30.5	33.0	
8DH-500X				53.0	84.6	105.0	156.5	8DH-500X				25.8	30.5	32.2	34.9
8DJ-600X				63.7	101.0	125.0	187.5	8DJ-600X				30.6	36.9	39.8	43.9
8DT-450X		26.8*	35.9*	64.1	100.5	123.5		8DT-450X		21.8*	24.7*	31.2	37.7	40.7	

Conditions: Suction Gas Return 20°C / Subcooling 0K

\* 10K Border

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	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		1.4*	2.4*	5.1	8.4	10.6	15.9	2DC-50X		1.4*	1.7*	2.4	3.0	3.3	3.5
2DD-50X		1.7*	2.7*	5.8	9.7	12.2	18.3	2DD-50X		1.7*	2.0*	2.7	3.4	3.7	4.1
2DL-40X	1.0*	2.7*	3.9*	7.5	12.2	15.2		2DL-40X	1.5*	2.3*	2.7*	3.5	4.4	4.9	
2DL-75X		2.5*	3.7*	7.3	12.1	15.2	23.2	2DL-75X		2.3*	2.7*	3.5	4.3	4.6	5.1
2DB-50X	1.5*	3.6*	5.0*	9.2	14.7	18.2		2DB-50X	2.0*	2.8*	3.3*	4.4	5.4	5.8	
2DB-75X		3.8*	5.2*	9.4	15.0	18.5	27.6	2DB-75X		3.0*	3.5*	4.4	5.3	5.7	6.2
3DA-50X	1.9*	4.1*	5.6*	10.2	16.1	19.8		3DA-50X	2.3*	3.3*	3.9*	5.0	6.2	6.6	
3DA-75X		3.9*	5.8*	11.0	17.6	21.8	32.3	3DA-75X		3.3*	4.0*	5.2	6.1	6.5	6.8
3DC-75X	2.7*	5.1*	6.9*	12.4	19.4	23.8		3DC-75X	2.9*	4.0*	4.6*	6.0	7.3	7.8	
3DC-100X		4.4*	6.9*	13.3	21.1	25.9	37.7	3DC-100X		3.6*	4.4*	6.0	7.2	7.6	8.1
3DC-75X DC	2.6	5.4	7.3	12.4	19.5	23.9		3DC-75X DC	2.9	4.0	4.6	6.0	7.3	7.8	
3DS-100X	3.8*	7.1*	9.5*	16.9	26.5	32.5		3DS-100X	4.0*	5.4*	6.2*	8.1	9.8	10.6	
3DS-150X		7.5*	10.2*	17.8	27.6	33.7	49.1	3DS-150X		5.6*	6.4*	8.2	9.8	10.5	11.5
8DH-500X		18.7*	27.4*	51.0	80.6	99.2	145.0	8DH-500X		15.9*	18.8*	24.4	29.3	31.3	34.0
8DL-370X	7.4*	18.4*	26.2*	49.3	79.0	97.6		8DL-370X	11.5*	16.6*	19.3*	24.6	29.3	31.4	
8DJ-600X		24.2*	34.0*	61.7	96.9	119.0	174.5	8DJ-600X		19.3*	22.5*	29.2	35.6	38.4	42.9
8DT-450X	12.2*	25.4*	34.7*	62.0	97.7	120.0		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	

Conditions: Suction Gas Return 20 °C / Subcooling OK  
 \*High Discharge Temperature - 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

Conditions: Suction Gas Return 20 °C / Subcooling OK  
 \* 10K Border





# 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.

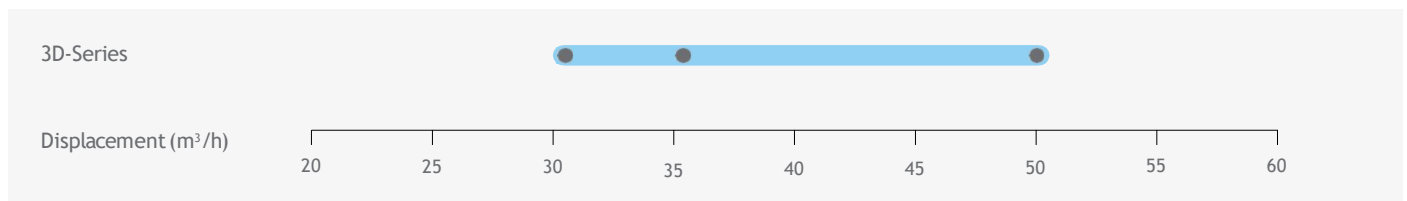
Digital technology is based on controlling a high-cycle solenoid valve fitted on one of the cylinder heads based on cycle time. The valve actuates a piston that controls the flow of gas into the suction area of the Discus valve plate.

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



Discus digital 3 cylinder compressor

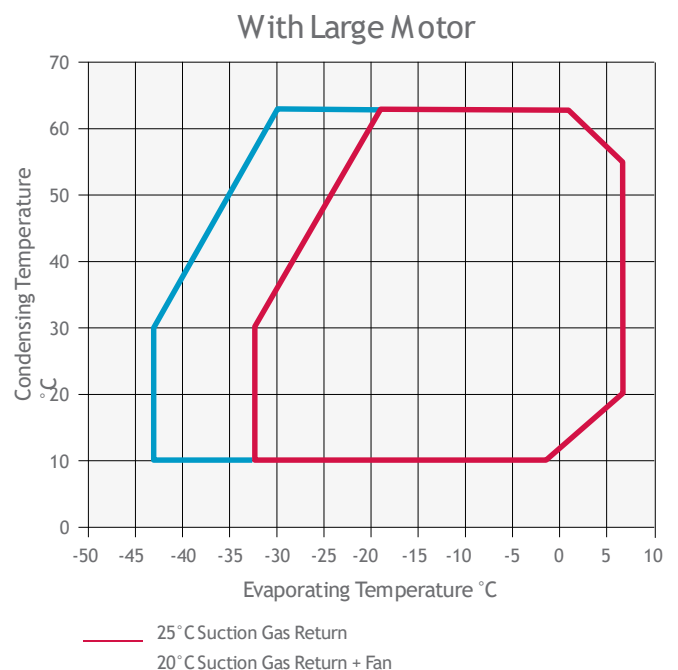
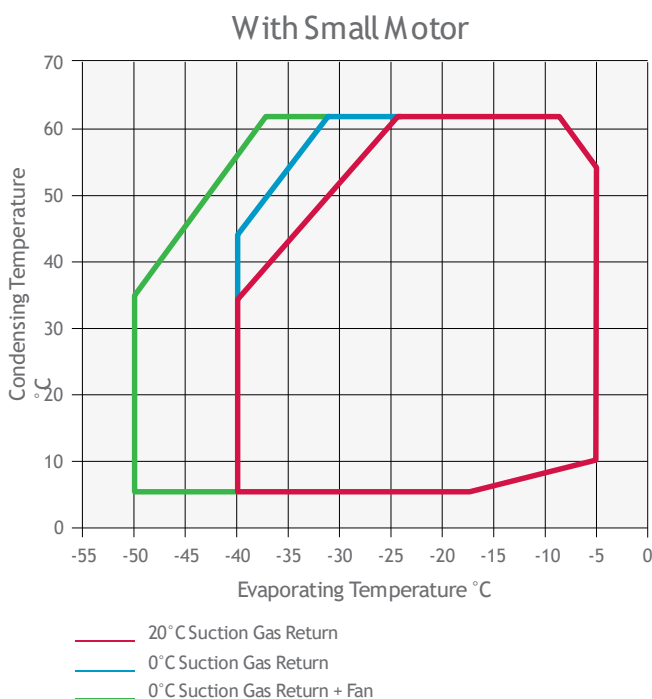
## Discus Digital Compressor Line-up



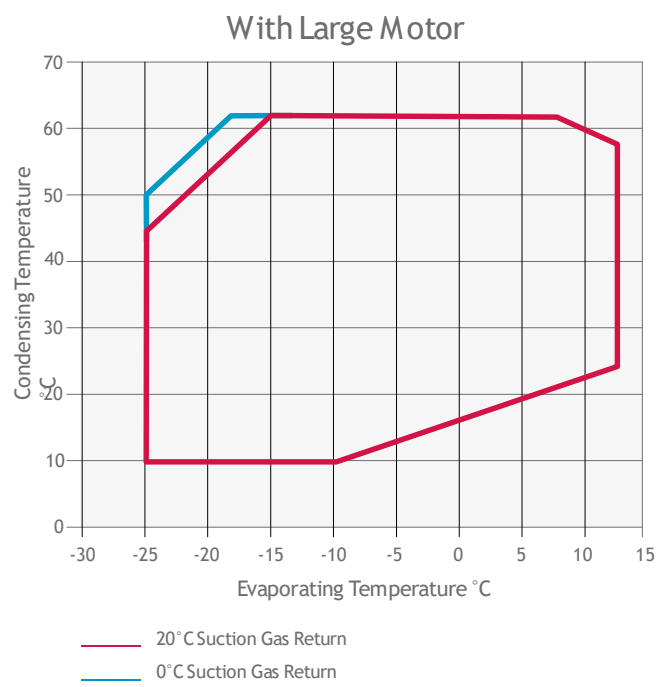
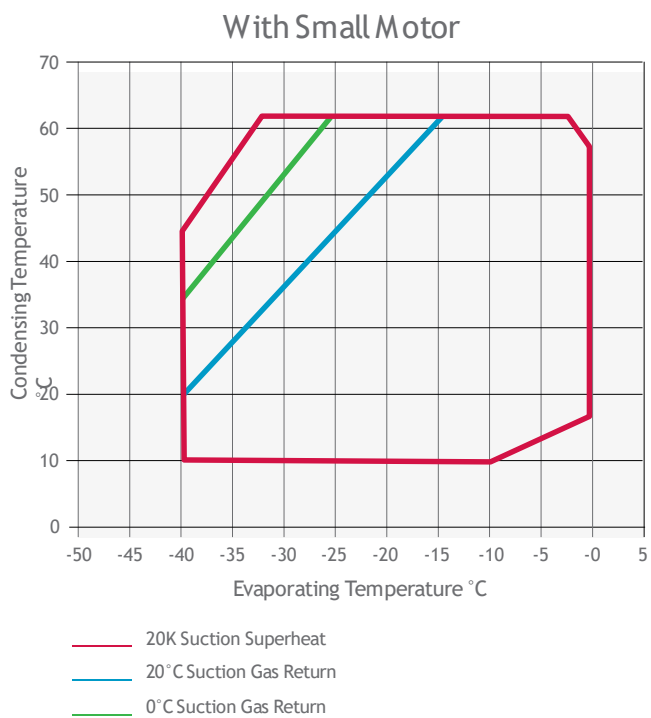
## Features and Benefits

- 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

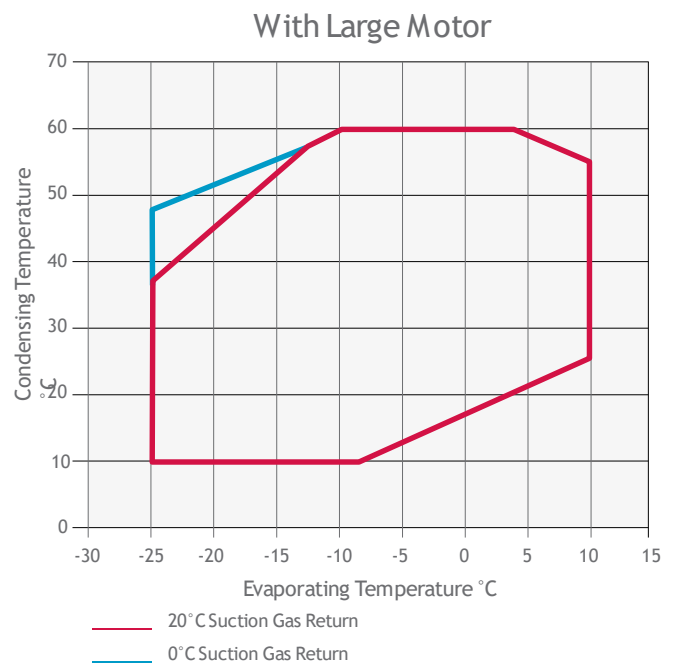
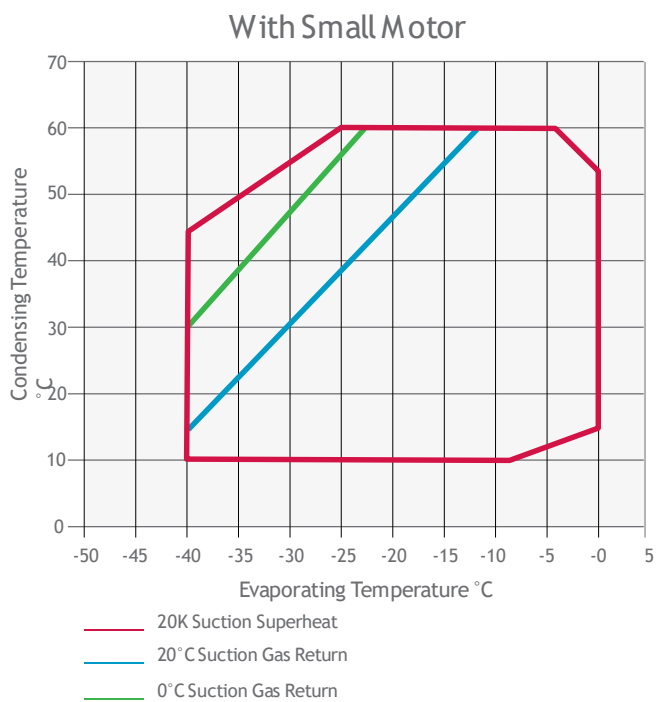
## Operating Envelope R404A



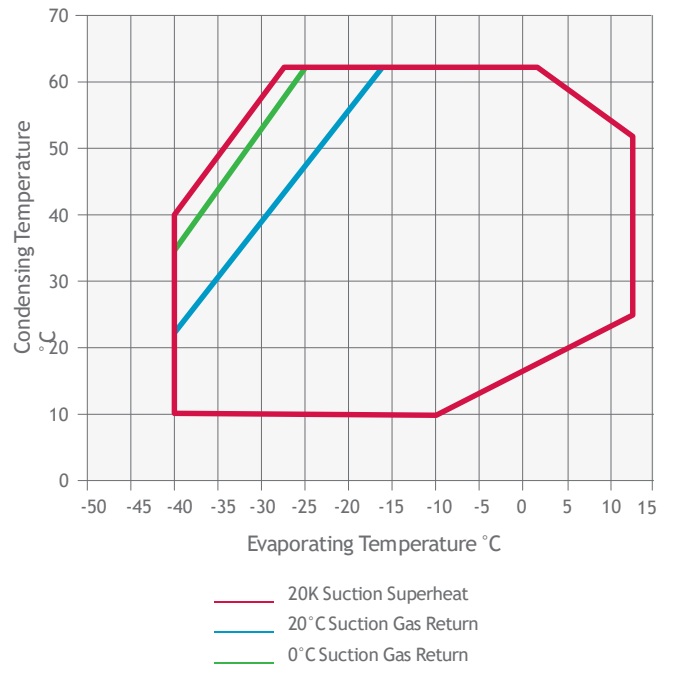
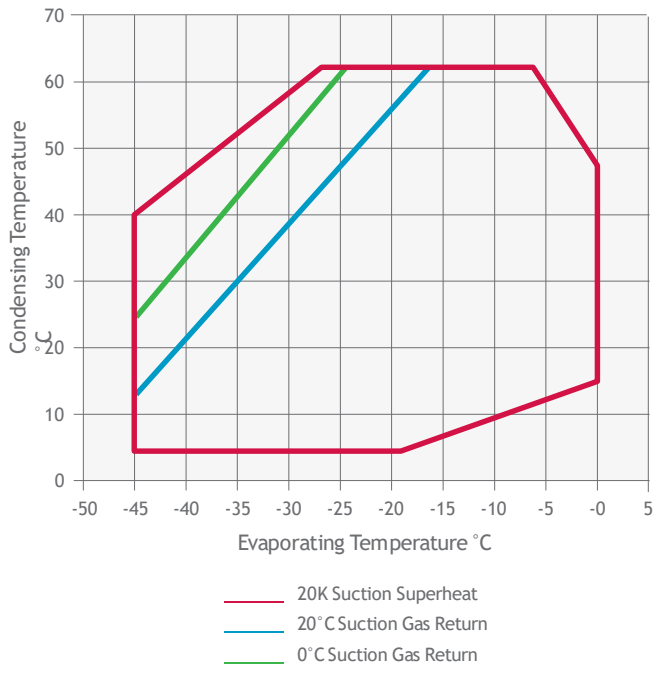
## Operating Envelope R407A



## Operating Envelope R407F



# Operating Envelope R448A/R449A





## Technical Overview

Models	Nominal hp	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 - dB(A)**
						3 Ph**	3 Ph**	3 Ph**	
3DAD-50X	5.0	32.2	3.7	655/370/480	146	AWM	15.7	55.0	65
3DAD-75X	7.5	32.2	3.7	680/370/480	152	AWM	18.6	106.0	67
3DCD-75X	7.5	38.0	3.7	655/370/480	150	AWM	18.5	70.0	67
3DCD-100X	10.0	38.0	3.7	680/370/480	164	AWM	21.6	121.0	68
3DSD-100X	10.0	49.9	3.7	680/370/480	162	AWM	24.4	121.0	69
3DSD-150X	15.0	49.9	3.7	710/370/490	166	AWM	29.7	129.0	69

\*\* 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	-30	-20	-10	-5	5	10	15	Model	-30	-20	-10	-5	5	10	15
3DAD-50X	5.3*	10.3	16.2	19.9				3DAD-50X	3.8*	5.0	6.1	6.5			
3DAD-75X		10.2	16.4	20.4	30.4	36.5		3DAD-75X		5.0	6.0	6.4	6.9	6.9	
3DCD-100X		12.4	20.0	24.7	36.6	43.9		3DCD-100X		5.8	7.1	7.6	8.3	8.3	
3DCD-75X	6.4*	12.3	19.4	23.8				3DCD-75X	4.6*	6.0	7.2	7.8			
3DSD-100X	8.9*	16.7	25.9	31.6				3DSD-100X	6.1*	7.9	9.6	10.3			
3DSD-150X		16.5	26.2	32.2	47.6	57.0		3DSD-150X		7.8	9.6	10.3	11.2	11.3	

Conditions: Suction Gas Return 20°C / Subcooling OK, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling OK

Condensing Temperature 40°C															
R407F	Cooling Capacity (kW)							R407F	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
3DAD-50X	6.0*	11.2	17.8	21.9				3DAD-50X	4.0*	5.2	6.4	6.8			
3DAD-75X		11.3	18.2	22.6	33.6	40.4		3DAD-75X		5.2	6.3	6.8	7.2	7.2	
3DCD-75X	7.4*	13.7	21.5	26.4				3DCD-75X	4.8*	6.2	7.5	8.1			
3DCD-100X		13.9	21.9	27.0	39.8	47.8		3DCD-100X		6.0	7.3	7.9	8.6	8.6	
3DSD-100X	10.0*	18.2	28.5	35.0				3DSD-100X	6.3*	8.3	10.1	10.8			
3DSD-150X		18.4	29.2	36.0	53.0	63.4		3DSD-150X		8.2	10.1	10.9	11.9	12.0	

Conditions: Suction Gas Return 20°C / Subcooling OK, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling OK

# Capacity Data

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	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
3DAD-50X	5.6*	10.2	16.1	19.8				3DAD-50X	3.9*	5.0	6.2	6.6			
3DAD-75X	6.7*	11.9	18.3	22.2	31.8	37.6		3DAD-75X	4.4*	5.7	6.8	7.2	7.5	7.4	
3DCD-75X	6.9*	12.4	19.4	23.8				3DCD-75X	4.6*	6.0	7.3	7.8			
3DCD-100X	7.3*	13.4	21.1	26.0	38.0	45.4		3DCD-100X	4.7*	6.1	7.2	7.6	8.0	7.9	
3DSD-150X	10.2*	17.8	27.6	33.7	49.1	58.4		3DSD-150X	6.4*	8.2	9.8	10.5	11.5	11.8	
3DSD-100X	9.5*	16.9	26.5	32.5				3DSD-100X	6.2*	8.1	9.8	10.6			

Conditions: Suction Gas Return 20°C / Subcooling 0K, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary Data

Condensing Temperature 40°C															
R404A	Cooling Capacity (kW)							R404A	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
3DAD-75X	7.1	11.9	18.3	22.2	31.8			3DAD-75X	4.4	5.7	6.8	7.2	7.5		
3DAD-50X	7.3	11.8	17.8	21.5				3DAD-50X	4.6	5.9	6.9	7.3			
3DCD-75X	8.8	14.1	21.2	25.6				3DCD-75X	5.5	7.0	8.2	8.6			
3DCD-100X	8.6	14.3	21.8	26.5	37.9			3DCD-100X	5.3	6.8	8.0	8.4	8.9		
3DSD-150X	12.1	19.1	28.6	34.6	49.3			3DSD-150X	7.3	9.2	11.0	11.6	12.3		
3DSD-100X	11.9	18.9	28.3	34.1				3DSD-100X	7.4	9.3	10.9	11.6			

Conditions: Suction Gas Return 20°C / Subcooling 0K, 100% Loaded

High Discharge Temperature - Additional Cooling Required

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
3DAD-50X		6.3	10.4	13.0	19.8	24.1		3DAD-50X		3.0	3.8	4.1	4.5	4.6	
3DAD-75X		5.5*	9.8*	12.6*	20.0	24.5	29.6	3DAD-75X		3.1*	3.8*	4.1*	4.5	4.5	4.5
3DCD-75X		7.5	12.4	15.6	23.5	28.5		3DCD-75X		3.6	4.5	4.9	5.4	5.5	
3DCD-100X		6.8*	11.9*	15.2*	23.8	29.0	34.9	3DCD-100X		3.7*	4.5*	4.8*	5.2	5.3	5.3
3DSD-100X		10.2	16.6	20.6	31.0	37.5		3DSD-100X		4.8	6.0	6.4	7.1	7.3	
3DSD-150X		9.1*	15.7*	19.9*	31.0	37.5	44.9	3DSD-150X		4.8*	6.0*	6.6*	7.3	7.4	7.3

Conditions: Suction Gas Return 20°C / Subcooling 0K, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling 0K





# Copeland™ Compressor Electronics for Copeland Stream Semi-hermetic Compressors

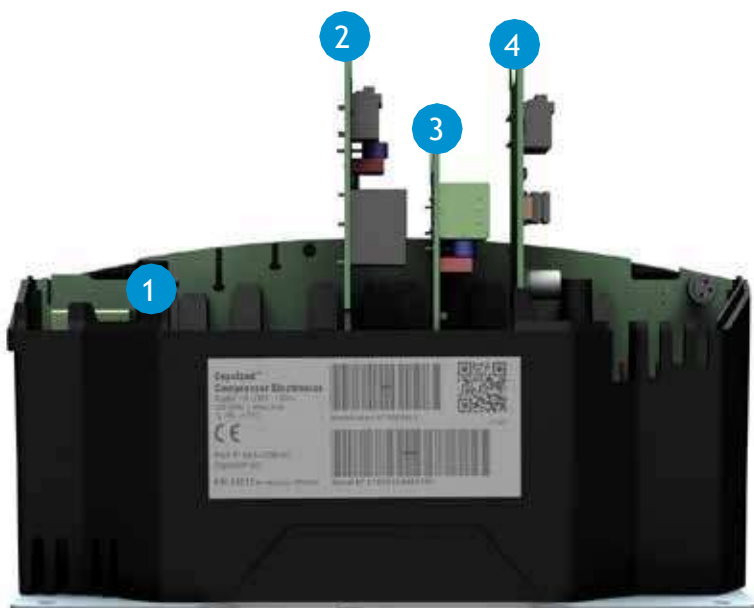
Copeland compressor electronics monitor and interpret data inside the compressor in order to enhance the reliability and operational performance of HVACR systems. Built upon the success of CoreSense Diagnostics introduced a few years ago, Emerson is now introducing the next generation electronics module for Stream compressors featuring a modular design using state-of-the-art electronics. This modular design with plug-in modules gives the customers the flexibility to choose the advanced features as per their system requirements. These features include advanced protection and diagnostics, Bluetooth and Modbus communication for remote monitoring, liquid injection control, dynamic envelope monitoring, digital and capacity control etc.

The benefits of Copeland compressor electronics go beyond compressor protection by assisting in system diagnosis and optimization. Providing service engineers with detailed information at the right time, system-related problems can be diagnosed faster or even before they occur. Optional plug-in modules with advanced control features and factory mounted sensors reduce the system complexity and applied costs for system manufacturers. Supermarket operators benefit from increased system uptime, reduction in food loss and reduced maintenance costs.

## Technical Specification

- Power supply 115/230VAC
- Communication protocol (Modbus® RTU and Bluetooth®)
- Bus to system controller: RS 485
- Discharge temperature sensor
- Current sensor
- Flash memory
- Alarm reset button

## Functions of modules



Copeland compressor electronic module

## Benefits

- Modularity for customer flexibility
- Optional plug-in modules with different functionalities
- Advanced protection for reliable system operation
- Diagnostics for quicker troubleshooting
- Power monitoring for operational costs monitoring
- Communication options - Bluetooth and Modbus for remote monitoring
- Compressor control for reduced system applied costs

- 1 Base board
- 2 Head fan and liquid injection control
- 3 Digital modulation control and unloaded start
- 4 Modbus®



## Scope of Supply



- 1 Optional Plug-in Modules
- 2 Discharge Temperature Sensor
- 3 Current Sensor
- 4 Oil Pressure Switch
- 5 Communication Port



# Copeland™ Stream with Compressor Electronics, Semi-Hermetic Reciprocating Compressors for HFC / HFO Blends

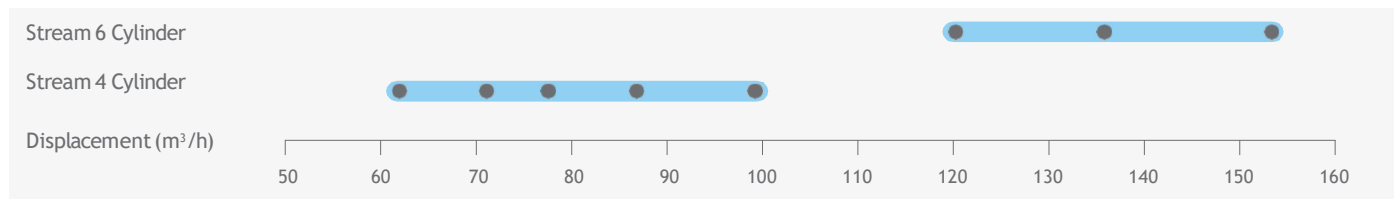
Stream series 4 and 6 cylinder compressors provide best-in-class performance, thereby significantly reducing the cost of operation and environmental impact compared to competing products. They are equipped with Copeland compressor electronics technology, featuring a modular design using state-of-the-art electronics (p.98). With advanced protection and diagnostics features for system reliability, reduced service costs and increased equipment uptime, Stream series is built to last in today's modern changing world.

Copeland Stream compressors are now qualified for low GWP refrigerants classified A2L, such as R454A, R454C and R455A.



Copeland Stream compressor

## Stream Compressor Line-Up



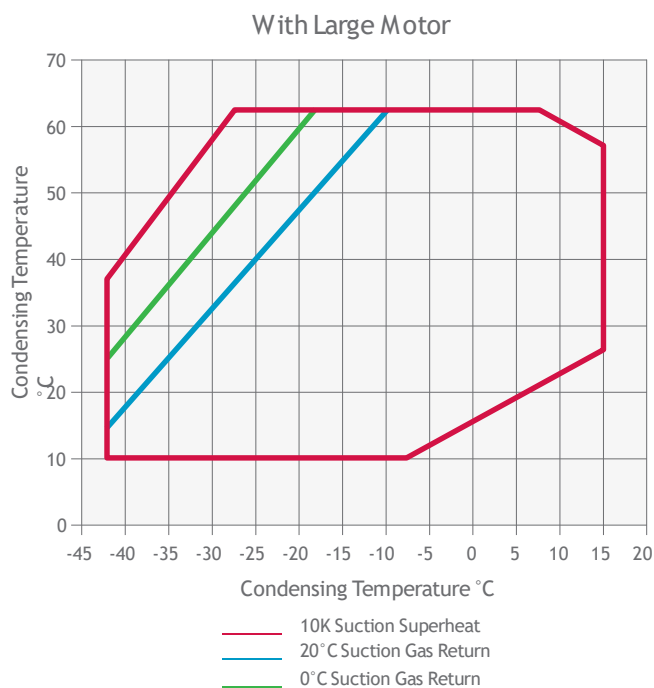
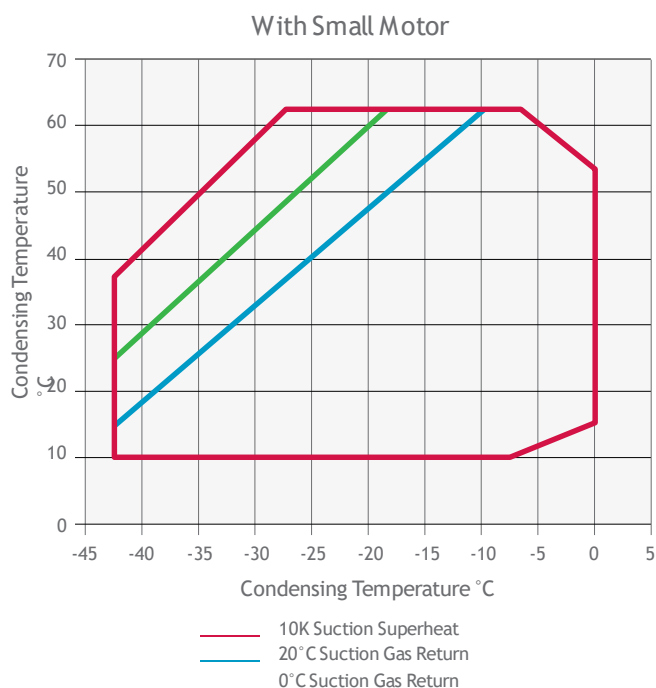
## Features and Benefits

- Range of 16 models from 62 to 153m<sup>3</sup>/h
- Best-in-class seasonal efficiencies, up to 15% higher than market standard
- Multi-refrigerant compressor as it is compatible with R407A/F/C, R448A / R449A, R404A, R134a, R450A, R513A, R454A, R454C and R455A.
- Stepless capacity modulation by means of inverter or digital modulation
- Wide operating envelope covering low- and medium-temperature refrigeration without cooling fan
- Reduced sound level, dimensions and weight by up to 45 kg
- Option to use compressors 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

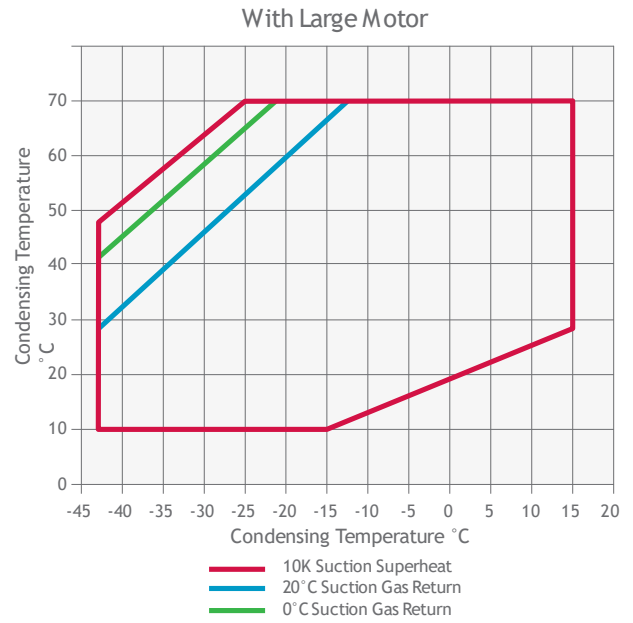
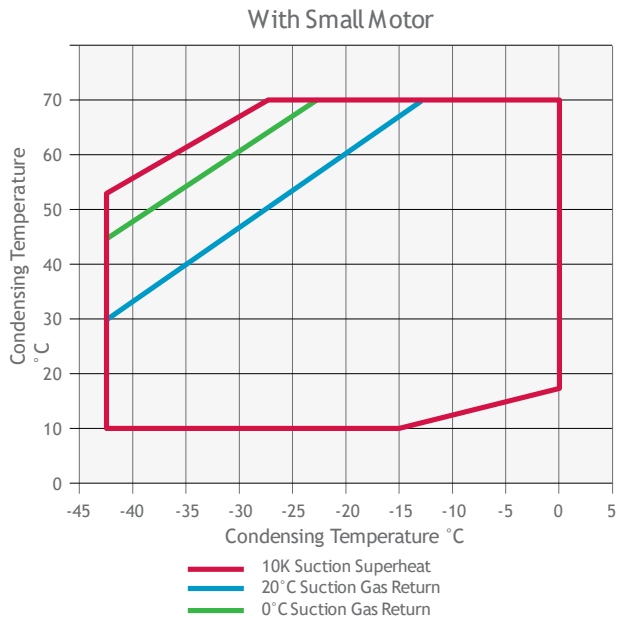
## Copeland Compressor Electronics Technology Features

- Motor and oil protection
- Storage of compressor asset and advanced runtime information
- Runtime/ alarm signalling using multi-colour LED flash-codes
- Communication to system controller via Bluetooth or Modbus®
- Individual compressor power monitoring

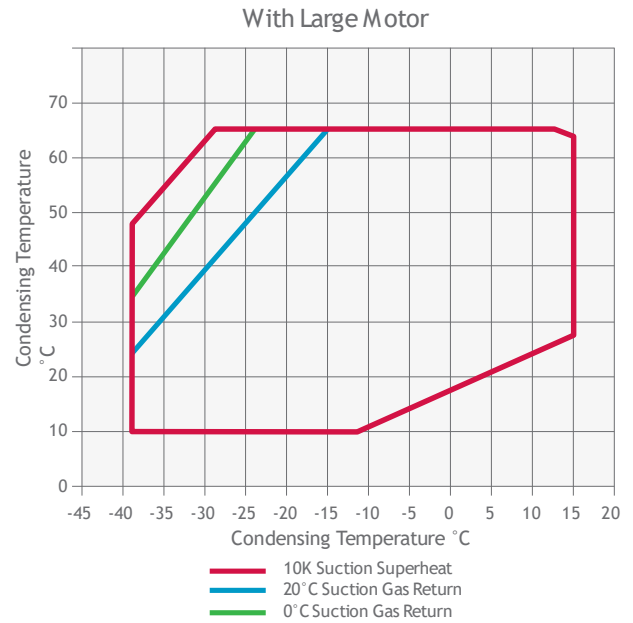
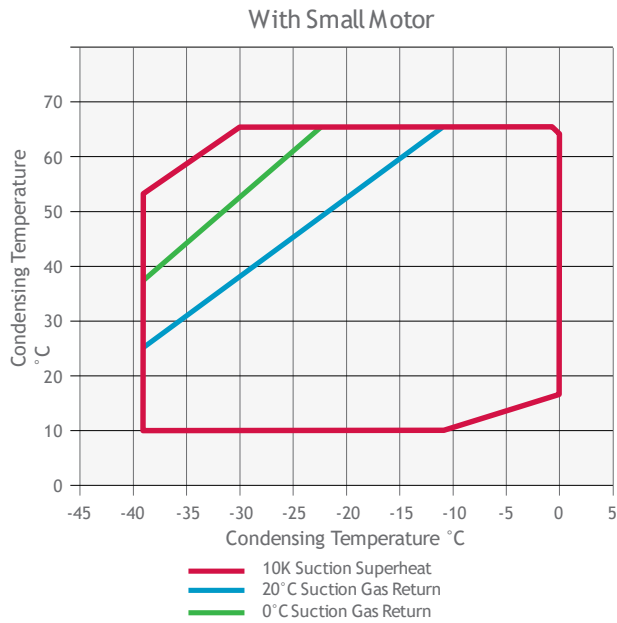
## Operating Envelope R454A



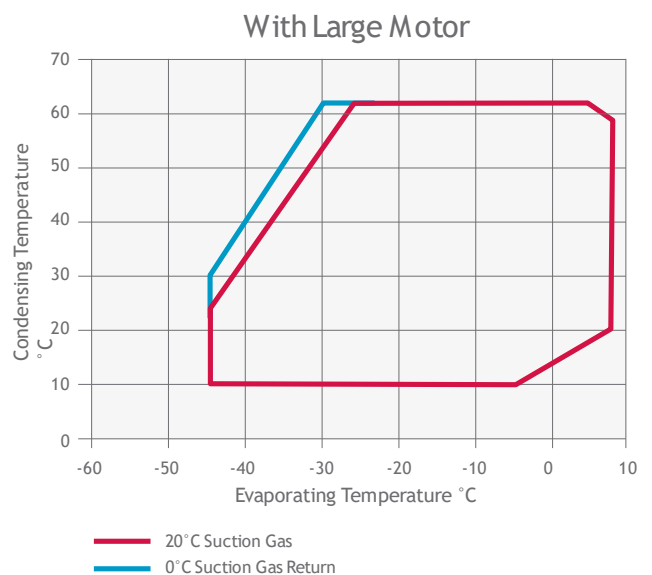
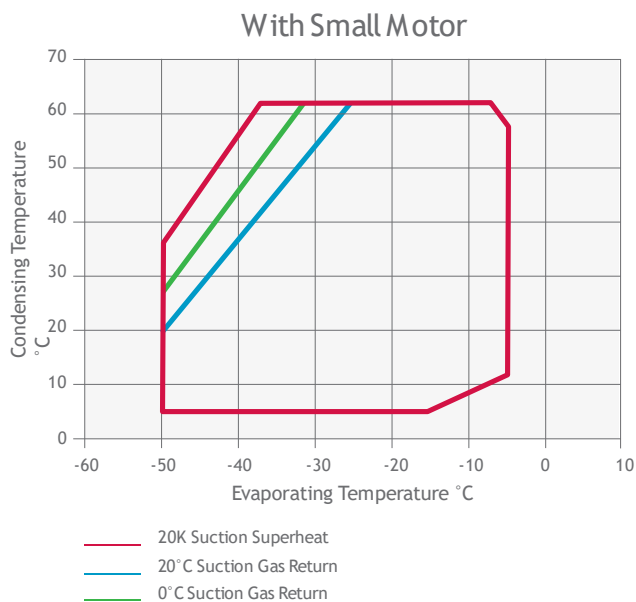
## Operating Envelope R454C



## Operating Envelope R455A

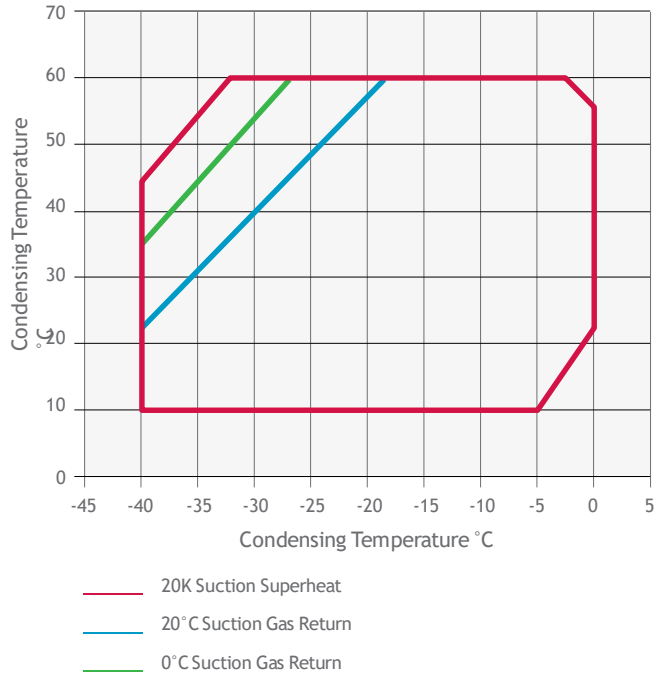


## Operating Envelope R404A

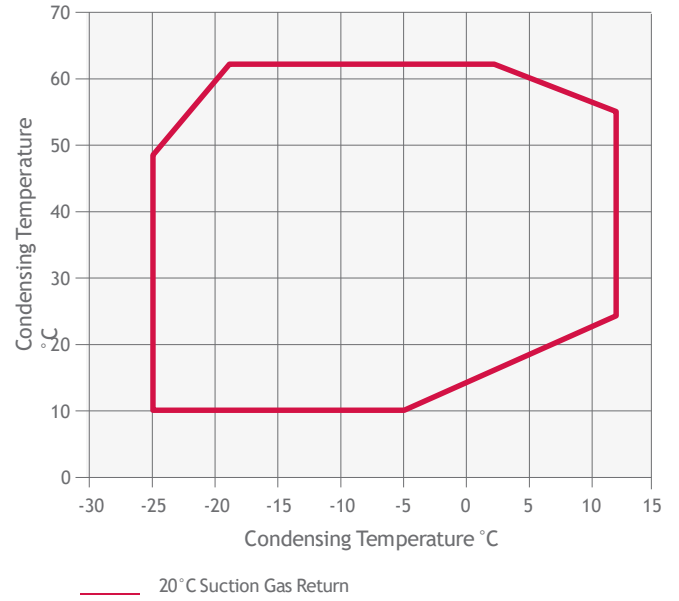


## Operating Envelope R407A

With Small Motor

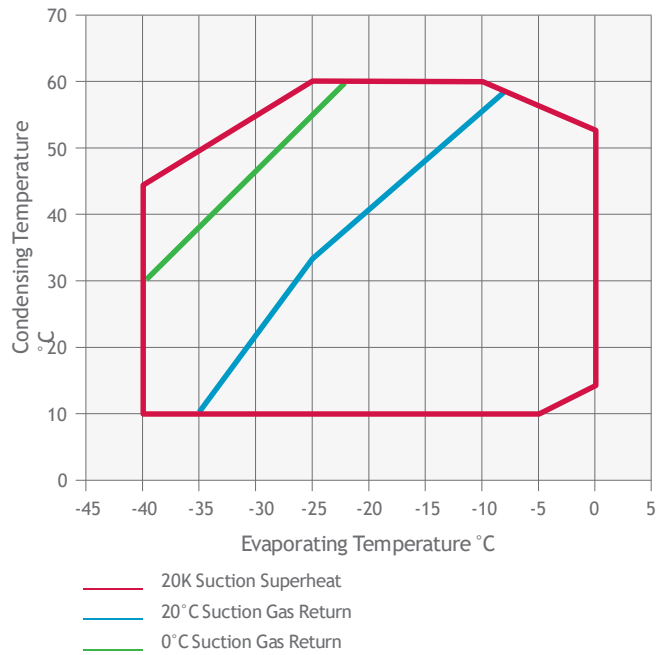


With Large Motor

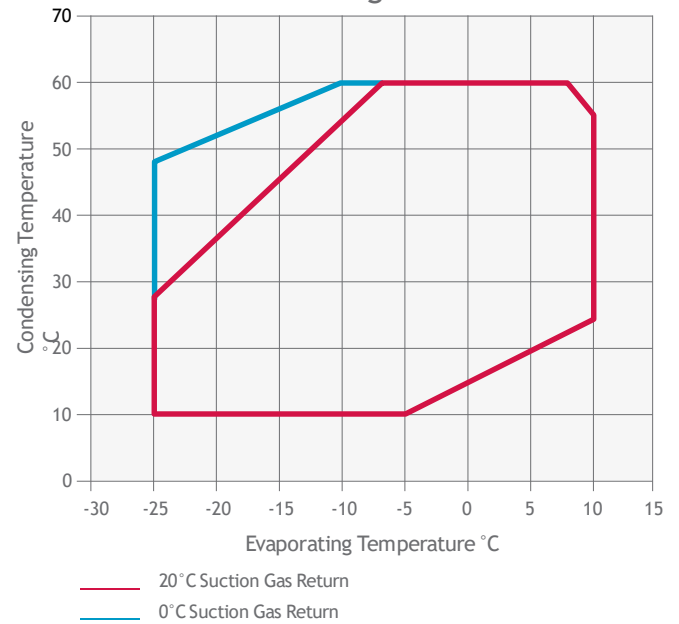


## Operating Envelope R407F

With Small Motor

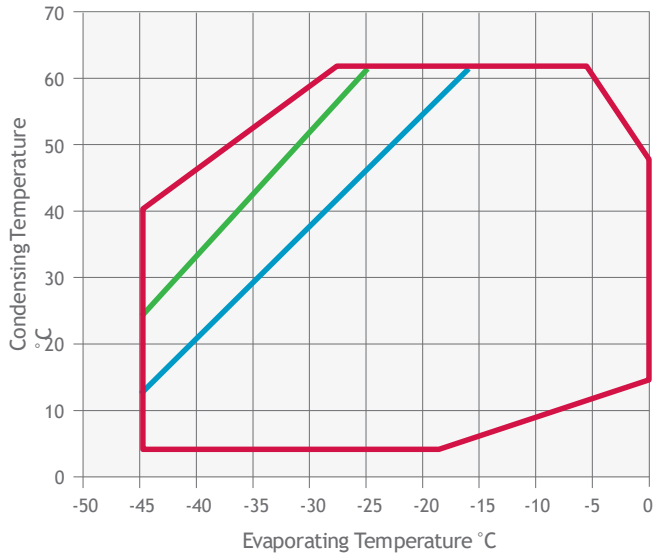


With Large Motor



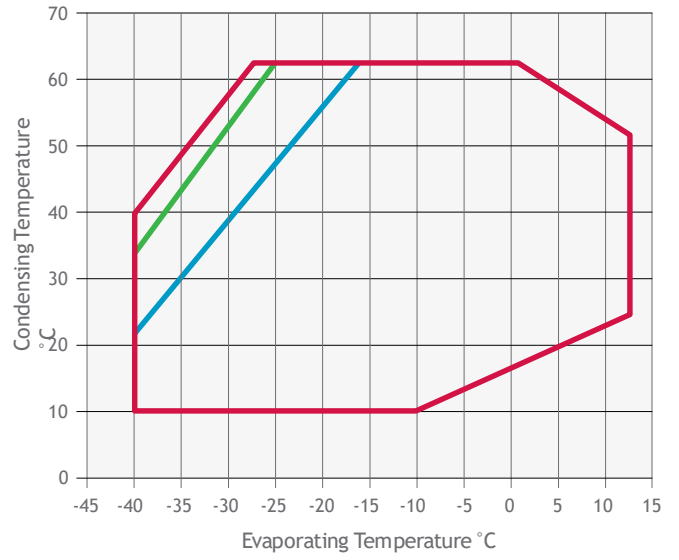
## Operating Envelope R448A/R449A

With Small Motor



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

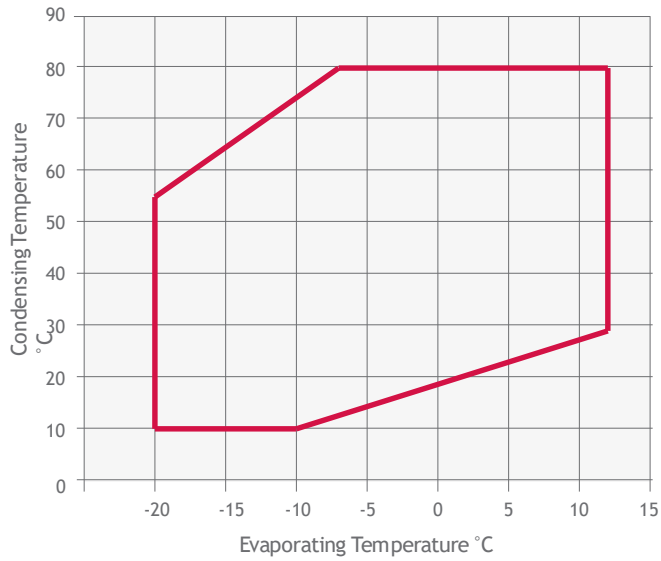
With Large Motor



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

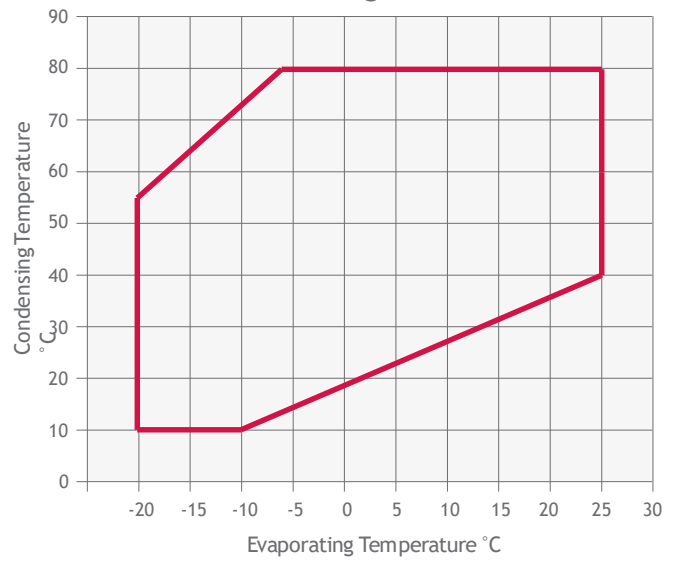
## Operating Envelope R134a

With Small Motor



- 20°C Suction Gas Return

With Large Motor



- 20K Suction Superheat

For individual model details please refer to select software.

## Technical Overview

Models	Nominal hp	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 - dB(A) ***
						3 Ph**	3 Ph**	3 Ph**	
4MF-13X	13	61.7	3.3	638/501/452	177	AWM	30.8	105	70
4MA-22X	22	61.7	3.3	638/501/452	177	AWM	36.3	175	75
4ML-15X	15	71.4	3.3	638/501/452	180	AWM	35.4	156	71
4MH-25X	25	71.4	3.3	657/501/452	187	AWM	41.6	199	75
4MM-20X	17	78.2	3.3	657/501/452	182	AWM	39.0	175	71
4MI-30X	27	78.2	3.3	657/501/452	188	AWM	46.6	221	75
4MT-22X	22	87.7	3.3	657/501/452	183	AWM	44.5	175	73
4MJ-33X	33	87.7	3.3	657/501/452	190	AWM	52.9	221	74
4MU-25X	25	99.4	3.3	657/501/452	186	AWM	51.9	199	72
4MK-35X	32	99.4	3.3	688/501/452	202	AWM	61.1	255	74
6MM-30X	27	120.5	3.3	695/547/450	215	AWM	59.7	255	78
6MI-40X	35	120.5	3.3	695/547/450	219	AWM	71.4	304	78
6MT-35X	32	135.0	3.3	725/547/450	221	AWM	67.3	255	77
6MJ-45X	40	135.0	3.3	725/547/450	223	AWM	81.5	304	79
6MU-40X	40	153.0	3.3	757/547/450	225	AWM	75.8	306	78
6MK-50X	50	153.0	3.3	773/547/450	230	AWM	92.9	393	80

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

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



# Capacity Data

Condensing Temperature: 40 °C															
R454A	Cooling Capacity (kW)							R454A	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
4MF-13X		8.8*	12.2*	21.8	33.4	40.5		4MF-13X		7.0*	8.2*	8.2	12.6	13.5	
4MA-22X		9.1*	12.6*	22.4	34.8	42.7	62.3	4MA-22X		7.1*	8.2*	8.2	12.4	13.3	14.3
4ML-15X		11.1*	15.0*	26.2	40.2	49.0		4ML-15X		8.5*	9.9*	9.9	14.9	15.9	
4MH-25X		10.8*	14.7*	26.2	40.6	49.7	72.0	4MH-25X		8.1*	9.5*	9.5	14.5	15.4	16.6
4MM-20X		12.5*	16.7*	28.9	44.4	54.3		4MM-20X		9.5*	11.0*	11.0	16.5	17.7	
4MI-30X		12.0*	16.5*	29.1	44.7	54.4	78.2	4MI-30X		9.2*	10.8*	10.8	16.2	17.3	18.8
4MT-22X		13.8*	18.4*	31.8	48.5	59.0		4MT-22X		10.9*	12.6*	12.6	18.9	20.2	
4MJ-33X		13.5*	18.8*	33.1	50.5	61.4	88.1	4MJ-33X		10.3*	12.1*	12.1	18.3	19.5	21.3
4MU-25X		15.6*	20.9*	36.3	55.5	67.6		4MU-25X		12.0*	13.9*	13.9	21.3	23.0	
4MK-35X		15.7*	21.2*	36.9	56.4	68.7	99.4	4MK-35X		12.0*	13.9*	13.9	21.1	22.6	24.9
6MM-30X		18.9*	25.4*	44.4	67.7	82.1		6MM-30X		14.5*	16.8*	16.8	25.5	27.3	
6MI-40X		18.3*	25.0*	44.2	68.0	83.0	120.5	6MI-40X		14.2*	16.6*	16.6	25.1	26.8	29.2
6MT-35X		22.0*	28.4*	49.6	76.0	92.5	133.5	6MT-35X		16.6*	18.6*	18.6	28.3	30.2	33.0
6MJ-45X		21.1*	29.1*	49.7	75.4	91.5		6MJ-45X		16.0*	19.1*	19.1	28.9	30.9	
6MU-40X		23.3*	31.3*	54.9	83.4	101.0		6MU-40X		18.0*	20.9*	20.9	32.4	34.8	
6MK-50X		23.3*	31.3*	54.7	83.8	102.0	148.0	6MK-50X		18.5*	21.2*	21.2	31.8	34.0	37.3

Conditions: Suction Gas Return 20 °C / Subcooling 0K, 100% loaded

\*Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary data

Condensing Temperature: 40 °C															
R454C	Cooling Capacity (kW)							R454C	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
4MF-13X		7.3*	11.3	18.9	29.4	36.0		4MF-13X		5.7*	6.7	8.6	10.3	11.1	
4MA-22X		6.9*	11.2	19.3	30.4	37.4	54.3	4MA-22X		5.7*	6.8	8.7	10.4	11.0	11.8
4ML-15X		8.5*	13.2	21.8	33.9	41.4	-	4ML-15X		6.9*	8.0	10.2	12.2	13.1	-
4MH-25X		8.3*	12.9	21.6	34.0	41.8	61.2	4MH-25X		6.6*	7.7	10.0	12.0	12.8	13.9
4MM-20X		9.7*	14.7	24.1	37.3	45.6	-	4MM-20X		7.7*	8.9	11.3	13.6	14.5	-
4MI-30X		9.1*	14.4	24.1	37.6	46.1	66.8	4MI-30X		7.5*	8.8	11.3	13.4	14.3	15.6
4MT-22X		10.4*	15.9	26.0	40.2	49.0	-	4MT-22X		8.7*	10.2	13.0	15.6	16.7	-
4MJ-33X		10.2*	16.2	27.5	42.7	52.1	75.0	4MJ-33X		8.4*	9.9	12.8	15.2	16.2	17.7
4MU-25X		11.9*	18.3	30.3	46.9	57.2	-	4MU-25X		9.8*	11.4	14.6	17.7	19.1	-
4MK-35X		11.9*	18.6	30.8	47.6	58.1	84.2	4MK-35X		9.7*	11.4	14.6	17.3	18.5	20.5
6MM-30X		14.5*	22.2	36.8	57.1	69.7	-	6MM-30X		11.7*	13.6	17.4	20.9	22.5	-
6MI-40X		14.2*	22.0	36.7	57.2	70.0	102.0	6MI-40X		11.7*	13.6	17.4	20.8	22.2	24.3
6MT-35X		17.1*	25.5	41.5	63.7	77.6	-	6MT-35X		13.5*	15.5	19.8	23.7	25.4	-
6MJ-45X		16.2*	24.7	40.8	63.4	77.6	113.0	6MJ-45X		13.0*	15.1	19.4	23.3	24.9	27.2
6MU-40X		17.6*	27.1	44.7	69.4	84.7	-	6MU-40X		14.6*	17.0	21.9	26.7	28.7	-
6MK-50X		17.5*	27.2	45.0	70.1	85.8	124.5	6MK-50X		15.1*	17.3	22.0	26.3	28.2	31.1

Conditions: Suction Gas Return 20 °C / Subcooling 0K, 100% loaded

\*Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary data

# Capacity Data

Condensing Temperature: 40 °C															
R455A	Cooling Capacity (kW)							R455A	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
4MF-13X		7.4	10.4*	19.4	30.1	36.7		4MF-13X		7.4	7.1*	9.2	11.1	11.9	
4MA-22X		7.1	11.7	20.1	31.7	38.9	56.5	4MA-22X		7.1	7.2	9.4	11.2	11.9	12.8
4ML-15X		9.5	13.0*	23.6	36.7	44.9		4ML-15X		9.5	8.6*	11.0	13.1	14.1	
4MH-25X		9.2	14.1	23.6	37.1	45.6	66.6	4MH-25X		9.2	8.2	10.7	12.8	13.7	14.9
4MM-20X		10.7	14.6*	26.1	40.4	49.5		4MM-20X		10.7	9.5*	12.1	14.6	15.6	
4MI-30X		10.3	16.0	26.8	41.4	50.5	72.7	4MI-30X		10.3	9.4	12.1	14.4	15.3	16.8
4MT-22X		11.5	15.6*	28.2	43.6	53.2		4MT-22X		11.5	10.9*	13.9	16.7	17.9	
4MJ-33X		11.3	17.7	29.8	46.4	56.6	81.4	4MJ-33X		11.3	10.6	13.6	16.2	17.3	19.0
4MU-25X		13.4	18.5*	33.3	51.3	62.6		4MU-25X		13.4	12.2*	15.6	19.0	20.5	
4MK-35X		13.1	20.1	33.5	51.9	63.3	91.5	4MK-35X		13.1	12.1	15.5	18.5	19.8	22.0
6MM-30X		16.4	22.3*	40.4	62.6	76.3		6MM-30X		16.4	14.6*	18.7	22.5	24.1	
6MI-40X		15.4	23.5	39.0	60.8	74.6	109.0	6MI-40X		15.4	14.5	18.6	22.2	23.8	26.1
6MT-35X		18.9	25.4*	45.1	69.1	84.1		6MT-35X		18.9	16.6*	21.2	25.5	27.3	
6MJ-45X		18.2	27.1	44.6	69.3	84.9	123.5	6MJ-45X		18.2	16.1	20.8	25.0	26.7	29.3
6MU-40X		20.2	27.4*	49.8	77.2	94.2		6MU-40X		20.2	18.1*	23.5	28.6	30.8	
6MK-50X		19.9	30.2	50.0	77.8	95.3	138.5	6MK-50X		19.9	18.5	23.5	28.2	30.2	33.4

Conditions: Suction Gas Return 20 °C / Subcooling 0K, 100% loaded

\*Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary 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
4MF-13X		7.1*	10.3*	19.9	31.2	38.3		4MF-13X		6.1*	7.3*	9.7	11.8	12.7	
4MA-22X				20.3	32.6	40.3	59.9	4MA-22X				9.5	11.7	12.6	14.0
4ML-15X		9.2*	13.0*	24.3	38.0	46.6		4ML-15X		7.4*	8.8*	11.4	13.8	14.9	
4MH-25X				23.8	37.8	46.7	69.2	4MH-25X				11.4	13.7	14.6	15.9
4MM-20X		10.4*	14.5*	26.7	41.6	51.0		4MM-20X		8.3*	9.7*	12.7	15.3	16.5	
4MI-30X				26.7	42.1	51.9	76.5	4MI-30X				12.6	15.0	16.1	17.8
4MT-22X		11.2*	15.5*	28.7	44.7	54.8		4MT-22X		9.4*	11.1*	14.5	17.5	18.9	
4MJ-33X				29.7	46.8	57.7	85.1	4MJ-33X				14.2	17	18.2	20.1
4MU-25X		12.3*	17.3*	32.6	50.9	62.4		4MU-25X		10.6*	12.4*	16.2	19.9	21.6	
4MK-35X				33.5	52.6	64.7	95.1	4MK-35X				16.2	19.5	20.9	23.4
6MM-30X		15.1*	21.2*	39.7	61.9	75.8		6MM-30X		12.6*	14.9*	19.4	23.6	25.5	
6MI-40X				40.8	64.2	79.0	116.5	6MI-40X				19.3	23.3	25	27.6
6MT-35X		18.4*	25.1*	45.7	71.0	86.9		6MT-35X		14.5*	16.8*	21.9	26.9	29.1	
6MJ-45X				45.4	71.4	87.9	129.5	6MJ-45X				21.5	26.1	28.0	31.0
6MU-40X		20.9*	27.8*	50.3	78.7	96.7		6MU-40X		16.6*	19.0*	24.4	30.1	32.8	
6MK-50X				50.6	79.4	97.6	143.5	6MK-50X				24.4	29.8	32.3	36.4

Conditions: Suction Gas Return 20 °C, Subcooling 0K

\* Conditions: Suction Superheat 10K, Subcooling 0K

# Capacity Data

Condensing Temperature: 40 °C															
R407F	Cooling Capacity (kW)							R407F	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
4MF-13X		7.8*	11.1*	19.7*	32.5	39.9		4MF-13X		6.5*	7.7*	10.2*	12.4	13.3	
4MA-22X				20.7*	34.8	43	63.8	4MA-22X				10.2*	12.4	13.2	14.4
4MH-25X				24.2*	40.4	49.9	73.8	4MH-25X				11.9*	14.4	15.4	16.8
4ML-15X		9.9*	13.8*	24.2*	39.8	48.9		4ML-15X		7.8*	9.2*	12.0*	14.6	15.7	
4MM-20X		11.0*	15.3*	26.6*	43.5	53.4		4MM-20X		8.7*	10.3*	13.3*	16.0	17.2	
4MI-30X				26.9*	44.4	54.8	80.7	4MI-30X				13.1*	15.8	17.0	18.6
4MT-22X		12.7*	17.4*	29.9*	48.5	59.5		4MT-22X		10.0*	11.7*	15.1*	18.3	19.7	
4MJ-33X				30.2*	49.5	60.9	89.8	4MJ-33X				14.8*	17.8	19.2	21.1
4MU-25X		14.0*	19.3*	33.3*	54.6	66.9		4MU-25X		11.2*	13.2*	17.2*	21.0	22.8	
4MK-35X				33.7*	55.3	68.3	101.0	4MK-35X				16.8*	20.4	22.1	24.4
6MM-30X		17.2*	23.7*	40.7*	66	80.7		6MM-30X		13.6*	15.8*	20.4*	24.8	26.7	
6MI-40X				41.2*	67.9	83.5	122.5	6MI-40X				20.2*	24.4	26.2	28.9
6MT-35X		19.8*	27.0*	45.8*	74.1	90.4		6MT-35X		15.3*	18.0*	23.1*	28.0	30.3	
6MJ-45X				45.8*	75.2	92.6	136.0	6MJ-45X				22.9*	27.6	29.7	32.8
6MU-40X		20.1*	27.7*	48.5*	82.7	101.5		6MU-40X		16.9*	19.8*	25.9*	31.7	34.4	
6MK-50X				51.3*	84.5	104	153.5	6MK-50X				25.8*	31.3	33.7	37.5

Conditions: Suction Gas Return 20 °C, Subcooling OK

\* Conditions: Suction Superheat 10K, Subcooling OK

Condensing Temperature 40 °C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	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
4MA-22X		7.8*	11.3*	21.2	34.3	42.7	63.5	4MA-22X		6.2*	7.4*	9.8	11.8	12.6	13.7
4MF-13X	3.8*	8.2*	11.1*	19.6	30.4	37.3		4MF-13X	4.5*	6.3*	7.4*	9.8	12.2	13.1	
4MH-25X		9.4*	13.5*	24.7	39.1	48.0	70.3	4MH-25X		7.6*	8.9*	11.6	14.1	15.1	16.7
4ML-15X	4.3*	10.5*	14.3*	25.2	38.7	47.1		4ML-15X	5.2*	7.6*	8.9*	11.6	14.2	15.4	
4MI-30X		10.8*	15.4*	28.1	44.1	54.0	78.6	4MI-30X		8.2*	9.8*	13.0	15.6	16.7	18.2
4MM-20X	4.9*	11.8*	16.0*	27.8	42.5	51.5		4MM-20X	5.8*	8.5*	9.9*	12.9	15.6	16.9	
4MJ-33X		12.1*	17.0*	30.9	48.7	59.8	87.6	4MJ-33X		9.2*	11.0*	14.5	17.6	18.9	20.6
4MT-22X	5.9*	13.5*	18.2*	31.3	47.7	57.8		4MT-22X	6.6*	9.7*	11.3*	14.6	17.8	19.2	
4MK-35X		13.7*	19.2*	34.7	54.8	67.5	98.9	4MK-35X		10.7*	12.7*	16.7	20.4	22.0	24.4
4MU-25X	6.5*	14.3*	19.5*	34.2	53.2	65.1		4MU-25X	7.4*	10.8*	12.7*	16.6	20.5	22.4	
6MI-40X		17.1*	23.9*	42.8	66.6	81.4	118.0	6MI-40X		13.0*	15.3*	19.6	23.5	25.2	28.0
6MM-30X	6.6*	17.6*	24.1*	41.8	63.2	76.3		6MM-30X	8.8*	13.1*	15.4*	19.9	23.9	25.6	
6MT-35X	7.5*	19.8*	26.9*	46.5	70.0	84.3		6MT-35X	9.7*	14.6*	17.2*	22.2	26.9	29.0	
6MJ-45X		19.5*	27.2*	48.1	74.5	91.0	132.0	6MJ-45X		14.3*	17.0*	22.2	26.9	28.8	31.7
6MK-50X		21.1*	29.4*	52.7	82.2	101.0	147.0	6MK-50X		16.4*	19.2*	25.0	30.3	32.7	36.7
6MU-40X	8.3*	22.2*	30.5*	53.4	81.8	99.4		6MU-40X	10.9*	16.3*	19.1*	24.6	29.8	32.1	

Conditions: Suction Gas Return 20 °C / Subcooling OK

\* Conditions: Suction Superheat 10K, Subcooling OK

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
4MA-22X		10.5	14.3	23.6	36.0	43.5	62.0	4MA-22X		7.3	8.6	11.0	13.0	13.7	14.7
4MF-13X	3.6*	10.7	14.0	22.8	34.8	42.2		4MF-13X	5.0*	7.4	8.7	11.0	13.0	13.9	
4MH-25X		12.4	16.7	27.5	42.2	51.3	73.6	4MH-25X		8.6	10.1	13.0	15.4	16.3	17.5
4ML-15X	4.8*	13.3	17.4	27.9	42.0	50.8		4ML-15X	6.3*	9.0	10.5	13.3	15.8	16.7	
4MI-30X		14.4	19.4	31.2	46.8	56.3	79.5	4MI-30X		9.8	11.5	14.5	17.0	18	19.5
4MM-20X	5.7*	15.1	19.6	30.9	46.1	55.4		4MM-20X	7.1*	10.1	11.6	14.6	17.0	18.2	
4MJ-33X		16.2	21.4	34.6	52.4	63.4	90.4	4MJ-33X		10.9	12.6	16.0	19.0	20.2	21.8
4MT-22X	6.7*	17.0	21.9	34.7	52.0	62.7		4MT-22X	8.0*	11.5	13.2	16.6	19.5	20.7	
4MK-35X		18.3	24.0	38.8	58.9	71.3	102.0	4MK-35X		12.6	14.6	18.5	22.0	23.5	25.7
4MU-25X	7.2*	18.6	24.1	38.5	58.1	70.2		4MU-25X	9.0*	12.9	14.9	18.8	22.3	23.7	
6MI-40X		21.9	28.9	46.7	70.8	85.8	122.5	6MI-40X		15.2	17.6	22.2	26.1	27.7	30.1
6MM-30X	8.9*	22.7	29.3	46.5	70.2	85.1		6MM-30X	11.0*	15.7	18.0	22.5	26.3	27.8	
6MJ-45X		24.3	32.3	52.5	79.5	96.1	136.5	6MJ-45X		16.8	19.6	24.9	29.5	31.4	33.9
6MT-35X	10.3*	25.6	33	52.5	79.3	95.9		6MT-35X	12.3*	17.5	20.1	25.3	29.7	31.5	
6MK-50X		27.3	36.3	58.7	88.6	107.0	152.0	6MK-50X		19.4	22.5	28.3	33.5	35.9	39.9
6MU-40X	11.0*	28.4	36.8	58.7	89.0	108.0		6MU-40X	13.8*	19.7	22.7	28.5	33.6	35.8	

Conditions Suction Gas Return 20°C, Subcooling 0K

\* Conditions Suction superheat 10K, Subcooling 0K

Condensing Temperature: 40 °C															
R134a	Cooling Capacity (kW)							R134a	Power Input (kW)						
	Evaporating Temperature ( °C)								Evaporating Temperature ( °C)						
Models	-45	-35	-30	-20	-10	-5	+5	Models	-45	-35	-30	-20	-10	-5	+5
4MA-22X				13.1	21.3	26.6	40.1	4MA-22X				5.9	7.3	7.9	8.7
4MF-13X				12.2	20.4	25.6	38.9	4MF-13X				5.8	7.2	7.8	8.7
4MH-25X				15.0	24.6	30.7	46.4	4MH-25X				7.0	8.7	9.4	10.4
4ML-15X				15.0	24.5	30.5	46.0	4ML-15X				6.9	8.5	9.3	10.4
4MI-30X				16.8	27.1	33.7	50.7	4MI-30X				7.6	9.4	10.3	11.4
4MM-20X				16.6	27.0	33.6	50.3	4MM-20X				7.7	9.4	10.2	11.4
4MJ-33X				18.9	30.3	37.6	56.4	4MJ-33X				8.7	10.7	11.5	12.8
4MT-22X				19.0	30.6	38.1	57.2	4MT-22X				8.7	10.8	11.7	13.0
4MK-35X				21.0	34.0	42.2	63.3	4MK-35X				9.7	12.2	13.3	14.9
4MU-25X				20.7	33.9	42.3	63.8	4MU-25X				9.8	12.2	13.3	15.0
6MI-40X				24.8	40.2	50.2	76.0	6MI-40X				12.0	14.6	15.8	17.8
6MM-30X				25.2	40.7	50.7	76.1	6MM-30X				11.7	14.6	15.8	17.7
6MJ-45X				28.5	45.6	56.7	85.3	6MJ-45X				13.0	16.2	17.8	20.3
6MT-35X				28.5	46.0	57.1	85.2	6MT-35X				13.3	16.5	17.9	20.0
6MK-50X				29.8	49.1	61.7	94.3	6MK-50X				15.2	18.8	20.5	23.3
6MU-40X				31.5	50.6	62.9	94.5	6MU-40X				14.6	18.4	20.1	23.0

Conditions Suction Gas Return 20°C, Subcooling 0K

\* Conditions Suction Superheat 10K, Subcooling 0K





# Copeland™ Stream Digital with Compressor Electronics for Continuous Capacity Modulation

Stream Digital series 4 and 6 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.

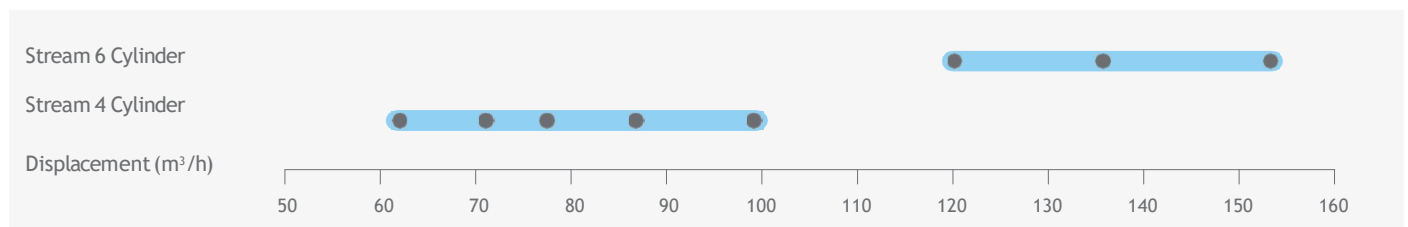
Digital technology is based on controlling a high-cycle solenoid valve fitted on one of the cylinder heads based on cycle time. The valve actuates a piston that controls the flow of gas into the suction area of the Stream valve plate. The compressor always runs at constant speed which resolves the challenges related to oil return, mechanical and electrical stress on the system.

All compressors are equipped with Copeland compressor electronics technology (p.98) and offer the possibility to diagnose system-related problems faster or even before they occur.



Copeland Stream digital compressor

## Stream Digital Line-Up

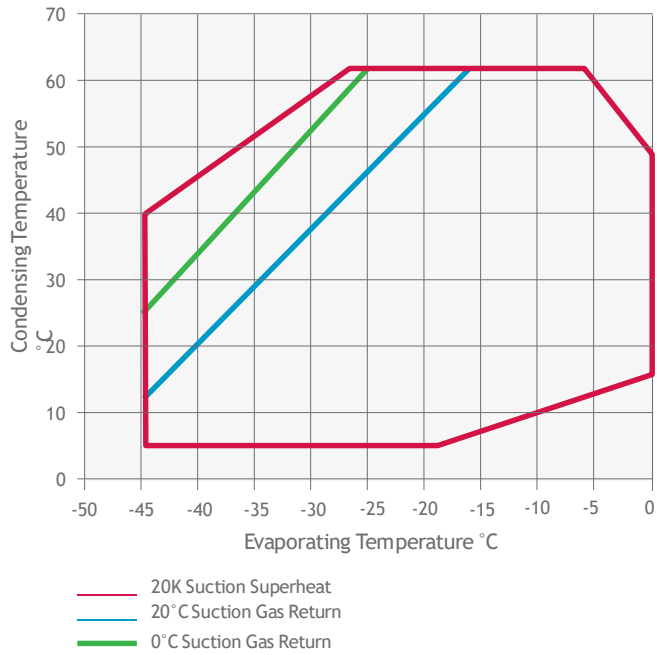


## Features and Benefits

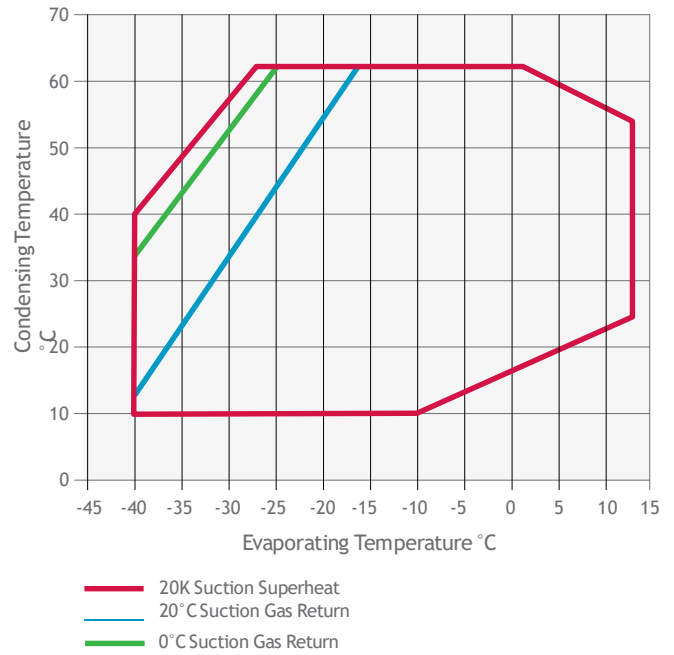
- Range of 16 models from 62 to 153 m<sup>3</sup>/h
- Multi-refrigerant compressor, compatible with R407A/F/C, R448A/ R449A, R404A, R134a, R450A and R513A
- Continuous modulation from 50-100% (4-cylinder) and 33-100% (6-cylinder) ensuring a perfect match of capacity and power to refrigeration load
- 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
- Copeland compressor electronics module providing advanced protection, diagnostics and preventive maintenance

# Operating Envelope R448A/R449A

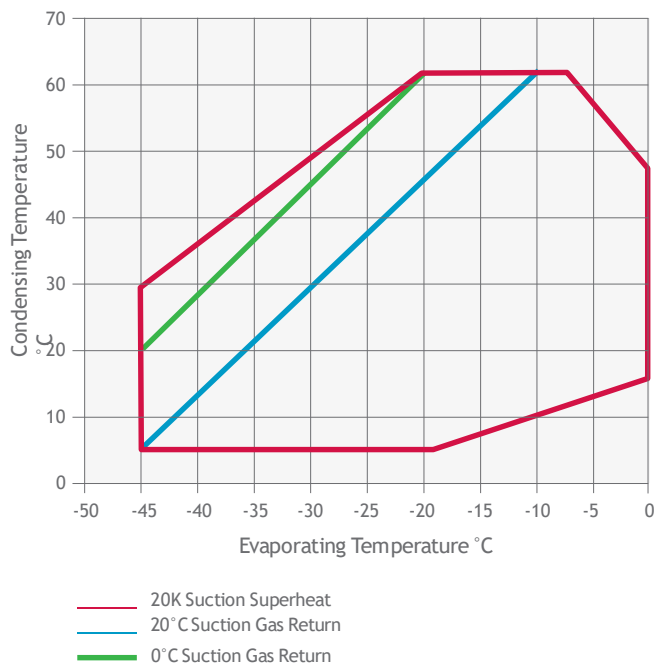
With 4 Cylinder Small Motor - 100% Modulation



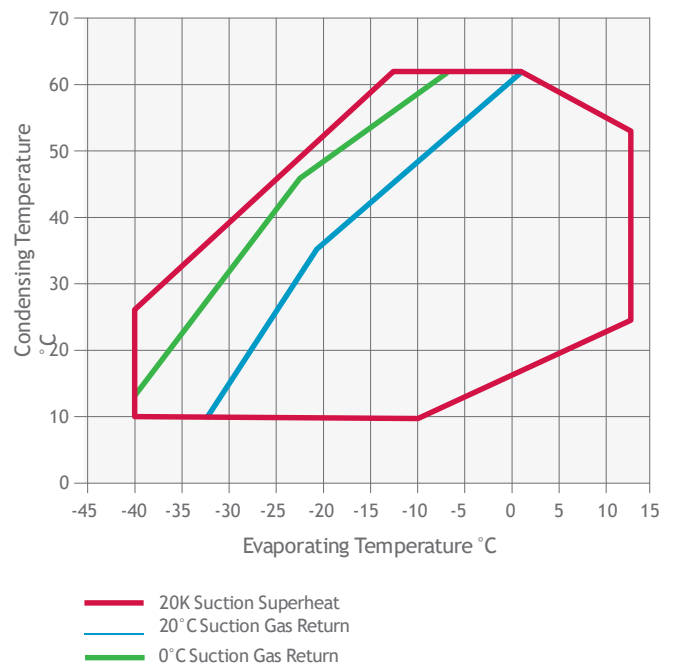
With 6 Cylinder Large Motor - 100% Modulation



With 4 Cylinder Small Motor - 50% Modulation



With 6 Cylinder Large Motor - 33% Modulation



All other refrigerant envelopes are available as 'Dynamic Envelopes' and can be accessed through select software.

## Technical Overview

Models	Nominal hp	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 - dB(A) ***
						3 Ph**	3 Ph**	3 Ph**	
4MFD-13X	13	61.7	3.3	638/501/452	183	AWM	30.8	105	70
4MAD-22X	22	61.7	3.3	638/501/452	183	AWM	36.3	175	75
4MLD-15X	15	71.4	3.3	638/501/452	186	AWM	35.4	156	71
4MHD-25X	25	71.4	3.3	657/501/452	193	AWM	41.6	199	75
4MMD-20X	17	78.2	3.3	657/501/452	188	AWM	39.0	175	71
4MID-30X	27	78.2	3.3	657/501/452	194	AWM	46.6	221	75
4MTD-22X	22	87.7	3.3	657/501/452	189	AWM	44.5	175	73
4MJD-33X	33	87.7	3.3	657/501/452	196	AWM	52.9	221	74
4MUD-25X	25	99.4	3.3	657/501/452	192	AWM	51.9	199	72
4MKD-35X	32	99.4	3.3	688/501/452	202	AWM	61.1	255	74
6MMD-30X	27	120.5	3.3	695/547/450	221	AWM	59.7	255	78
6MID-40X	35	120.5	3.3	695/547/450	225	AWM	71.4	304	78
6MTD-35X	32	135.0	3.3	725/547/450	227	AWM	67.3	255	77
6MJD-45X	40	135.0	3.3	725/547/450	229	AWM	81.5	304	79
6MUD-40X	40	153.0	3.3	757/547/450	231	AWM	75.8	304	78
6MKD-50X	50	153.0	3.3	773/547/450	236	AWM	92.9	393	80

\*\* 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
4MFD-13X				18.3*	30.9	37.9		4MFD-13X				9.7*	11.8	12.7	
4MAD-22X					32.2	39.9	59.3	4MAD-22X					11.7	12.6	14.0
4MLD-15X				22.7*	37.7	46.1		4MLD-15X				11.4*	13.8	14.9	
4MHD-25X					37.4	46.2	68.5	4MHD-25X					13.7	14.6	15.9
4MMD-20X				24.9*	41.2	50.5		4MMD-20X				12.7*	15.3	16.5	
4MID-30X				21.6*	37.4	46.2	68.5	4MID-30X				11.4*	13.7	14.6	15.9
4MTD-22X				26.5*	44.2	54.2		4MTD-22X				14.5*	17.5	18.9	
4MJD-33X					41.7	51.4	75.7	4MJD-33X					15.1	16.1	17.8
4MUD-25X				30.1*	50.4	61.8		4MUD-25X				16.2*	19.9	21.6	
4MKD-35X					52.1	64.1	94.2	4MKD-35X					19.5	20.9	23.4
6MMD-30X			20.9*	39.3	61.3	75.0		6MMD-30X			14.9*	19.4	23.6	25.5	
6MID-40X				40.4	63.6	78.3	115.5	6MID-40X				19.3	23.3	25.0	27.6
6MTD-35X			24.8*	45.3	70.3	86.0		6MTD-35X			16.8*	21.9	26.9	29.1	
6MJD-45X				45.0	70.7	87.0	128.0	6MJD-45X				21.5	26.1	28.0	31.0
6MUD-40X				50.4	78.7	96.7		6MUD-40X				24.4	30.1	32.8	
6MKD-50X				50.1	78.6	96.6	142.0	6MKD-50X				24.4	29.8	32.3	36.4

Conditions: Suction Gas Return 20°C, Subcooling 0K, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling 0K

Condensing Temperature: 40°C															
R407F	Cooling Capacity (kW)							R407F	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-45	-35	-30	-20	-10	-5	+5	Models	-45	-35	-30	-20	-10	-5	+5
4MAD-22X				20.5*	34.4	42.6	63.1	4MAD-22X				10.2*	12.4	13.2	14.4
4MFD-13X				19.5*	32.2	39.5		4MFD-13X				10.2*	12.4	13.3	
4MHD-25X				23.9*	40.0	49.4	73.1	4MHD-25X				11.9*	14.4	15.4	16.8
4MLD-15X				23.9*	39.4	48.4		4MLD-15X				12.0*	14.6	15.7	
4MID-30X				26.6*	44.0	54.2	79.9	4MID-30X				13.1*	15.8	17.0	18.6
4MMD-20X				26.3*	43.0	52.9		4MMD-20X				13.3*	16.0	17.2	
4MJD-33X				29.8*	49.0	60.3	88.9	4MJD-33X				14.8*	17.8	19.2	21.1
4MTD-22X				29.5*	48.0	58.9		4MTD-22X				15.1*	18.3	19.7	
4MKD-35X				33.3*	54.8	67.6	100.0	4MKD-35X				16.8*	20.4	22.0	24.4
4MUD-25X				32.9*	54.0	66.3		4MUD-25X				17.1*	21.0	22.8	
6MID-40X				40.7*	67.2	82.6	121.5	6MID-40X				20.2*	24.4	26.2	28.9
6MMD-30X				40.2*	65.4	79.9		6MMD-30X				20.4*	24.8	26.7	
6MJD-45X				45.3*	74.5	91.6	135.0	6MJD-45X				22.9*	27.6	29.7	32.8
6MTD-35X				45.3*	73.3	89.5		6MTD-35X				23.1*	28.0	30.3	
6MKD-50X				50.7*	83.7	103.0	151.5	6MKD-50X				25.8*	31.3	33.7	37.5
6MUD-40X				47.9*	81.9	100.5		6MUD-40X				25.9*	31.7	34.4	

Conditions: Suction Gas Return 20°C, Subcooling 0K, 100% Loaded

\* 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
4MAD-22X		8.1*	11.7*	23.4	35.6	43.1	61.3	4MAD-22X		7.3*	8.6*	11.0	13.0	13.7	14.7
4MFD-13X		8.3*	11.5*	22.6	34.5	41.8		4MFD-13X		7.4*	8.7*	11.0	13.1	13.9	
4MHD-25X		9.6*	13.7*	27.2	41.7	50.7	72.9	4MHD-25X		8.6*	10.1*	13.0	15.4	16.3	17.5
4MLD-15X		10.6*	14.5*	27.6	41.6	50.2		4MLD-15X		9.0*	10.5*	13.3	15.8	16.7	
4MID-30X		11.4*	16.2*	30.9	46.3	55.7	78.7	4MID-30X		9.8*	11.5*	14.5	17.0	18.0	19.5
4MMD-20X		12.2*	16.4*	30.6	45.6	54.8		4MMD-20X		10.1*	11.6*	14.6	17.1	18.2	
4MJD-33X		12.9*	17.8*	34.2	51.9	62.7	89.5	4MJD-33X		10.9*	12.6*	16.1	19.0	20.2	21.8
4MTD-22X		13.7*	18.4*	34.3	51.5	62.1		4MTD-22X		11.5*	13.2*	16.6	19.5	20.7	
4MKD-35X		14.5*	20.0*	38.4	58.3	70.6	101.0	4MKD-35X		12.6*	14.6*	18.5	22.0	23.5	25.7
4MUD-25X		14.9*	20.1*	38.1	57.5	69.5		4MUD-25X		12.9*	14.9*	18.8	22.3	23.7	
6MID-40X		17.3*	28.6°	46.2	70.1	84.9	121.5	6MID-40X		15.2*	17.6°	22.2	26.1	27.7	30.1
6MMD-30X		18.2*	29.0°	46.0	69.5	84.3		6MMD-30X		15.7*	18.1°	22.5	26.3	27.8	
6MJD-45X		19.2*	32.0°	51.9	78.7	95.1	135.0	6MJD-45X		16.8*	19.6°	24.9	29.5	31.4	33.9
6MTD-35X		20.5*	32.7°	52.0	78.5	94.9		6MTD-35X		17.5*	20.1°	25.3	29.7	31.5	
6MKD-50X		21.4*	36.0°	58.1	87.7	106.0	150.5	6MKD-50X		19.4*	22.5°	28.3	33.5	35.9	39.9
6MUD-40X		22.6*	36.5°	58.1	88.1	107.0		6MUD-40X		19.7*	22.7°	28.5	33.6	35.8	

Conditions: Suction Gas Return 20°C, Subcooling OK, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling OK

° Additional Cooling Required

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
4MAD-22X		4.0*	6.2*	11.8*	20.0*	25.4*	39.7	4MAD-22X		3.7*	4.4*	5.9*	7.3*	7.9*	8.7
4MFD-13X				12.1	20.2	25.4	38.5	4MFD-13X				5.8	7.2	7.8	8.7
4MHD-25X		4.4*	6.9*	13.5*	23.1*	29.3*	45.9	4MHD-25X		4.7*	5.4*	7.1*	8.7*	9.4*	10.4
4MLD-15X				14.8	24.2	30.2	45.5	4MLD-15X				6.9	8.5	9.3	10.4
4MID-30X		5.2*	8.0*	15.1*	25.4*	32.2*	50.2	4MID-30X		4.9*	5.8*	7.6*	9.4*	10.3*	11.4
4MMD-20X				16.5	26.7	33.3	49.8	4MMD-20X				7.7	9.4	10.2	11.4
4MJD-33X		6.0*	9.1*	17.0*	28.5*	35.9*	55.9	4MJD-33X		5.6*	6.6*	8.7*	10.7*	11.5*	12.8
4MTD-22X				18.9	30.3	37.7	56.7	4MTD-22X				8.7	10.8	11.7	13.1
4MKD-35X		7.0*	10.4*	19.1*	31.9*	40.3*	62.7	4MKD-35X		7.1*	7.7*	9.7*	12.2*	13.3*	14.9
4MUD-25X				20.5	33.5	41.9	63.2	4MUD-25X				9.8	12.2	13.3	15.1
6MID-40X				22.2*	37.6*	47.8*	75.3	6MID-40X				12.0*	14.6*	15.8*	17.8
6MMD-30X				24.9	40.3	50.2	75.3	6MMD-30X				11.7	14.6	15.8	17.7
6MJD-45X				25.6*	42.7*	54.0*	84.5	6MJD-45X				13.0*	16.2*	17.8*	20.3
6MTD-35X				28.2	45.5	56.5	84.4	6MTD-35X				13.3	16.5	17.9	20.0
6MKD-50X				26.2*	45.7*	58.6*	93.4	6MKD-50X				15.2*	18.8*	20.5*	23.3
6MUD-40X				31.2	50.1	62.3	93.6	6MUD-40X				14.6	18.4	20.1	23.0

Conditions: Suction Gas Return 20°C, Subcooling OK, 100% Loaded

\* Conditions: Suction Superheat 10K, Subcooling OK



## Capacity Data

Condensing Temperature: 40°C															
R448A / R449A	Cooling Capacity (kW)							R448A / R449A	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
4MAD-22X		7.7*	11.1*	21.0	34.0	42.2	62.9	4MAD-22X		6.2*	7.4*	9.8	11.8	12.6	13.7
4MFD-13X	3.7*	8.1*	10.9*	19.4	30.1	36.9		4MFD-13X	4.5*	6.3*	7.4*	9.8	12.2	13.1	
4MLD-15X	4.2*	10.3*	14.2*	24.9	38.3	46.6		4MLD-15X	5.2*	7.6*	8.9*	11.6	14.2	15.4	
4MHD-25X		9.3*	13.3*	24.5	38.7	47.6	69.6	4MHD-25X		7.6*	8.9*	11.6	14.1	15.1	16.7
4MMD-20X	4.9*	11.6*	15.8*	27.5	42.0	51.0		4MMD-20X	5.8*	8.5*	9.9*	12.9	15.6	16.9	
4MID-30X		10.6*	15.3*	27.8	43.6	53.5	77.8	4MID-30X		8.2*	9.8*	13.0	15.6	16.7	18.2
4MJD-33X		11.9*	16.8*	30.6	48.2	59.2	86.7	4MJD-33X		9.2*	11.0*	14.5	17.6	18.9	20.6
4MTD-22X	5.8*	13.3*	17.9*	31.0	47.2	57.2		4MTD-22X	6.6*	9.7*	11.3*	14.6	17.8	19.2	
4MKD-35X		13.6*	19.0*	34.4	54.3	66.8	97.9	4MKD-35X		10.7*	12.7*	16.7	20.4	22.0	24.4
4MUD-25X	6.4*	14.2*	19.2*	33.9	52.7	64.4		4MUD-25X	7.4*	10.8*	12.7*	16.6	20.5	22.4	
6MID-40X		16.9*	23.7*	42.4	65.9	80.6	116.5	6MID-40X		13.0*	15.3*	19.6	23.5	25.2	28.0
6MMD-30X	6.5*	17.4*	23.8*	41.4	62.6	75.5		6MMD-30X	8.8*	13.1*	15.4*	19.9	23.9	25.6	
6MTD-35X	7.4*	19.5*	26.6*	46.0	69.3	83.5		6MTD-35X	9.7*	14.6*	17.2*	22.2	26.9	29.0	
6MJD-45X		19.3*	26.9*	47.6	73.7	90.1	131.0	6MJD-45X		14.3*	17.0*	22.2	26.9	28.8	31.7
6MKD-50X		20.8*	29.1*	52.2	81.4	99.8	145.5	6MKD-50X		16.4*	19.2*	25.0	30.3	32.7	36.7
6MUD-40X	8.2*	21.9*	30.2*	52.9	81.0	98.4		6MUD-40X	10.9*	16.3*	19.1*	24.6	29.8	32.1	

Conditions: Suction Gas Return 20°C / Subcooling 0K, 100% Loaded

\*Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary Data

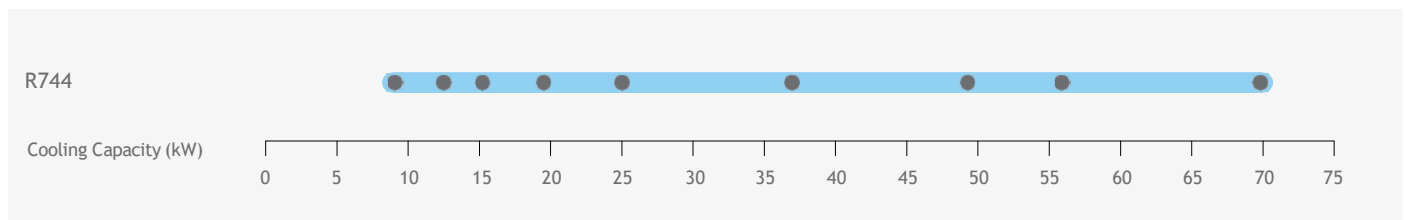
# Copeland™ Stream Compressors with Compressor Electronics for R744-Transcritical Applications

Stream series of 4 cylinder CO<sub>2</sub> compressors is the ideal solution for R744 booster systems. It is characterized by a design pressure of 135 bar. Refrigerant flow and heat transfer have been optimized for best performance. All compressors are equipped with Copeland Compressor Electronics Module and offer the possibility to diagnose system-related problems faster or even before they occur.



Copeland Stream compressor for R744

## Stream Compressor Line-up



Conditions: EN12900 R744: Evaporating -10°C, gas cooler exit: 35°C/ 90 bar, superheat: 10K

## Features and Benefits

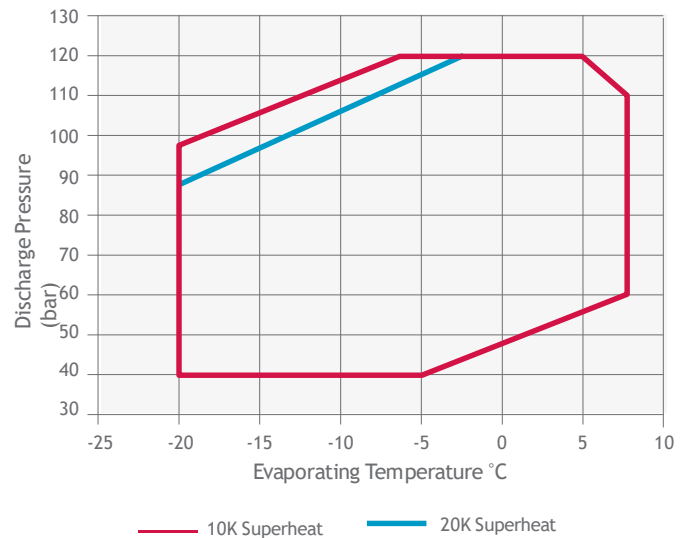
Stream provides for flexibility in pack design and operation:

- Compact dimensions
- Integrated low pressure relief valve
- Discharge temperature protection
- Service valve 360° rotation for ease of piping design
- 2 sight glasses for mounting of oil management control and visual inspection
- One oil port for oil equalization in parallel system
- Oil splasher system ensuring lubrication at constant and variable speed

Designed for durability and performance in R744 applications:

- Low sound, low vibration and large discharge chamber to eliminate pulsation
- High design pressures of 135 bar (high side) and 90 bar (low side)
- Burst pressures in excess of safety factor 3
- Cylinder head and discharge plenum design minimizing heat transfer to suction side
- Stepless capacity modulation via inverter from 25 to 70Hz
- Copeland Compressor Electronics Technology
- Individual compressor power consumption monitoring

## Operating Envelope R744



## Technical Overview

Model	Nominal hp	Displacement (m <sup>3</sup> /h)	Capacity (kw)	COP	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**	
4MTL-05_	5.0	4.6	8.8	1.6	1.5	630/425/410	123	EWL	13	80	59
4MTL-07_	7.0	6.2	11.9	1.6	1.5	630/425/410	124	EWL	18	81	62
4MTL-09_	9.0	7.4	14.6	1.6	1.5	630/425/410	123	EWL	21	93	63
4MTL-12_	12.0	9.5	19.3	1.7	1.8	697/444/423	170	AWM	27	145	67
4MTL-15_	15.0	12.5	25.2	1.8	1.8	697/445/422	170	AWM	35	156	71
4MTL-30_	30.0	18.0	37.0	1.8	1.8	697/445/422	175	AWM	50	221	75
4MTL-35_	35.0	22.7	44.9	1.8	2.8	821/486/466	264	AWM	60	304	74
4MTL-40_	40.0	26.6	52.2	1.8	2.8	821/486/466	270	AWM	67	370	74
4MTL-50_	50.0	32.0	65.9	1.8	2.8	821/486/466	276	AWM	83	393	74

Conditions EN12900 - MT: Evaporating -10°C, Suction Superheat 10K, Pressure 90 bar, Temperature 35°C

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

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

# Capacity Data

			Cooling Capacity (kW)					Power Input (kW)					
Model	Temperature (°C)	Pressure (bar)	Evaporating Temperature (°C)					Evaporating Temperature (°C)					
			-20	-15	-10	-5	0	-20	-15	-10	-5	0	
			Equivalent Evaporation Pressure (bar)					Equivalent Evaporation Pressure (bar)					
			19.7	22.9	26.5	30.5	34.9	19.7	22.9	26.5	30.5	34.9	
4MTL-05_	Condensing	10	45	11.0	13.5	16.4	19.8		3.1	3.0	2.7	2.4	
		15	50	9.9	12.3	14.9	18.0	21.5	3.4	3.4	3.2	3.0	2.6
		20	57	8.8	10.9	13.3	16.1	19.3	3.8	3.8	3.7	3.5	3.2
		25	64	7.6	9.5	11.6	14.1	16.9	4.1	4.2	4.1	4.0	3.8
		30	75	6.1	7.5	9.3	11.2	13.5	4.4	4.5	4.6	4.6	4.4
	Cool gas	35	90		7.14	8.8	10.8	13.0		5.3	5.5	5.6	5.6
		40	100			7.6	9.4	11.3			5.9	6.1	6.2
		40	110				9.7	11.75				6.5	6.7
4MTL-07_	Condensing	10	45	15.1	18.4	22.2	26.5		3.9	3.7	3.4	3.0	
		15	50	13.7	16.7	20.2	24.1	28.6	4.4	4.3	4.1	3.7	3.3
		20	57	12.2	14.9	18.1	21.6	25.7	4.8	4.8	4.7	4.5	4.1
		25	64	10.5	13.0	15.7	18.8	22.4	5.3	5.4	5.3	5.2	4.9
		30	75	8.3	10.3	12.5	15.0	17.9	5.7	5.9	6.0	5.9	5.7
	Cool gas	35	90		9.7	11.9	14.3	17.2		6.9	7.2	7.3	7.4
		40	100			10.2	12.4	14.9			7.7	8.0	8.2
		40	110				12.80	15.4				8.6	8.9
4MTL-09_	Condensing	10	45	18.4	22.4	27.0	32.2		4.7	4.5	4.2	3.7	
		15	50	16.6	20.3	24.5	29.4	34.9	5.3	5.2	4.9	4.6	4.0
		20	57	14.8	18.2	22.0	26.3	31.3	5.8	5.8	5.7	5.4	5.0
		25	64	12.8	15.8	19.2	23.0	27.4	6.4	6.5	6.5	6.3	6.0
		30	75	10.1	12.6	15.3	18.4	21.9	6.9	7.1	7.2	7.2	7.0
	Cool gas	35	90		11.9	14.6	17.7	21.1		8.4	8.7	8.9	9.0
		40	100			12.7	15.3	18.4			9.4	9.8	10.0
		40	110				15.9	19.0				10.6	10.9
4MTL-12_	Condensing	10	45	24.1	29.1	35.0	41.7		6.1	5.9	5.5	4.9	
		15	50	21.8	26.4	31.9	38.1	45.0	6.8	6.8	6.5	6.0	5.3
		20	57	19.5	23.7	28.6	34.3	40.6	7.6	7.6	7.4	7.0	6.5
		25	64	16.9	20.6	25.0	30.0	35.6	8.3	8.4	8.4	8.2	7.7
		30	75	13.5	16.4	20.0	24.1	28.6	9.0	9.3	9.4	9.3	9.0
	Cool gas	35	90	12.8	15.7	19.3	23.3	27.9	10.2	10.9	11.3	11.6	11.6
		40	100		13.6	16.8	20.4	24.4		11.5	12.2	12.6	12.8
		40	110			17.4	21.2	25.5			12.8	13.5	13.9
4MTL-15_	Condensing	10	45	31.2	37.9	45.6	54.4		7.9	7.6	7.1	6.3	
		15	50	28.3	34.5	41.6	49.7	58.7	8.8	8.7	8.4	7.8	6.9
		20	57	25.3	30.9	37.4	44.8	53.0	9.7	9.7	9.6	9.2	8.6
		25	64	22.0	26.9	32.7	39.3	46.6	10.5	10.8	10.8	10.7	10.2
		30	75	17.5	21.5	26.2	31.6	37.5	11.4	11.8	12.0	12.1	11.8
	Cool gas	35	90	16.5	20.5	25.2	30.5	36.5	13.1	13.8	14.4	14.8	15.0
		40	100		17.7	21.8	26.6	31.8		14.8	15.5	16.1	16.4
		40	110			22.5	27.5	33.1			16.6	17.3	17.9
4MTL-30_	Condensing	10	45	45.6	54.9	65.9	78.3		11.4	11.0	10.4	9.3	
		15	50	41.5	50.2	60.3	71.7	84.4	12.6	12.5	12.1	11.4	10.2
		20	57	37.2	45.1	54.3	64.7	76.3	13.9	14.0	13.9	13.4	12.5
		25	64	32.4	39.4	47.6	56.9	67.2	15.2	15.5	15.6	15.4	14.8
		30	75	25.9	31.6	38.3	45.8	54.2	16.4	16.9	17.3	17.4	17.1
	Cool gas	35	90	24.7	30.3	37.0	44.6	53.1	18.8	19.8	20.6	21.2	21.5
		40	100		26.3	32.2	39.0	46.5		21.2	22.2	23.0	23.6
		40	110			33.4	40.5	48.5			23.8	24.8	25.6

Conditions: Suction Superheat 10K / Subcooling 0K

## Capacity Data (continued)

			Cooling Capacity (kW)					Power Input (kW)					
Model	Temperature (°C)	Pressure (bar)	Evaporating Temperature (°C)					Evaporating Temperature (°C)					
			-20	-15	-10	-5	0	-20	-15	-10	-5	0	
			Equivalent Evaporation Pressure (bar)					Equivalent Evaporation Pressure (bar)					
			19.7	22.9	26.5	30.5	34.9	19.7	22.9	26.5	30.5	34.9	
4MTL-35_	Condensing	10	45	55.8	68.0	82.0	97.9		14.1	13.4	12.5	11.0	
		15	50	50.5	61.7	74.6	89.3	106.0	15.8	15.4	14.8	13.6	12.0
		20	57	45.1	55.2	66.9	80.2	95.3	17.4	17.4	17.0	16.2	15.0
		25	64	39.2	48.2	58.5	70.3	83.6	18.9	19.2	19.2	18.8	17.9
		30	75	31.2	38.6	46.9	56.5	67.2	20.3	21.0	21.3	21.2	20.7
	Cool gas	35	90	29.7	37.0	45.3	54.8	65.5	22.7	24.2	25.3	26.0	26.3
		40	100		32.0	39.4	47.8	57.2		25.6	27.1	28.3	28.9
		40	110			40.6	49.5	59.5			28.9	30.4	31.5
4MTL-40_	Condensing	10	45	68.7	82.7	99.1	118.0		16.4	15.8	14.6	12.9	
		15	50	62.4	75.3	90.4	107.5	127.5	18.4	18.2	17.4	16.0	14.1
		20	57	55.8	67.6	81.2	96.9	114.5	20.4	20.5	20.1	19.1	17.6
		25	64	48.6	59.0	71.1	84.9	100.5	22.3	22.8	22.7	22.2	21.1
		30	75	38.7	47.2	57.1	68.2	80.8	24.0	24.9	25.3	25.2	24.6
	Cool gas	35	90	36.7	45.00	54.4	64.9	76.6	27.0	28.6	29.7	30.2	30.1
		40	100		39.5	48.2	58.0	69.0		30.7	32.5	33.8	34.5
		40	110			50.2	60.6	72.1			34.6	36.3	37.6
4MTL-50_	Condensing	10	45	81.6	98.3	117.5	140.0		20.0	19.3	18.1	16.2	
		15	50	74.2	89.7	107.5	128.0	151.5	22.3	22.1	21.2	19.8	17.8
		20	57	66.4	80.6	96.9	115.5	136.5	24.7	24.9	24.4	23.4	21.8
		25	64	57.9	70.5	84.9	101.5	120.0	26.9	27.6	27.6	27.1	25.9
		30	75	46.2	56.5	68.2	81.5	96.3	29.1	30.2	30.7	30.7	30.0
	Cool gas	35	90	43.9	53.9	65.0	77.4	91.2	32.7	34.7	36.0	36.6	36.6
		40	100		47.3	57.5	68.9	81.6		37.2	39.3	40.9	41.8
		40	110			59.6	71.5	84.8			41.8	43.8	45.3

Conditions: Suction Superheat 10K / Subcooling 0K  
Preliminary Data

# Copeland™ Stream Compressors with Compressor Electronics for R744-Subcritical Applications Requiring High Standstill Pressures (90bar)

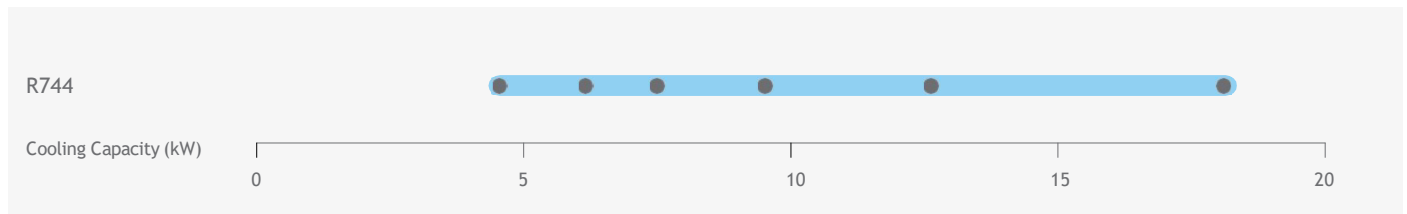
Stream series of 4 cylinder CO<sub>2</sub> compressors is the ideal solution for R744 low temperature cascade and booster systems requiring high standstill pressure of up to 90 bar suction. The use of transcritical compressors in medium / transcritical side as well as on the low temperature / subcritical side ensures that in case of power outage, the refrigeration system features full resilience and no operation disruption.

Stream is characterized by a design pressure of 135 bar. Refrigerant flow and heat transfer have been optimized for best performance. All compressors are equipped with a Copeland Compressor Electronics Technology and offer the possibility to diagnose system-related problems faster or even before they occur.



Copeland Stream compressor for low temperature applications with R744

## Stream Compressor Line-up



Conditions: EN12900 R744: Evaporating -35°C, condensing -5°C, superheat 10K, subcooling 0K

## Features and Benefits

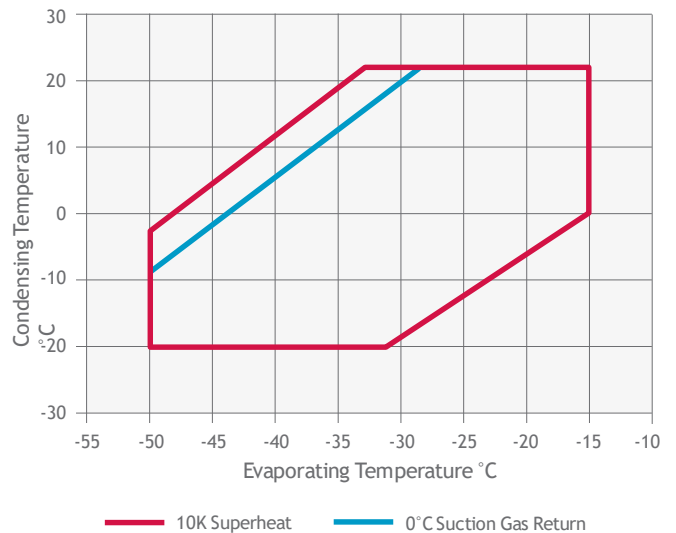
Stream provides for flexibility in pack design and operation:

- Compressor max. pressures (suction/discharge): 90 bar / 135 bar
- Compact dimensions
- Integrated low pressure relief valve
- Discharge temperature protection
- Service valve 360° rotation for ease of piping design
- 2 sight glasses for mounting of oil management control and visual inspection
- One oil port for oil equalization in parallel system
- Oil splasher system ensuring lubrication at constant and variable speed

Designed for durability and performance in R744 applications:

- Low sound, low vibration and large discharge chamber to eliminate pulsation
- Optimized motor selection for low temperature running conditions
- Burst pressures in excess of safety factor 3
- Cylinder head and discharge plenum design minimizing heat transfer to suction side
- Stepless capacity modulation via inverter from 25 to 70Hz
- Copeland compressor electronics technology for advanced protection, diagnostics, communication
- Individual compressor power consumption monitoring

## Operating Envelope R744





## Technical Overview

Models	Nominal hp	Displacement (m <sup>3</sup> /h)	Capacity (kw)	COP	Oil Quantity (l)	Length/Width/Height (mm)	Net Weight (kg)	Motor Version/Code	Maximum Operating Current (A)	Locked Rotor Current (A)	Sound Pressure @1m - dB(A)***
								3 Ph**	3 Ph**	3 Ph**	
4MSL-03_	3.0	4.6	7.1	3.3	1.3	630/425/410	120	EWL	7.0	50	76
4MSL-04_	4.0	6.2	9.7	3.5	1.3	630/425/410	120	EWL	8.8	50	76
4MSL-06_	6.0	7.4	12.2	3.7	1.3	630/425/410	120	EWL	10.5	62	76
4MSL-08_	8.0	9.5	15.9	3.6	1.8	697/444/423	170	AWM	13.9	87	76
4MSL-12_	12.0	12.5	21.0	3.7	1.8	697/445/422	170	AWM	18.7	145	76
4MSL-15_	15.0	18.0	31.0	3.8	1.8	697/445/422	170	AWM	25.7	156	76

Conditions EN12900 - LT: Evaporating -35°C, Condensing -5°C, Suction Superheat 10K, 0K Subcooling

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

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

## Capacity Data

Condensing Temperature -10°C									
R744	Cooling Capacity (kW)				R744	Power Input (kW)			
	Evaporating Temperature (°C)					Evaporating Temperature (°C)			
Model	-45	-40	-35	-30	Model	-45	-40	-35	-30
4MSL-03_	4.6*	6.1*	7.8*	9.9*	4MSL-03X	1.9*	1.9*	1.9*	1.8*
4MSL-04_	6.2*	8.2*	10.6*	13.4*	4MSL-04X	2.4*	2.5*	2.5*	2.3*
4MSL-06_	7.6*	10.1*	13.0*	16.5*	4MSL-06X	2.8*	2.9*	2.9*	2.8*
4MSL-08_	10.3*	13.4*	17.1*	21.5*	4MSL-08X	3.8*	4.0*	3.9*	3.7*
4MSL-12_	13.8*	17.8*	22.7*	28.4*	4MSL-12X	4.9*	5.0*	5.0*	4.8*
4MSL-15_	20.3*	26.3*	33.4*	41.5*	4MSL-15X	7.0*	7.2*	7.2*	7.0*

Conditions: Suction Gas Return 20°C / Subcooling 0K

\*Conditions: Suction Superheat 10K, Subcooling 0K

## Service Compressors for 4 and 6 Cylinder S-Series and Discus Reciprocating Compressors

With the successful launch of Stream with Copeland compressor electronics technology 4M and 6M compressors, Emerson has decided to consolidate product families to allow our customers to reduce product proliferation and cost of operation. As a result, Emerson will in the future only produce the most efficient semi-hermetic reciprocating compressor platforms out of its current portfolio.

With a large number of 4 and 6 cylinder S-Series and Discus compressors operating in applications around the world, Emerson recognizes the importance of providing worry-free drop-in replacement models. The range of service compressors offers easy replacement (“like for like”) without the need of system adaptations.

More detailed information is available with our “Guidelines for replacement of S-Series and Discus compressors” available from your Emerson sales office or as download under [climate.emerson.com/en-gb](http://climate.emerson.com/en-gb)

For your product selection in case of replacement needs, please refer to the cross-reference table below. In addition, our local Application Engineering and Sales team is ready to support you.



Service Compressor

### Discus Replacements

D4DF-100X	→	4MFS1-13_
D4DA-100X	→	4MFS1-13_
D4DA-200X	→	4MAS1-22_
D4DL-150X	→	4MLS1-15_
D4DH-150X	→	4MLS1-15_
D4DH-250X	→	4MHS1-25_
D4DT-220X	→	4MMS1-20_
D4DJ-200X	→	4MMS1-20_
D4DJ-300X	→	4MIS1-30_
D6DL-270X	→	6MLS1-27_
D6DH-200X	→	6MLS1-27_
D6DH-350X	→	6MHS1-35_
D6DT-320X	→	6MMS1-30_
D6DJ-300X	→	6MMS1-30_
D6DJ-400X	→	6MIS1-40_

\*Valves are available as optional accessories.





# Refrigeration Units

## Refrigeration Units

Emerson offers the broadest and most reliable refrigeration unit product line-up. Leveraging the latest compressor technology, each platform provides you the option to select the refrigerant, capacity and application temperature combinations that meet your requirements. A huge variety of Copeland™ indoor and outdoor refrigeration units offer the right solution for applications in food retail and food service, commercial and industrial refrigeration.

Copeland scroll outdoor refrigeration units are designed and fully equipped for a quick and easy installation and ideal to integrate into urban environments. The latest scroll technology is combined with high-quality components and covered by a weatherproof housing in a unique design.

The Copeland ZX refrigeration unit series offers the highest energy efficiency available in a standard unit to lower operators' utility bills. Ranging in size from 1.2 to 7.5 hp, the ZX units are perfectly suited for typical food service and retail applications. The key benefits of compactness, silence and efficiency in the standard models will be enhanced by the capability of continuous capacity modulation of the ZX digital models. This makes ZX digital refrigeration units the perfect fit for applications with wide load variations.



Copeland scroll indoor refrigeration units are equipped with the latest refrigeration scroll compressors and constitute the widest range of their kind. The modular line concept offers base units which can be adapted to the target application by various options including weather housings and fan speed controls.

Copeland scroll digital receiver units HLR are an innovative offering for food service and retail businesses. Their compact design and the power of digital scroll continuous capacity modulation enable optimized environmental integration with highest system efficiency.

Semi-hermetic refrigeration units: robust, reliable and efficient air-cooled refrigeration unit platforms featuring semi-hermetic reciprocating compressor technology are for use in high-medium- and low-temperature applications. Emerson has expanded its semi-hermetic product range by the innovative Stream indoor refrigeration units which complete a product range from 0.8 - 40 hp with dedicated refrigerant approvals for R407A/F, R448A/ R449A, R404A, R134a, R450A and R513A.