

Copeland™ ZR Scroll Compressor Range Range for R513A, R407C and R134a

ZR Copeland scroll compressor were developed for comfort and process/precision cooling applications using R513A, R407C and R134a.

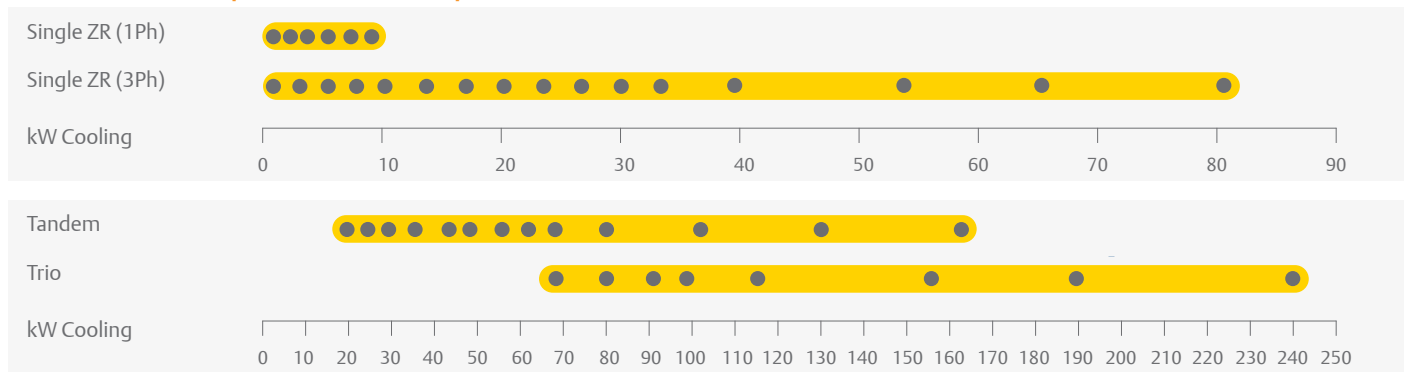
Applied in the air conditioning and comfort industry for water chillers, rooftops and close control unit applications, scroll compressors are now the most used compression technology replacing reciprocating and screw compressors due to its undeniable superiority. Several, fully Copeland qualified, multiple compressor assemblies (tandem and trio) are available to allow the use of Copeland scroll compressors into large capacity systems (ex. up to 500kW air cooled chillers) able to deliver optimal comfort, low operating cost with higher seasonal efficiency (SEER). To support the new market needs of customers, Emerson offers scroll compressors for R513A, a low-pressure refrigerant with a low GWP of 631. These ranges are able to reach 5K Superheat which allows better system performance optimization and cost.

The range of products goes from the ZR24 (2hp) to the ZR380 (30hp) for R407C and R134a and from ZR24KRE (2hp) to ZR190KRE (15hp) for R513A, R407C and R134a.



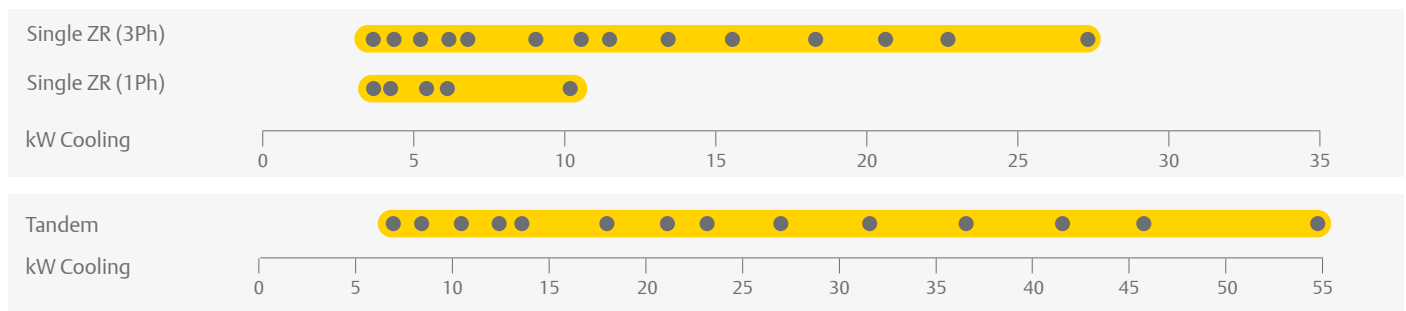
ZR scroll compressor

ZR Scroll Compressor Line-up R407C



Conditions EN12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K

ZR Scroll Compressor Line-up R513A



Conditions EN12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K

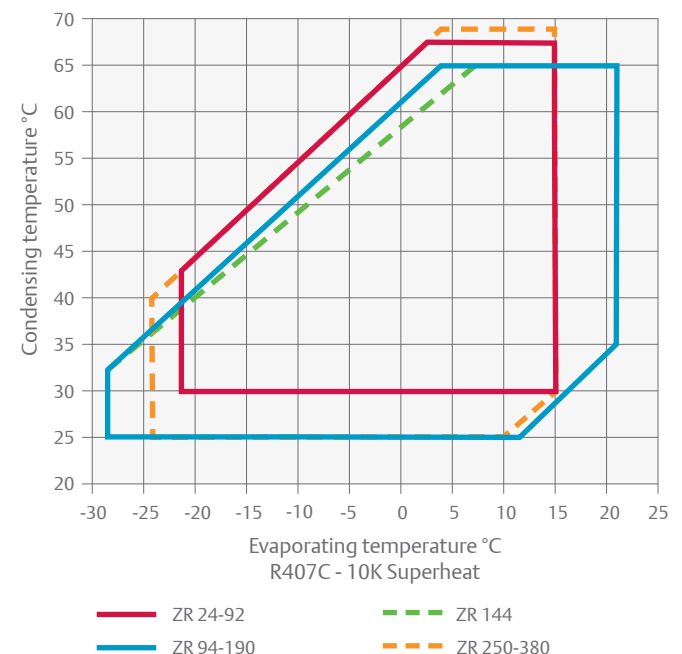
Features and Benefits

- Copeland scroll axial and radial compliance for superior reliability and efficiency
- Wide scroll line-up for R407C, R134a and R513A
- Low TEWI (Total Equivalent Warming Impact)
- Low sound and vibration level
- Low oil circulation rate
- Copeland qualified tandem and trio configurations for superior seasonal efficiency (SEER)

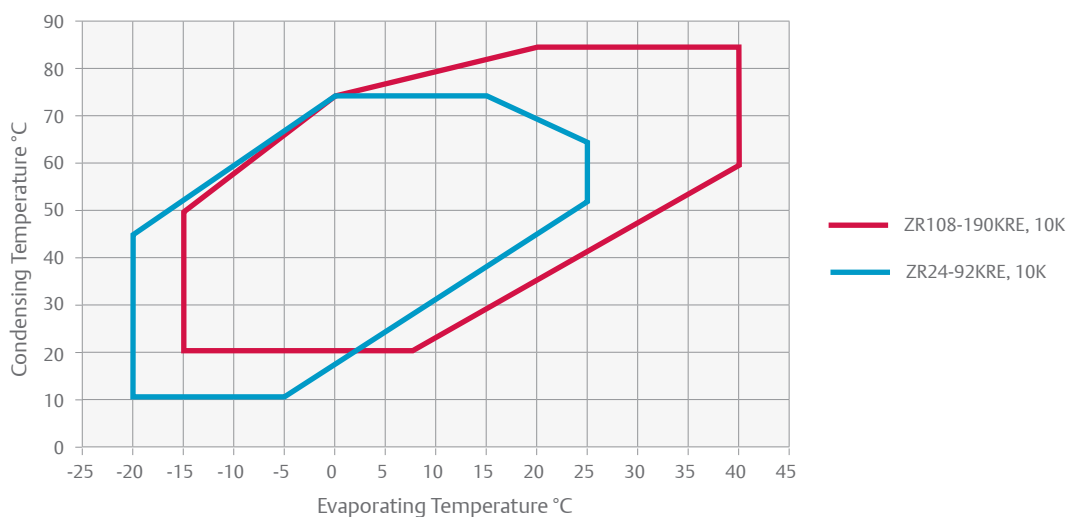
Maximum Allowable Pressure (PS)

- ZR24 to ZR81:
Low side PS 21 bar(g) / High side PS 29 bar(g)
- ZR108 to ZR380:
Low side PS 20 bar(g) / High side PS 32 bar(g)

Operating Envelope R407C



Operating Envelope R513A



Technical Overview ZR*KRE

Models	Nominal hp	R513A/R134a Capacity (kW)	R407C Capacity (kW)	EER	Displacement (m³/h)	Stub Suction (inch)	Stub Discharge (inch)	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) ***
											1 Ph *	3 Ph **	1 Ph *	3 Ph **	1 Ph *	3 Ph **	
ZR24KRE	2.0	3.5	5.0	3.0	5.9	3/4	1/2	0.7	239/245/364	25	PFJ	TFD	13	5	58	26	54
ZR28KRE	2.5	4.2	5.9	2.9	6.8	3/4	1/2	1.1	239/245/364	26	PFJ	TFD	13	5	61	32	57
ZR36KRE	3.0	5.2	7.6	3.1	8.6	3/4	1/2	1.2	239/245/387	27	PFJ	TFD	16	6	82	40	55
ZR42KRE	3.5	6.2	8.9	3.2	10.0	3/4	1/2	1.1	239/245/400	28	PFJ	TFD	20	7	97	46	56
ZR48KRE	4.0	6.9	10.3	3.1	11.4	7/8	1/2	1.5	239/245/417	29	PFJ	TFD	24	10	114	50	57
ZR61KRE	5.0	9.0	13.0	3.2	14.4	7/8	1/2	1.9	246/257/438	38		TFD		13		66	58
ZR69KRE	5.5	10.2	14.3	3.2	16.2	7/8	1/2	1.9	246/257/438	43	PFJ		36		150		59
ZR72KRE	6.0	10.6	15.4	3.4	17.1	7/8	1/2	1.9	246/257/438	39		TFD		13		74	61
ZR81KRE	6.5	11.6	16.6	3.2	18.8	7/8	3/4	1.8	246/257/443	39		TFD		14		101	61
ZR92KRE	8.0	13.5	18.8	3.2	21.4	7/8	3/4	1.9	246/257/443	44		TFD		16		102	65
ZR108KRE	9.0	15.6	23.0	3.2	24.9	1 3/8	7/8	3.4	281/284/533	60		TFD		18		111	63
ZR125KRE	10.0	18.2	27.0	3.3	29.1	1 3/8	7/8	3.4	281/284/533	61		TFD		20		118	63
ZR144KRE	12.0	20.5	30.9	3.2	33.2	1 3/8	7/8	3.3	281/284/533	61		TFD		22		118	64
ZR160KRE	13.0	22.8	33.4	3.1	36.4	1 3/8	7/8	3.3	281/284/552	65		TFD		28		140	68
ZR190KRE	15.0	27.2	39.3	3.1	43.3	1 3/8	7/8	3.4	281/285/552	66		TFD		35		174	71

Conditions EN12900 : Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K
 * 1 Ph: 230V/ 50Hz

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

Technical Overview ZR*KCE

Models	Nominal hp	R407C Capacity (kW)	EER	Displacement (m³/h)	Stub Suction (inch)	Stub Discharge (inch)	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) ***
ZR108KCE	9.0	23.0	3.4	25.0	1 3/8	7/8	3.3	281/285/533	60	TFD		18	111	63
ZR125KCE	10.0	27.0	3.4	29.1	1 3/8	7/8	3.3	264/285/533	61	TFD		20	118	63
ZR144KCE	12.0	30.9	3.4	33.2	1 3/8	7/8	3.3	281/285/533	61	TFD		22	118	64
ZR160KCE	13.0	33.4	3.2	36.4	1 3/8	7/8	3.4	281/285/552	65	TFD		28	140	67
ZR190KCE	15.0	39.3	3.2	43.3	1 3/8	7/8	3.4	281/285/552	66	TFD		35	174	69
ZR250KCE	20.0	52.2	3.2	56.6	1 5/8	1 3/8	4.7	427/376/726	139	TWD		42	225	72
ZR310KCE	25.0	65.0	3.2	71.4	1 5/8	1 3/8	6.8	447/390/724	160	TWD		52	272	74
ZR380KCE	30.0	80.1	3.4	87.5	1 5/8	1 3/8	6.3	447/427/724	177	TWD		63	310	77

Conditions EN12900 : Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K
 ** 3 Ph: 380-420V/ 50Hz

*** @ 1m: sound pressure level at 1m distance from the compressor, free field condition
 Models ZR22K3E-ZR48K3E, ZR61KSE and ZR61KCE-ZR81KCE are available as service compressors

Capacity Data

Condensing Temperature 50°C															
R513A	Cooling Capacity (kW)							R513A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-15	-10	-5	0	+5	+10	+15	Model	-15	-10	-5	0	+5	+10	+15
ZR24KRE	1.3	1.7	2.2	2.8	3.5	4.4	5.3	ZR24KRE	1.3	1.3	1.2	1.2	1.2	1.2	1.2
ZR28KRE	1.6	2.1	2.7	3.4	4.2	5.1	6.2	ZR28KRE	1.4	1.4	1.4	1.4	1.4	1.4	1.4
ZR36KRE	2.1	2.7	3.4	4.2	5.2	6.4	7.8	ZR36KRE	1.8	1.8	1.7	1.7	1.7	1.7	1.7
ZR42KRE	2.4	3.1	4.0	5.0	6.2	7.5	9.1	ZR42KRE	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ZR48KRE	2.8	3.6	4.5	5.6	6.9	8.5	10.3	ZR48KRE	2.3	2.3	2.3	2.3	2.3	2.3	2.3
ZR61KRE	3.5	4.6	5.9	7.3	9.0	11.0	13.2	ZR61KRE	2.9	2.9	2.9	2.8	2.8	2.8	2.9
ZR69KRE**	4.0	5.2	6.6	8.2	10.2	12.4	14.9	ZR69KRE**	3.2	3.2	3.2	3.2	3.2	3.2	3.2
ZR72KRE	4.2	5.4	6.9	8.6	10.6	12.9	15.5	ZR72KRE	3.3	3.3	3.2	3.2	3.2	3.2	3.22
ZR81KRE	4.8	6.1	7.6	9.4	11.6	14.2	17.1	ZR81KRE	3.8	3.8	3.8	3.7	3.7	3.7	3.7
ZR92KRE	5.7	7.1	8.9	11.0	13.5	16.4	19.8	ZR92KRE	3.8	3.9	4.0	4.1	4.2	4.4	4.5
ZR108KRE	6.3	7.7	10.0	12.6	15.6	19.1	23.1	ZR108KRE	4.8	4.8	4.9	4.9	4.9	5.0	5.0
ZR125KRE	6.8	9.0	11.7	14.7	18.2	22.3	27.0	ZR125KRE	5.5	5.7	5.7	5.7	5.8	5.8	5.9
ZR144KRE	8.2	10.3	13.2	16.6	20.5	25.1	30.4	ZR144KRE	6.4	6.4	6.4	6.4	6.5	6.5	6.6
ZR160KRE	8.0	11.5	14.8	18.5	22.8	27.9	33.8	ZR160KRE	7.2	7.3	7.3	7.4	7.4	7.5	7.5
ZR190KRE	10.1	13.7	17.6	22.0	27.2	33.2	40.2	ZR190KRE	9.0	8.7	8.7	8.7	8.8	8.9	9.0

Conditions: Suction Superheat 10K / Subcooling 0K

** Single Phase only

Preliminary data

Condensing Temperature 50°C															
R134a	Cooling Capacity (kW)							R134a	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-15	-10	-5	0	+5	+10	+15	Model	-15	-10	-5	0	+5	+10	+15
ZR108KCE		8.1	10.3	12.8	15.7	19.1	23.0	ZR108KCE		4.6	4.6	4.7	4.7	4.7	4.7
ZR125KCE		9.1	11.8	14.8	18.3	22.3	26.9	ZR125KCE		5.3	5.4	5.4	5.4	5.5	5.5
ZR144KCE		11.2	14.3	17.5	21.0	24.8	29.0	ZR144KCE		6.1	6.3	6.3	6.3	6.3	6.4
ZR160KCE		11.1	14.5	18.3	22.7	27.8	33.6	ZR160KCE		6.8	6.9	6.9	7.0	7.0	7.2
ZR190KCE		13.6	17.5	22.0	27.2	33.1	40.1	ZR190KCE		8.5	8.5	8.6	8.6	8.6	8.7
ZR250KCE		18.4	23.2	28.9	35.5	43.3	52.2	ZR250KCE		10.9	10.9	11.0	11.1	11.2	11.4
ZR310KCE		22.3	28.3	35.2	43.3	52.8	63.7	ZR310KCE		13.3	13.5	13.6	13.7	13.9	14.1

Conditions: Suction Superheat 10K / Subcooling 0K

Condensing Temperature +50°C															
R407C	Cooling Capacity (kW)							R407C	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-15	-10	-5	0	+5	+10	+15	Model	-15	-10	-5	0	+5	+10	+15
ZR24KRE		2.6	3.3	4.1	5.0	6.1	7.3	ZR24KRE		1.8	1.8	1.7	1.7	1.7	1.7
ZR28KRE		3.0	3.8	4.8	5.9	7.2	8.6	ZR28KRE		2.0	2.0	2.0	2.0	1.9	1.9
ZR36KRE		4.0	5.0	6.2	7.6	9.2	11.0	ZR36KRE		2.4	2.4	2.4	2.4	2.4	2.4
ZR42KRE		4.6	5.9	7.3	8.9	10.8	12.8	ZR42KRE		2.9	2.9	2.8	2.8	2.8	2.8
ZR48KRE		5.4	6.8	8.4	10.3	12.5	14.9	ZR48KRE		3.2	3.2	3.2	3.2	3.1	3.1
ZR61KRE		7.1	8.8	10.8	13.0	15.6	18.7	ZR61KRE		4.0	4.0	4.0	4.1	4.1	4.1
ZR69KRE**		7.8	9.6	11.8	14.3	17.3	20.6	ZR69KRE**		4.9	4.8	4.7	4.5	4.3	4.1
ZR72KRE		8.0	10.1	12.5	15.4	18.6	22.2	ZR72KRE		4.7	4.7	4.7	4.7	4.7	4.7
ZR81KRE		8.2	10.6	13.3	16.6	20.3	24.6	ZR81KRE		5.3	5.3	5.3	5.3	5.3	5.4
ZR92KRE		9.6	12.2	15.2	18.8	22.9	27.6	ZR92KRE		6.0	6.1	6.2	6.2	6.2	6.2
ZR108KCE/KRE		12.2	15.3	18.9	23.0	27.9	33.4	ZR108KCE/KRE		6.8	6.8	6.9	6.9	6.9	6.9
ZR125KCE/KRE		14.0	17.7	22.0	27.0	32.6	39.1	ZR125KCE/KRE		8.0	8.0	8.0	8.1	8.1	8.1
ZR144KCE/KRE			20.1	25.2	30.9	37.4	44.8	ZR144KCE/KRE			9.1	9.1	9.1	9.1	9.2
ZR160KCE/KRE		15.9	20.8	26.7	33.4	41.3	50.3	ZR160KCE/KRE		10.3	10.3	10.3	10.3	10.4	10.4
ZR190KCE/KRE		19.8	25.5	31.9	39.3	47.7	57.3	ZR190KCE/KRE		12.2	12.3	12.3	12.3	12.4	12.5
ZR250KCE		27.5	34.5	42.7	52.2	63.2	75.8	ZR250KCE		15.9	16.0	16.1	16.3	16.4	16.6
ZR310KCE		33.5	42.4	52.8	65.0	79.1	95.4	ZR310KCE		20.0	20.0	20.0	20.2	20.4	20.6
ZR380KCE		40.1	51.8	64.9	80.1	97.6	118.0	ZR380KCE		23.9	24.1	24.3	24.4	24.6	24.9

Conditions: Suction Superheat 10K / Subcooling 0K

ZR* KRE Tandem Model Overview

Model	Tandem Assembly	Cooling Capacity (kW)		
		R407C	R513A	R134a
Even Tandem				
ZRT 48 KRE	2 x ZR24 KRE	10.0	7.0	7.2
ZRT 56 KRE	2 x ZR28 KRE	11.8	8.4	8.3
ZRT 72 KRE	2 x ZR36 KRE	15.2	10.4	10.5
ZRT 84 KRE	2 x ZR42 KRE	17.7	12.4	12.1
ZRT 96 KRE	2 x ZR48KRE	20.6	13.8	13.2
ZRT 122 KRE	2 x ZR61KRE	26.0	18.0	17.5
ZRT 144 KRE	2 x ZR72KRE	30.7	21.2	21.0
ZRT 162 KRE	2 x ZR81KRE	33.1	23.2	23.6
ZRT 184 KRE	2 x ZR92KRE	37.5	27.0	26.7
ZRT 216 KRE	2 x ZR108KRE	45.3	31.6	31.3
ZRT 250 KRE	2 x ZR125KRE	53.2	36.8	36.5
ZRT 288 KRE	2 x ZR144KRE	60.9	41.6	42.0
ZRT 320 KRE	2 x ZR160KRE	65.8	45.8	45.4
ZRT 380 KRE	2 x ZR190KRE	77.4	54.8	54.3

Conditions EN 12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K
Tandem Assemblies by System Manufacturers. Emerson can provide full technical support.
Preliminary data

ZR* KCE Tandem Model Overview

Model	Tandem Assembly	Cooling Capacity (kW)	
		R407C	R134a
Even Tandem			
ZRT 216 KCE	2 x ZR108KCE	46.0	31.3
ZRT 250 KCE	2 x ZR125KCE	54.0	36.5
ZRT 288 KCE	2 x ZR144KCE	61.8	42.0
ZRT 320 KCE	2 x ZR160KCE	66.8	45.4
ZRT 380 KCE	2 x ZR190KCE	78.6	54.4
ZRT 500 KCE	2 x ZR250KCE	104.0	71.0
ZRT 620 KCE	2 x ZR310KCE	130.0	84.4
ZRT 760 KCE	2 x ZR380KCE	163.0	110.8
Uneven Tandem			
ZRU 315 KCE	ZR125KCE + ZR190KCE	66.3	45.5
ZRU 350 KCE	ZR160KCE + ZR190KCE	72.7	49.9
ZRU 440 KCE	ZR190KCE + ZR250KCE	91.5	62.7
ZRU 500 KCE	ZR190KCE + ZR310KCE	99.8	69.4
ZRU 560 KCE	ZR250KCE + ZR310KCE	112.7	77.7
ZRU 690 KCE	ZR310KCE + ZR380KCE	140.6	97.6

Conditions EN 12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K
Tandem Assemblies by System Manufacturers. Emerson can provide full technical support.