

General Product Guide 2020

For refrigeration, air conditioning and heat pumps



EMERSON

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

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

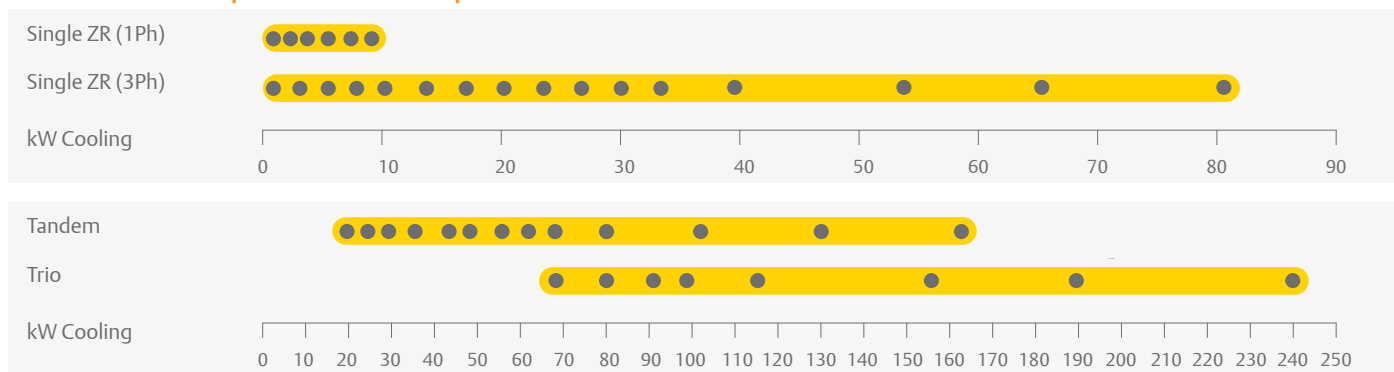
Applied in the air conditioning and comfort industry for water chillers, rooftops and close control unit applications, scroll compressors are now the most used compression technology replacing reciprocating and screw compressors due to its undeniable superiority. Several, fully Copeland™ qualified, multiple 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 ZR18 (1.5hp) to the ZR380 (30hp) for R407C and R134a and from ZR24KRE (2hp) to ZR190KRE (15hp) for R513A, R407C and R134a.



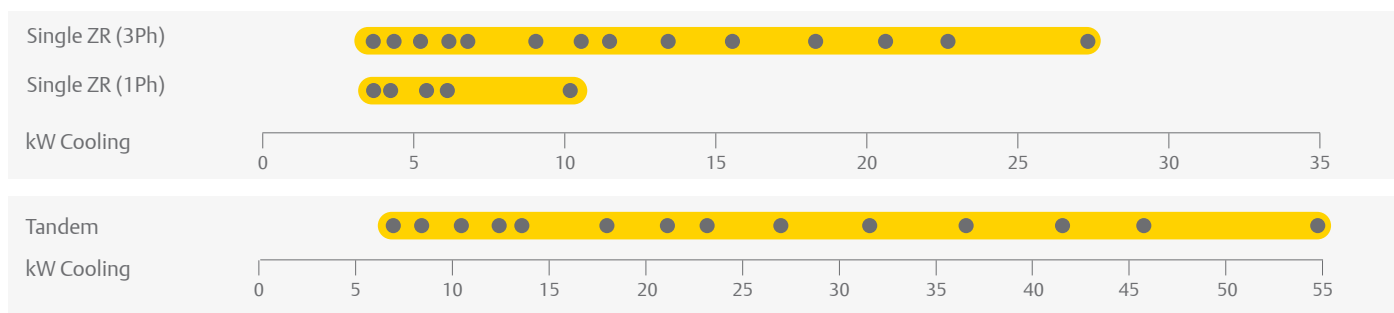
ZR Scroll Compressor

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

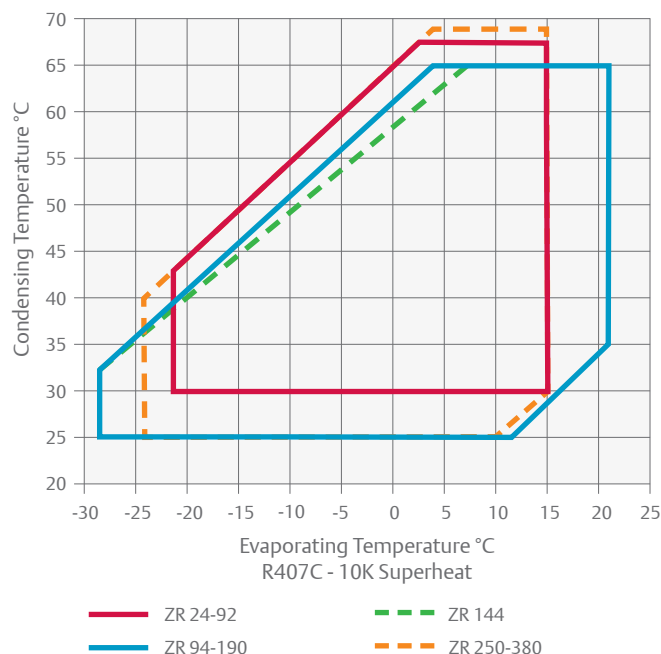
Features and Benefits

- Copeland Scroll axial and radial compliance for superior reliability and efficiency
- Wide scroll line-up for R407C, R134 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)

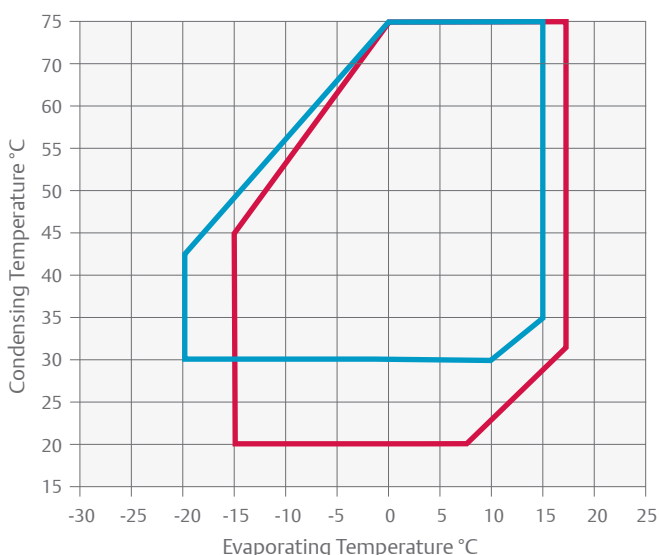
Maximum Allowable Pressure (PS)

- ZR24 to ZR81:
Low side PS 21 bar(g) / High Side PS 29 bar(g)
- ZR94 to ZR380:
Low side PS 20 bar(g) / High Side PS 32 bar(g)

Operating Envelope R407C



Operating Envelope R134a & R513A



— ZR108-380KCE R134a and
ZR92KRE R513A 10K

— ZR24-92KRE R134a/R513A 10K

Technical Overview ZR* KRE

Models	Nominal hp	R513A/R134a Capacity (kW)	R407C Capacity (kW)	EER	Displacement (m ³ /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	27	PFJ	TFD	13	7	61	32	54
ZR36KRE	3.0	5.2	7.6	3.1	8.6	3/4	1/2	1.2	239/245/387	29	PFJ	TFD	16	7	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	19	9	97	46	56
ZR48KRE	4.0	6.9	10.3	3.1	11.4	7/8	1/2	1.5	239/245/417	29		TFD		10		50	57
ZR61KRE	5.0	9.0	13.0	3.2	14.4	7/8	1/2	1.9	246/257/438	37		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	40		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	40		TFD		16		102	65
ZR108KRE	9.0	15.8	23.0	3.2	25.0	1 3/8	7/8	3.3	281/285/533	60		TFD		18		111	63
ZR125KRE	10.0	18.4	27.0	3.3	29.1	1 3/8	7/8	3.3	264/285/533	61		TFD		20		118	63
ZR144KRE	12.0	20.8	30.9	3.2	33.2	1 3/8	7/8	3.3	281/285/533	61		TFD		22		118	64
ZR160KRE	13.0	22.9	33.4	3.1	36.4	1 3/8	7/8	3.4	281/285/552	65		TFD		28		140	68
ZR190KRE	15.0	27.4	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
Preliminary data

Technical Overview ZR* KCE

Models	Nominal hp	R407C Capacity (kW)	EER	Displacement (m ³ /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) ***
										3 Ph**	3 Ph**	3 Ph**	
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, ZR61K3E and ZR81K3E are available as service compressors

Capacity Data

Condensing Temperature 50°C															
R513A / R134a	Cooling Capacity (kW)							R513A / 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
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	8.4	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	3.2
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
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
ZR380KCE		29.2	36.6	45.3	55.4	67.0	80.5	ZR380KCE		16.3	16.6	16.8	17.1	17.3	17.6

Conditions: Suction Superheat 10K / Subcooling 0K

** Single Phase only

Preliminary data

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
ZR94KCE		10.3	13.4	16.8	20.6	24.9	29.7	ZR94KCE		6.3	6.3	6.3	6.3	6.2	6.2
ZR108KCE		12.2	15.3	18.9	23.0	27.9	33.4	ZR108KCE		6.8	6.8	6.9	6.9	6.9	6.9
ZR125KCE		14.0	17.7	22.0	27.0	32.6	39.1	ZR125KCE		8.0	8.0	8.0	8.1	8.1	8.1
ZR144KCE			20.1	25.2	30.9	37.4	44.8	ZR144KCE			9.1	9.1	9.1	9.1	9.2
ZR160KCE		15.9	20.8	26.7	33.4	41.3	50.3	ZR160KCE		10.3	10.3	10.3	10.3	10.4	10.4
ZR190KCE		19.8	25.5	31.9	39.3	47.7	57.3	ZR190KCE		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	n/a	31.6	31.3
ZRT 250 KRE	2 x ZR125KRE	n/a	36.8	36.5
ZRT 288 KRE	2 x ZR144KRE	n/a	41.6	42.0
ZRT 320 KRE	2 x ZR160KRE	n/a	45.8	45.4
ZRT 380 KRE	2 x ZR190KRE	n/a	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 188 KCE	2 x ZR94KCE	41.2	26.9
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 ZR300KCE	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 + ZR300KCE	99.8	69.4
ZRU 560 KCE*	ZR250KCE + ZR300KCE	112.7	77.7
ZRU 690 KCE*	ZR300KCE + 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.

ZP Copeland Scroll™ Compressor Range for R410A

ZP Copeland Scroll compressors, for R410A, for comfort and process precision cooling applications. Emerson has been the pioneer in launching the first complete line-up of R410A commercial scroll compressors.

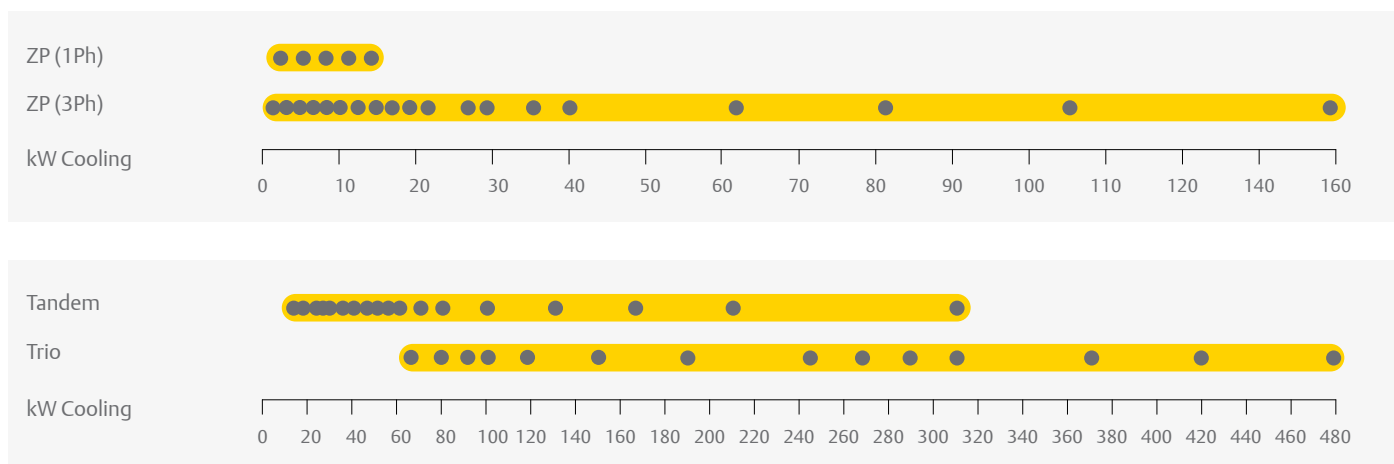
ZP Copeland Scroll compressors are perfectly suitable for air-cooled chiller systems up to 900kW (1100 kW if water-cooled) featuring high comfort and superior seasonal efficiency (ESEER). Whether used in stand-alone, tandem or trio configurations, the broad ZP Copeland Scroll line-up meets today's market requirements with unmatched flexibility, efficiency and proven reliability.

ZP104, ZP122 and ZP143KCE compressors for light commercial systems have a reduced footprint and weight for more compact systems. Their high efficiency helps to reduce operating costs.



ZP Scroll Compressor

ZP Scroll Compressor Line-up



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

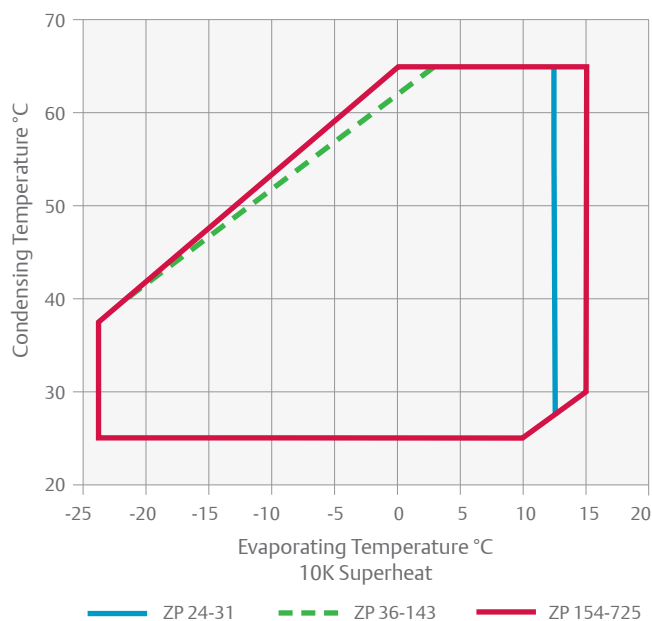
Features and Benefits

- Copeland qualified tandem and trio (now also uneven configurations for superior seasonal efficiency (ESEER and EN14825: SEER and SCOP)
- Copeland Scroll axial and radial compliance for superior reliability and efficiency
- Extended 5K operating envelope suitable for heat pump applications
- Low TEWI (Total equivalent warming impact)
- Wide scroll line-up for R410A
- Low sound and vibration level
- Low oil circulation rate

Maximum Allowable Pressure (PS)

- ZP24 to ZP91:
Low side PS 28 bar(g) / High side PS 43 bar(g)
- ZP104 to ZP725:
Low side PS 29.5 bar(g) / High side PS 45 bar(g)

Operating Envelope R410A



Technical Overview

Models	Nominal hp	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**	
ZP24K5E	1.9	5.1	2.8	4.0	3/4	1/2	0.7	236/236/387	22	PFJ	TFD	13	5	60	28	55
ZP29K5E	2.2	6.0	2.8	4.8	3/4	1/2	0.7	246/246/387	23	PFJ	TFD	16	6	67	38	55
ZP31K5E	3.0	6.5	2.8	5.1	3/4	1/2	0.7	243/243/388	22	PFJ	TFD	17	7	67	38	55
ZP36K5E	2.6	7.6	2.9	6.0	7/8	1/2	1.2	243/243/506	32	PFJ	TFD	20	7	87	46	57
ZP42K5E	3.5	8.9	2.9	6.9	7/8	1/2	1.2	246/246/418	31	PFJ	TFD	21	8	98	43	57
ZP54K5E	4.6	11.5	3.0	8.9	7/8	1/2	1.2	246/246/418	34	PFJ	TFD	31	10	128	52	59
ZP61K5E	5.0	13.4	3.0	10.0	7/8	1/2	1.2	246/246/445	35		TFD		11		67	57
ZP72KCE	6.0	15.3	3.0	11.7	7/8	1/2	1.7	246/246/455	45		TFD		15		75	59
ZP83KCE	7.0	17.7	3.1	13.5	7/8	1/2	1.8	246/246/443	40		TFD		15		101	61
ZP91KCE	7.5	19.3	3.1	14.7	1 1/4	1 1/4	1.8	243/248/443	41		TFD		16		101	61
ZP104KCE	9.0	22.7	3.2	16.8	1 1/8	7/8	2.5	297/262/559	49		TFD		18		128	60
ZP122KCE	10.0	26.5	3.2	19.6	1 1/8	7/8	2.5	297/262/559	49		TFD		22		139	61
ZP143KCE	12.0	31.6	3.2	23.1	1 1/8	7/8	2.8	270/262/559	49		TFD		25		146	61
ZP154KCE	13.0	33.1	3.2	24.9	1 3/8	7/8	3.3	281/285/552	65		TFD		31		140	66
ZP182KCE	15.0	39.0	3.2	29.1	1 3/8	7/8	3.3	281/285/552	66		TFD		34		174	66
ZP385KCE	30.0	82.4	3.2	60.8	1 5/8	1 3/8	6.3	448/392/715	178		TWD		65		310	74
ZP485KCE	40.0	105.0	3.2	77.3	1 5/8	1 3/8	6.3	368/345/756	190		TWD		83		408	78
ZP725KCE	60.0	159.5	3.2	115.5	2 1/8	1 3/8	6.3	483/460/864	260		FED		123		666	82

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

Capacity Data

Condensing Temperature +50°C															
R410A	Cooling Capacity (kW)							R410A	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
ZP24K5E		2.7	3.4	4.2	5.0	6.0		ZP24K5E		1.9	1.9	1.8	1.8	1.8	
ZP29K5E		3.1	4.0	4.9	6.0	7.3		ZP29K5E		2.3	2.2	2.2	2.2	2.1	
ZP31K5E		3.2	4.2	5.3	6.5	7.9		ZP31K5E		2.4	2.4	2.4	2.3	2.3	
ZP36K5E		4.1	5.1	6.3	7.6	9.1	10.8	ZP36K5E		2.8	2.7	2.7	2.6	2.6	2.5
ZP42K5E		4.5	5.8	7.3	8.9	10.7	12.8	ZP42K5E		3.3	3.2	3.1	3.0	3.0	2.9
ZP54K5E		5.8	7.5	9.3	11.5	13.9	16.6	ZP54K5E		4.0	3.9	3.9	3.8	3.8	3.8
ZP61K5E		7.2	9.0	11.1	13.4	16.0	18.9	ZP61K5E		4.6	4.5	4.5	4.4	4.4	4.4
ZP72KCE		8.6	10.5	12.7	15.3	18.2	21.5	ZP72KCE		5.1	5.1	5.1	5.1	5.1	5.1
ZP83KCE		9.8	12.1	14.7	17.7	21.1	25.1	ZP83KCE		5.7	5.8	5.8	5.8	5.8	5.9
ZP91KCE		10.6	13.2	16.1	19.3	22.9	27.0	ZP91KCE		6.1	6.1	6.1	6.2	6.2	6.2
ZP104KCE		12.6	15.6	18.9	22.7	27.0	31.9	ZP104KCE		7.1	7.1	7.1	7.1	7.1	7.1
ZP122KCE		14.8	18.3	22.1	26.5	31.5	37.2	ZP122KCE		8.3	8.3	8.3	8.3	8.3	8.4
ZP143KCE		17.1	21.4	26.3	31.6	37.6	44.1	ZP143KCE		9.8	9.8	9.8	9.8	9.8	9.8
ZP154KCE		18.7	23.0	27.7	33.1	39.3	46.3	ZP154KCE		10.3	10.3	10.4	10.5	10.6	10.7
ZP182KCE		22.2	27.1	32.7	39.0	46.2	54.6	ZP182KCE		12.0	12.1	12.2	12.3	12.4	12.5
ZP385KCE		46.3	56.6	68.6	82.3	98.1	116.0	ZP385KCE		25.4	25.3	25.4	25.6	25.9	26.3
ZP485KCE		60.2	73.1	88.0	105.0	125.0	147.0	ZP485KCE		31.1	31.5	32.0	32.5	33.2	34.0
ZP725KCE		91.7	111.0	135.5	159.0	188.0	222.0	ZP725KCE		49.7	50.0	50.3	50.5	50.9	51.3

Conditions: Suction Superheat 10K / Subcooling 0K

Tandem Model Overview

Model	Nominal hp	Cooling Capacity (kW)	Even Tandem	Uneven Tandem
Tandem ZPT - Tandem Uneven ZPU				
ZPT 72 K5E*	2 x 3	16	•	
ZPT 84 K5E*	2 x 3.5	18	•	
ZPT 108 K5E*	2 x 4	23	•	
ZPT 122 K5E*	2 x 5	26	•	
ZPT 144 KCE*	2 x 6	31	•	
ZPT 166 KCE*	2 x 6.5	35	•	
ZPT 182 KCE*	2 x 8	39	•	
ZPT 208 KCE*	2 x 9	45	•	
ZPT 244 KCE*	2 x 10	53	•	
ZPT 286KCE	2 x 12	63	•	
ZPT 308KCE*	2 x 13	67	•	
ZPU 336 KCE*	13 + 15	73		•
ZPT 364 KCE*	2 x 15	79	•	
ZPU 417 KCE*	15 + 20	90		•
ZPT 470 KCE*	2 x 20	101	•	
ZPU 477 KCE*	15 + 25	103		•
ZPU 530 KCE*	20 + 25	114		•
ZPT 590 KCE*	2 x 25	127	•	
ZPU 680 KCE*	25 + 30	146		•
ZPT 770 KCE*	2 x 30	165	•	
ZPU 870 KCE*	30 + 40	187		•
ZPT 970 KCE*	2 x 40	209	•	
ZPU 111 MCE*	30 + 60	240		•
ZPU 121 MCE*	40 + 60	262		•
ZPT 145 MCE*	60 + 60	317	•	

System using ZP235 or ZP295 (20 or 25 hp) shall use ZP232KZE and ZP292KZE (refer to next chapter)

Conditions EN 12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K

* Tandem assemblies by system manufacturers. Emerson can provide full technical support.

ZP Copeland Scroll™ Air Conditioning Compressor Range, Optimized for Seasonal Performance

The new ZP* KZE and ZP* KPE scroll compressors for large chillers feature advanced monitoring capabilities and improved part-load cooling efficiency, thanks to VVR technology. This will help OEMs meet the minimum seasonal performance level required by the Ecodesign Directive.

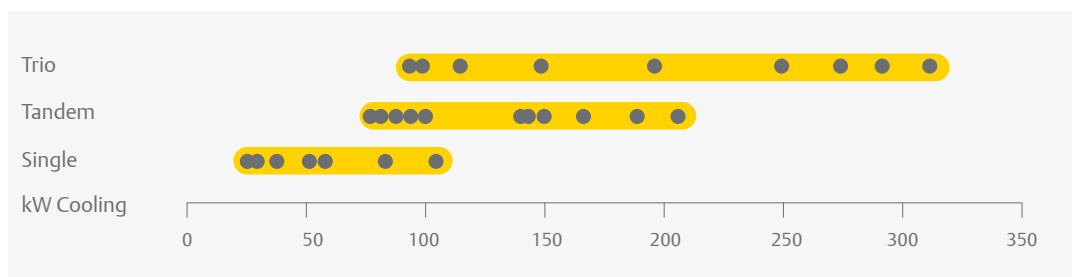
The CoreSense™ Communications module they are equipped with ensures enhanced reliability, by providing real time compressor data to the system controller to provide temperature protection.

They are designed for reversible chillers, rooftop or air handling units with a cooling capacity between 30 and 400 kW.



ZP* KZE Scroll Compressor

ZP* KZE & ZP* KPE Compressor Line-up



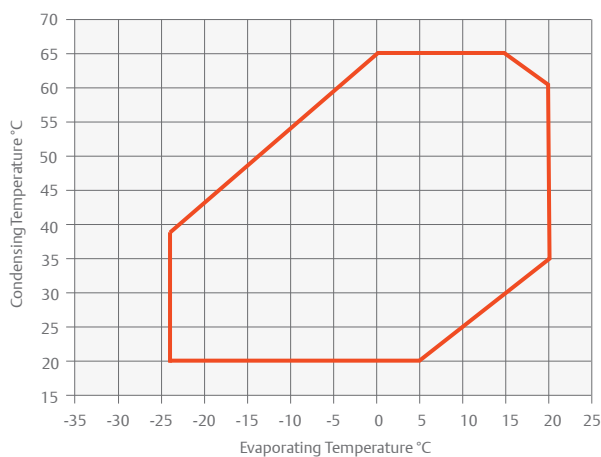
Multiple Copeland Scroll Nominal Cooling kW @ (5/50) EN12900 - 1 Circuit

Features and Benefits

- High seasonal performance (SEER)
5% improved SEER versus previous generation
- Flexibility & reduced complexity
Wide range of even and uneven tandem and trio assemblies for a full system line-up with a reduced number of compressor models in stock.
- Enhanced reliability through electronics

The CoreSense Communications module provides realtime compressor data via RS485 Modbus that is used by the system controller to provide temperature protection. This ensures greater reliability for demanding applications.

Operating Envelope R410A



Technical Overview

Models	Nominal hp	Capacity (kW)	EER	Displacement (m ³ /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) ***
										3 Ph **	3 Ph **	3 Ph **	
ZP137KPE	12.0	29.5	3.1	22.1	1 3/8	7/8	3.3	264/285/533	63	TFD	25	118	64
ZP154KPE	13.0	33.0	3.1	24.9	1 3/8	7/8	3.3	281/285/552	65	TFD	31	140	65
ZP182KPE	15.0	38.8	3.1	29.1	1 3/8	7/8	3.3	326/295/552	66	TFD	34	174	66
ZP232KZE	20.0	50.6	3.3	36.6	1 5/8	1 1/8	4.4	315/315/661	92	TND	38	241	72
ZP292KZE	25.0	63.3	3.3	45.7	1 5/8	1 1/8	4.4	315/315/661	92	TND	49	288	72
ZP385KPE	30.0	82.9	3.2	60.8	1 5/8	1 3/8	6.3	447/427/724	177	TWD	65	310	74
ZP485KPE	40.0	105.0	3.2	77.3	1 5/8	1 3/8	6.3	368/345/756	190	TWD	83	408	78

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

Capacity Data

Condensing Temperature +50°C																
R410A	Cooling Capacity (kW)							R410A	Power Input (kW)							
	Evaporating Temperature (°C)								Evaporating Temperature (°C)							
	Model	-15	-10	-5	0	+5	+10		+15	Model	-15	-10	-5	0	+5	+10
ZP137KPE		16.0	20.0	24.5	29.5	35.2	41.5	ZP137KPE		9.8	9.7	9.6	9.5	9.5	9.5	9.4
ZP154KPE		18.3	22.5	27.4	33.0	39.4	46.6	ZP154KPE		11.0	10.9	10.8	10.7	10.5	10.5	10.5
ZP182KPE		21.6	26.7	32.4	38.8	46.0	54.2	ZP182KPE		12.8	12.8	12.7	12.6	12.5	12.4	12.4
ZP232KZE		28.5	34.9	42.2	50.6	60.1	70.8	ZP232KZE		15.2	15.3	15.3	15.3	15.3	15.3	15.3
ZP292KZE		36.1	44.0	53.1	63.3	74.8	87.6	ZP292KZE		19.4	19.5	19.4	19.4	19.3	19.3	19.3
ZP385KPE		47.0	57.3	69.2	82.9	98.6	116.5	ZP385KPE		25.9	25.9	25.8	25.8	25.9	26.1	26.1
ZP485KPE		60.7	73.5	88.2	105.0	124.5	146.0	ZP485KPE		32.9	32.9	32.9	33.0	33.1	33.4	33.4

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary data

Tandem Model Overview

Model	Nominal Horsepower hp	Cooling Capacity kW
Even Tandem ZPT		
ZPT 274 K	2 x ZP137 KZE	58
ZPT 308 K	2 x ZP154 KPE	67
ZPT 364 K	2 x ZP182 KPE	77
ZPT 464 K	2 x ZP232 KZE	101
ZPT 584 K	2 x ZP292 KZE	125
ZPT 770 K	2 x ZP385 KPE	165
ZPT 970 K	2 x ZP485 KPE	209
Uneven Tandem ZPU		
ZPU 336 K	ZP154 KPE + ZP182 KPE	72
ZPU 414 K	ZP182 KPE + ZP232 KZE	89
ZPU 474 K	ZP182 KPE + ZP292 KZE	102
ZPU 524 K	ZP232 KZE + ZP292 KZE	114
ZPU 677 K	ZP292 KZE + ZP385 KPE	146
ZPU 717 K	ZP232 KZE + ZP485 KPE	155
ZPU 870 K	ZP385 KPE + ZP485 KPE	187

Conditions EN 12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K

* Tandem assemblies by system manufacturers. Emerson can provide full technical support.

ZPD & ZRD Copeland Scroll Digital™ Compressor Ranges for R513A, R410A and R407C

Stepless capacity modulation in air conditioning applications: flexible solution for R513A, R407C and R410A.

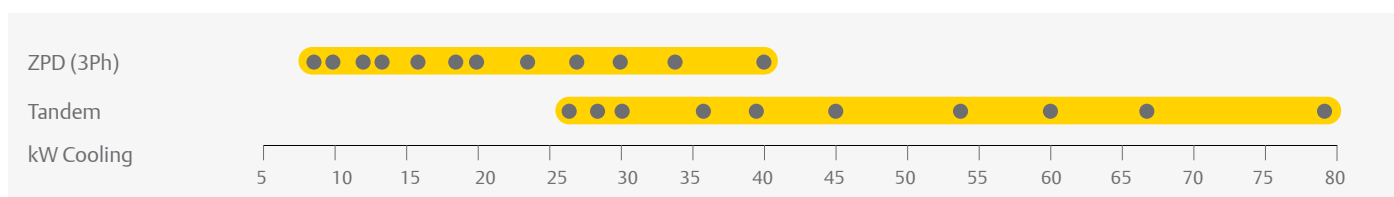
In many cooling and heating systems, the load and the operating conditions vary over a wide range thus requiring the use of capacity modulation. Digital Scroll assures stepless modulation down to 10% of the nominal capacity, enabling precise temperature control, superior comfort and energy saving.

Digital Scroll compressors are the preferred choice for process cooling, refrigeration racks, refrigeration units, VRF, rooftop and air handling unit systems.

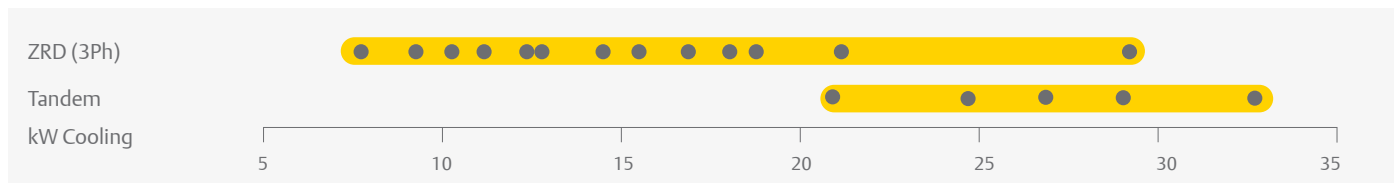
ZPD & ZRD Copeland Scroll Digital Compressor



ZPD Digital Scroll Compressor Line-up R410A

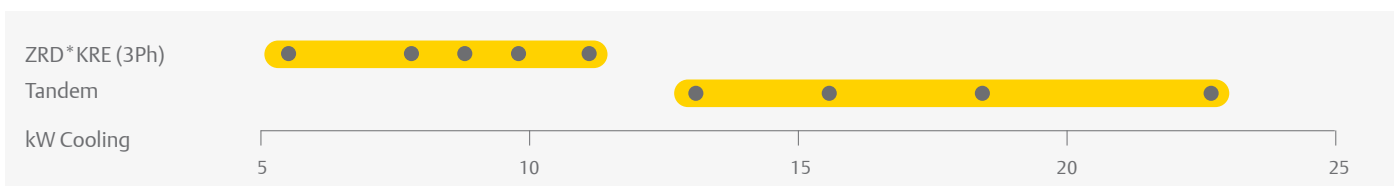


ZRD Digital Scroll Compressor Line-up R407C



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

ZRD* KRE Digital Scroll Compressor Line-up R513A



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

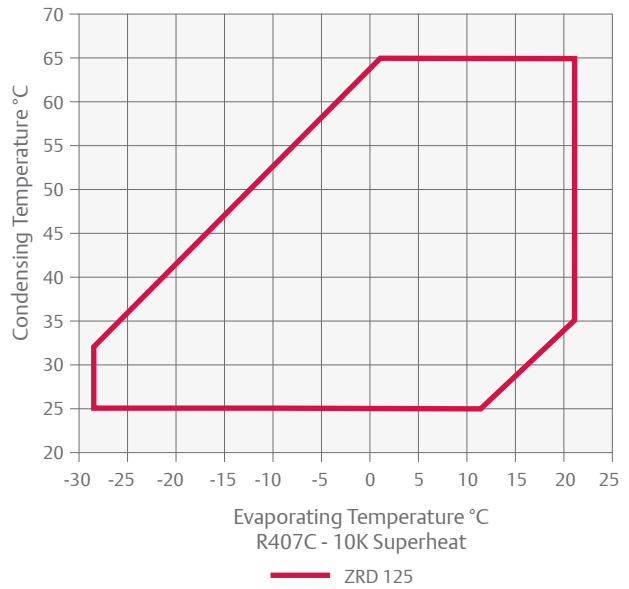
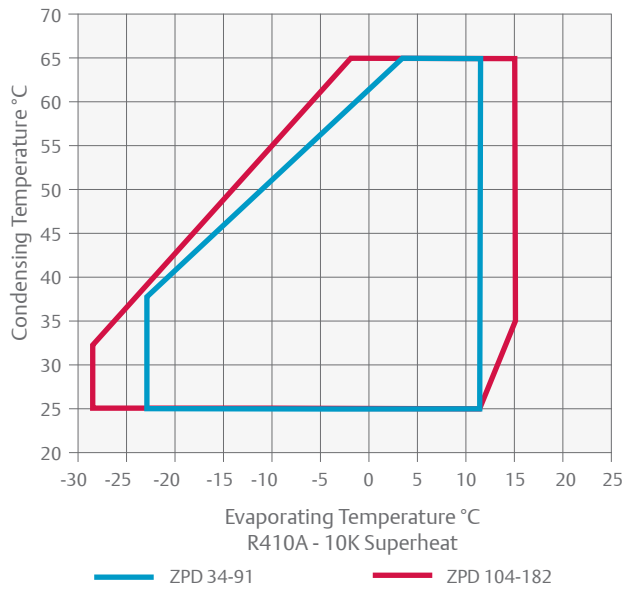
Features and Benefits

- Wide modulation range from 10% to 100% for immediate load adjustment, close temperature comfort, optimal comfort
- No complex electronics, a quasi-drop-in solution for fast time to market, no EMI/EMC problems, easy installation and maintenance
- No impact on system mechanical balance: no vibration and resonance phenomenon, no frame / piping redesign necessary

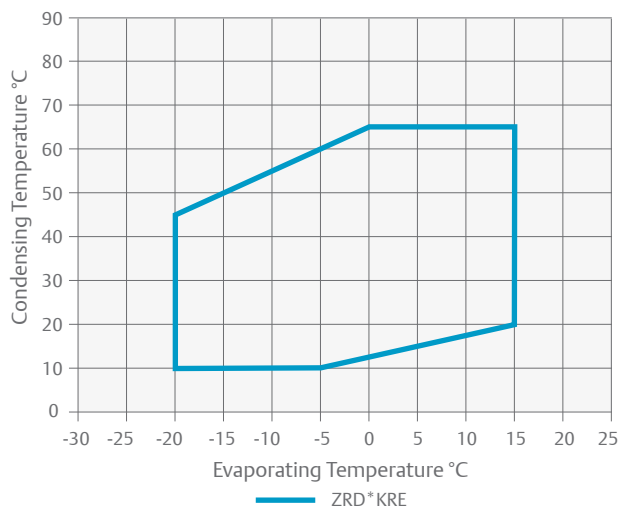
Maximum Allowable Pressure (PS)

- Digital ZRD42 to ZRD81:
Low Side PS 20 bar(g) / High Side PS 29.5 bar(g)
- Digital ZRD94 to ZRD125:
Low Side PS 20 bar(g) / High Side PS 32 bar(g)
- Digital ZPD34 to ZPD91:
Low Side PS 28 bar(g) / High Side PS 43 bar(g)
- Digital ZPD103 to ZPD182:
Low Side PS 29.5 bar(g) / High Side PS 45 bar(g)

Operating Envelope R410A/R407C



Operating Envelope R513A



Technical Overview - ZPD R410A Models

Models	Nominal hp	Capacity (kW)	EER	Displacement (m ³ /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 - dB(A) **
										3 Ph *	3 Ph *	3 Ph *	
ZPD34KSE	3.0	7.3	2.8	5.7	7/8	1/2	1.2	243/243/448	31	TFM	12	64	66
ZPD42KSE	3.5	9.1	3.0	6.9	7/8	1/2	1.2	243/243/464	31	TFM	8	52	66
ZPD54KSE	4.5	11.5	3.0	8.9	7/8	1/2	1.2	236/236/479	35	TFM	10	62	67
ZPD61KCE	5.0	13.2	2.9	10.1	7/8	1/2	1.9	241/246/484	41	TFD	12	64	63
ZPD72KCE	5.0	15.2	2.9	11.6	7/8	1/2	1.9	241/246/484	40	TFD	15	75	67
ZPD83KCE	6.0	17.7	3.0	13.4	7/8	1/2	1.8	246/253/481	40	TFD	16	101	64
ZPD91KCE	7.5	19.2	3.1	14.7	7/8	3/4	1.8	246/253/481	40	TFD	16	101	69
ZPD104KCE	9.0	22.7	3.1	16.7	1 1/8	7/8	2.5	270/262/605	61	TFD	18	128	63
ZPD122KCE	10.0	26.3	3.1	19.7	1 1/8	7/8	2.5	270/262/605	62	TFD	21	139	63
ZPD137KCE	12.0	29.5	3.1	22.1	1 3/8	7/8	3.3	293/285/533	62	TFD	25	118	63
ZPD154KCE	13.0	33.1	3.1	24.8	1 3/8	7/8	3.3	314/285/552	65	TFD	27	140	66
ZPD182KCE	15.0	39.0	3.1	29.0	1 3/8	7/8	3.3	314/285/552	67	TFD	34	173	68

Conditions EN12900 R410A: 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

Technical Overview - ZRD* KRE R407C, R134a and R513A Models

Models	Nominal hp	R513A/R134a Capacity (kW)	R407C Capacity (kW)	EER	Displacement (m ³ /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 **	
ZRD36KRE	3.0	5.2	7.7	3.2	8.3	3/4	1/2	1.2	239/244/435	30	PFJ	TFD	17	7	97	40	58
ZRD48KRE	4.0	7.0	10.3	3.1	11.4	7/8	1/2	1.4	239/244/466	30		TFD		10		48	58
ZRD61KRE	5.0	8.9	12.4	3.2	14.4	7/8	1/2	1.9	246/257/481	38		TFD		11		64	67
ZRD72KRE	6.0	10.6	15.4	3.1	17.1	7/8	1/2	1.9	246/257/481	40		TFD		13		74	67
ZRD92KRE	7.5	13.4	18.8	3.1	21.4	7/8	3/4	1.9	246/257/481	43		TFD		16		102	68

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

Preliminary data

Technical Overview - ZRD* KCE R407C Models

Models	Nominal hp	Capacity (kW)	EER	Displacement (m ³ /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 - dB(A) **
										3 Ph *	3 Ph *	3 Ph *	
ZRD125KCE	10.0	27.7	3.3	28.8	1 3/8	7/8	3.3	293/285/533	61	TFD	20	118	64

Conditions EN12900 R410A: 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

Capacity Data

Condensing Temperature 50°C																	
R410A		Cooling Capacity (kW)						R410A		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
ZPD34KSE			3.9	4.9	6.0	7.3	8.7		ZPD34KSE			2.7	2.6	2.6	2.6	2.5	
ZPD42KSE			5.0	6.2	7.6	9.1	10.9		ZPD42KSE			2.9	3.0	3.0	3.0	3.0	
ZPD54KSE			6.7	8.2	9.8	11.8	13.9		ZPD54KSE			4.0	3.9	3.9	3.8	3.8	
ZPD61KCE			7.3	9.0	11.0	13.2	15.7	18.6	ZPD61KCE			4.2	4.3	4.4	4.4	4.5	4.5
ZPD72KCE			8.6	10.5	12.7	15.3	18.1	21.4	ZPD72KCE			4.9	5.0	5.1	5.2	5.2	5.3
ZPD83KCE			9.8	12.1	14.7	17.7	21.2	25.1	ZPD83KCE			6.0	6.0	6.0	6.0	6.0	6.0
ZPD91KCE			10.6	13.2	16.0	19.2	22.8	26.9	ZPD91KCE			6.2	6.2	6.2	6.3	6.3	6.3
ZPD104KCE			13.0	15.8	19.0	22.7	26.9	31.7	ZPD104KCE			7.0	7.0	7.1	7.2	7.3	7.4
ZPD122KCE			15.1	18.3	22.0	26.3	31.2	36.7	ZPD122KCE			8.0	8.1	8.2	8.3	8.4	8.5
ZPD137KCE			16.0	20.0	24.4	29.4	35.1	41.5	ZPD137KCE			9.6	9.5	9.4	9.4	9.3	9.4
ZPD154KCE			18.7	23.0	27.7	33.1	39.3	46.3	ZPD154KCE			10.3	10.4	10.4	10.5	10.6	10.7
ZPD182KCE			23.2	27.9	33.1	39.0	45.9	53.8	ZPD182KCE			12.2	12.3	12.4	12.5	12.6	12.7

Conditions: Suction Superheat 10K / Subcooling 0K

Condensing Temperature 50°C																	
R513A / R134a		Cooling Capacity (kW)						R513A / 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
ZRD36KRE		2.1	2.7	3.4	4.3	5.2	6.3	7.5	ZRD36KRE		1.5	1.5	1.6	1.6	1.6	1.6	1.6
ZRD48KRE		2.9	3.7	4.6	5.7	7.0	8.5	10.2	ZRD48KRE		2.3	2.3	2.3	2.3	2.2	2.2	2.3
ZRD61KRE		3.6	4.6	5.8	7.2	8.9	10.8	13.1	ZRD61KRE		2.5	2.6	2.6	2.7	2.8	2.9	2.9
ZRD72KRE		4.3	5.6	7.0	8.7	10.6	12.9	15.5	ZRD72KRE		2.9	3.0	3.1	3.3	3.4	3.5	3.7
ZRD92KRE		5.4	6.9	8.7	10.9	13.4	16.3	19.6	ZRD92KRE		3.7	3.9	4.0	4.2	4.3	4.4	4.4

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary data

For capacity data for R450A please refer to Emerson's Select Software

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
ZRD36KRE			4.1	5.2	6.3	7.7	9.2		ZRD36KRE			2.3	2.4	2.4	2.4	2.4	
ZRD48KRE			5.4	6.8	8.4	10.3	12.5		ZRD48KRE			3.2	3.2	3.2	3.2	3.1	
ZRD61KRE			6.3	8.0	10.0	12.4	15.1		ZRD61KRE			3.9	4.0	4.0	4.0	4.0	
ZRD72KRE			8.0	10.1	12.5	15.4	18.6		ZRD72KRE			4.7	4.7	4.7	4.7	4.7	
ZRD92KRE			9.6	12.2	15.2	18.8	22.9		ZRD92KRE			6.0	6.1	6.2	6.2	6.2	
ZRD125KCE			14.3	18.1	22.5	27.6	33.3	39.4	ZRD125KCE			8.2	8.3	8.4	8.4	8.6	8.7

Conditions: Suction Superheat 10K / Subcooling 0K

XPV & ZPV Copeland Scroll™ Variable Speed Compressor Ranges for R410A With Inverter Drive

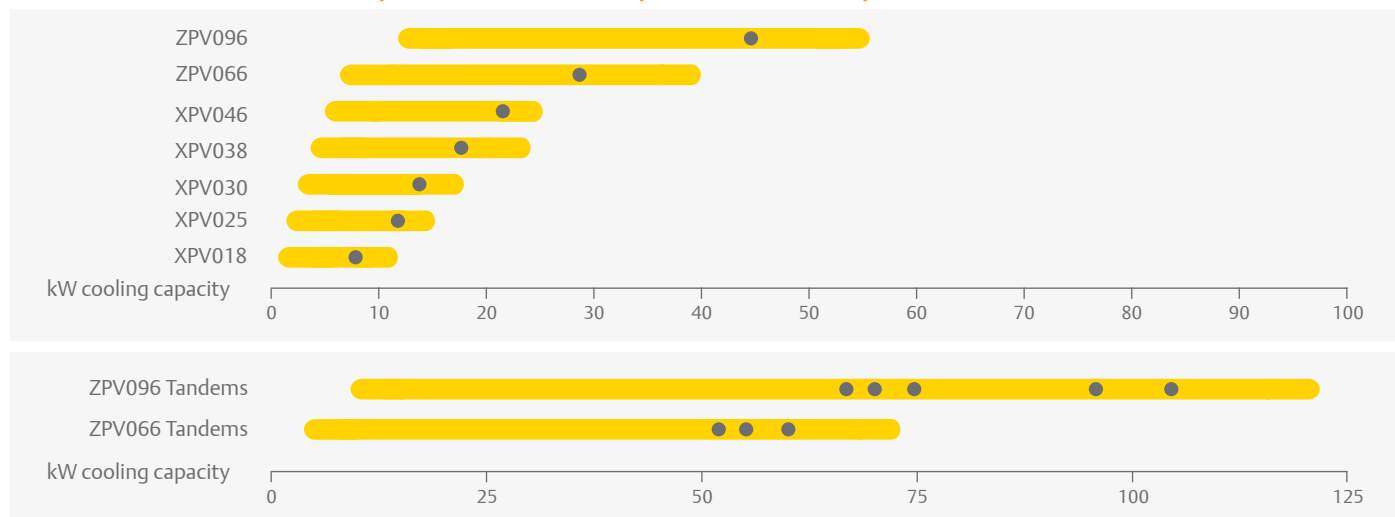
Copeland Scroll XPV and ZPV Variable Speed compressors are designed to deliver maximum cooling and heating efficiency when you need it most. Equipped with the latest variable speed technology, they allow system manufacturers and building owners to achieve superior performance when designing reversible chillers, heat pumps, precision cooling systems or rooftops.

In addition to Copeland market-proven robustness, the new XPV and ZPV ranges with their qualified inverter drive meet and exceed the level of reliability expected for these applications.

Copeland Scroll™
ZPV066
variable speed
compressor and
drive



XPV and ZPV Variable Speed Scroll Compressor Line-up



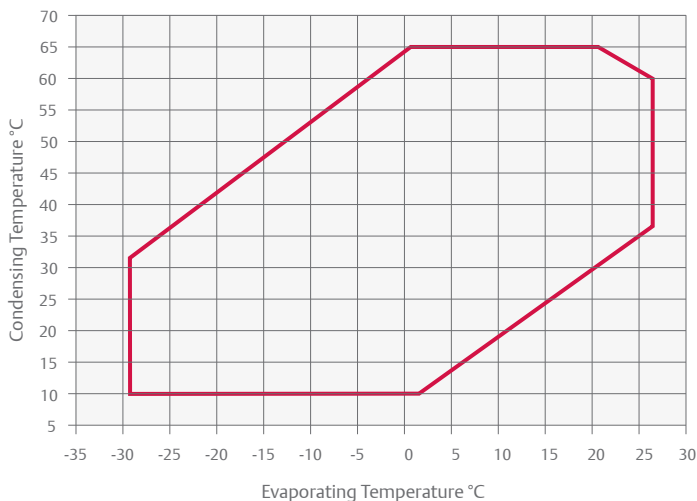
Features and Benefits

- Highest part load efficiency in its class enabling significant energy savings and standards compliance
- Wide speed range for enhanced part load efficiency and dehumidification: 900 - 7,200 RPM (15-120Hz)
- Capability to be tandemized with fixed speed compressors for maximum flexibility in system design
- Both compressor and drive are Copeland™ approved for reduced design time, cost and speed to market
- BPM motor technology for highest efficiency
- Sound reduction technology for reversible chiller transition and defrost

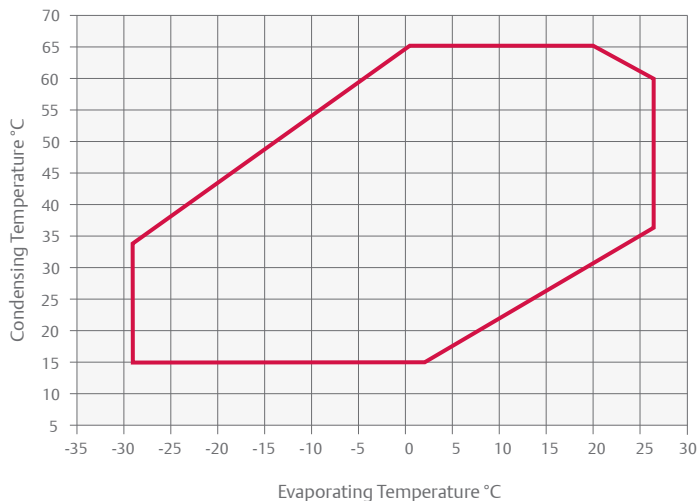
Maximum Allowable Pressure (PS)

- XPV018-046
Low Side PS 29.5 bar(g) / High Side PS 45 bar(g)
- ZPV066 - 096
Low Side PS 29.5 bar(g) / High Side PS 45 bar(g)

ZPV Operating Envelope R410A



XPV Operating Envelope R410A



Technical Overview

Compressor										
Models	Cooling Capacity (kW)		EER*	Displacement (cm ³)	Stub Suction (inch)	Stub Discharge (inch)	Oil Quantity (l)	Length/Width/Height (mm)	Net weight (kg)	Sound Pressure @1 m - dB(A) **
	Min	Max								
XPV0182E	2.0	10.4	3.1	18.0	3/4	1/2	0.7	194/216/335	16	n.a.
XPV0252E	2.7	14.5	3.1	25.0	3/4	1/2	0.7	194/216/335	16	n.a.
XPV0303E	3.3	17.4	3.1	30.0	3/4	1/2	1.2	218/198/379	19	73
XPV0383E	4.3	22.5	3.2	38.0	3/4	1/2	1.2	218/198/379	20	73
XPV0462E	6.6	24.0	3.2	46.0	3/4	1/2	1.2	219/198/388	22	n.a.
ZPV0662E	8.3	39.0	3.0	63.0	1-1/8	7/8	2.5	273/262/559	40	73
ZPV0962E	12.9	53.3	3.1	96.0	1-1/8	7/8	2.5	273/262/559	44	75

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

*@ Nominal speed (90hz)

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

Preliminary Data

Inverter Drive											
Models	Matched Compressor	Capacity (kW)	Amps (A)	Cooling	Frequency (Hz)		Net Weight (kg)	1ph 230V	3Ph 400V	Comm.	Depth/Width/Height (mm) *
		Nominal	Nominal		Min	Max					
ED3015A	XPV018	3.8	15	Air / Liquid	15	120	2.8	✓		Modbus RTU and analog board for 0-10V	205/240/144
ED3020A	XPV025	5.0	20		15	120	3.6	✓			205/250/180
ED3018B	XPV025 / XPV030	5.0	18		15	120	4.4		✓		205/250/183
ED3022B	XPV038 / XPV046	8.0	22		15	120	5.2		✓		233/316/150
EV3150	ZPV066	15.0		Air	17	120	7.4		✓		180/250/380
EV3185	ZPV096	18.5			20	120	14.0		✓	180/250/380	

Conditions: Suction Superheat 5K, Subcooling 4K

*Standard voltage air-cooled version including fins

Capacity Data

Condensing Temperature +50°C															
R410A		Cooling Capacity (kW)							R410A		Power Input (kW)				
		Evaporating Temperature (°C)									Evaporating Temperature (°C)				
Model		-15	-10	-5	0	+5	+10	+15	Model		-15	-10	+5	+10	+15
XPV0182E	Max	5.8	7.0	8.4	10.1	12.0	14.1	16.5	XPV0182E	Max	3.6	3.7	3.7	3.7	3.7
	Min	1.5	1.6	1.7	1.7	2.0	2.4	2.9		Min	1.0	1.0	0.8	0.8	0.8
XPV0252E	Max	7.2	8.8	10.8	13.2	15.8	18.8	22.2	XPV0252E	Max	4.8	4.9	5.2	5.2	5.2
	Min	2.2	2.4	2.4	2.4	2.9	3.4	4.1		Min	1.4	1.4	1.1	1.1	1.0
XPV0303E	Max	8.9	10.7	12.9	15.6	18.8	22.5	26.7	XPV0303E	Max	5.5	5.6	5.9	6.0	6.0
	Min	2.2	2.5	1.5	1.9	2.3	2.7	3.7		Min	1.8	1.6	1.0	1.0	1.0
XPV0383E	Max	11.3	13.6	16.4	19.8	23.8	28.5	33.8	XPV0383E	Max	7.0	7.1	7.5	7.5	7.6
	Min	2.8	3.2	1.9	2.4	2.9	3.4	4.6		Min	2.2	2.0	1.2	1.2	1.3
XPV0462E	Max	13.6	16.4	19.8	23.9	28.8	34.4	40.8	XPV0462E	Max	8.1	8.3	8.7	8.7	8.7
	Min	3.6	4.5	2.2	2.8	3.3	4.0	5.1		Min	2.7	2.6	1.4	1.4	1.4
ZPV0662E	Max	19.1	23.3	28.2	34.0	40.6	48.2	56.8	ZPV0662E	Max	13.2	13.5	14.3	14.5	14.7
	Min	6.2	4.9	6.0	7.1	8.3	9.8	11.5		Min	4.2	3.0	2.9	2.8	2.8
ZPV0962E	Max	28.0	34.3	41.7	50.4	60.4	71.8	84.6	ZPV0962E	Max	18.2	18.7	20.0	20.4	20.8
	Min	9.1	7.5	9.0	10.8	12.8	15.2	18.0		Min	5.7	4.1	4.1	4.1	4.0

Condition: Suction Superheat 5K, Subcooling 4K

Preliminary Data

ZH Copeland Scroll™ Fixed Speed Compressor Range for R410A and R407C

ZH Copeland Scroll Compressor Range

The ZH compressor range is optimized for reversible and heat pump applications. In addition to the existing R407C range, a complete new range optimized for R410A has been developed. Both ranges are based on three platform sizes and cover a capacity of 4kW to 38kW.

ZH heating compressors have been optimized for reversible heating systems, they deliver higher capacity and efficiency at low evaporating (heat source) temperatures and are therefore better adapted to heating requirements than standard air conditioning compressors. Due to their larger operating map they also require less additional heating (electrical or gas) to cover the full heating demand on the coldest days and therefore further improve the system seasonal efficiency.

ZH Scroll Compressors With Enhanced Vapor Injection

ZH heating compressors with Enhanced Vapor Injection have been further optimized to ensure best-in-class performances in dedicated heating applications. This technology allows replacement of traditional boilers in new building and retrofit applications, without the need of substituting existing heating elements in the building.

ZH Copeland Scroll heating compressors with Enhanced Vapor Injection have an additional port to inject vapor within the compression process. This improves system performances by increasing the heating capacity for a given compressor displacement. Additional benefits are the reduction of the gas



ZH Scroll Compressor

discharge temperature and the extension of the operating envelope which enable the production of high temperature water at all working conditions.

ZH heating compressors reach the same high standards of durability and reliability as other Copeland Scroll compressors. This includes the ability to handle relatively large amounts of liquid, which is known to damage or cause compressor failures. Fewer moving parts, robust running gear and low vibration due to balanced compression mechanism make the ZH range of Copeland Scroll compressors the most reliable solution available in the heat pump market.

ZH Nomenclature Guidelines

ZH**K4E

Qualified for R407C/R134a
without enhanced vapor injection - ** capacity in Btu/h

ZH**KVE

Qualified for R407C only
enhanced vapor injection - ** capacity in kW

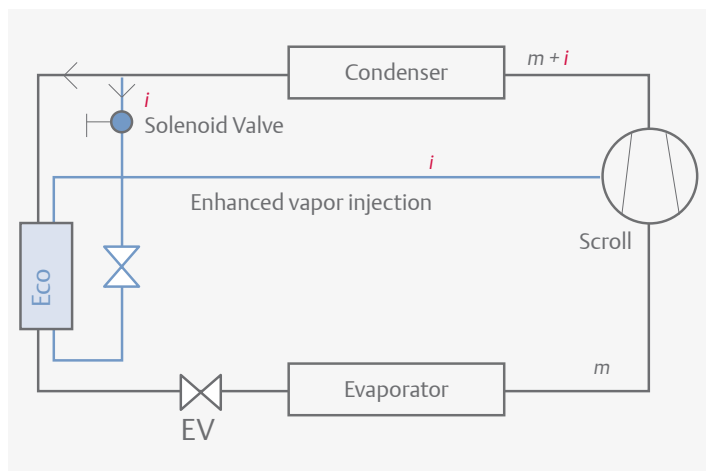
ZH**K1P

Qualified for R410A only
without enhanced vapor injection - ** capacity in kW

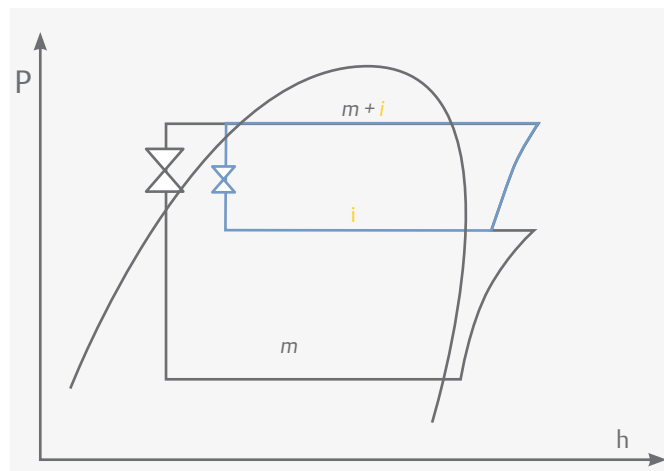
ZH_I**K1P

Qualified for R410A only
enhanced vapor injection - ** capacity in kW

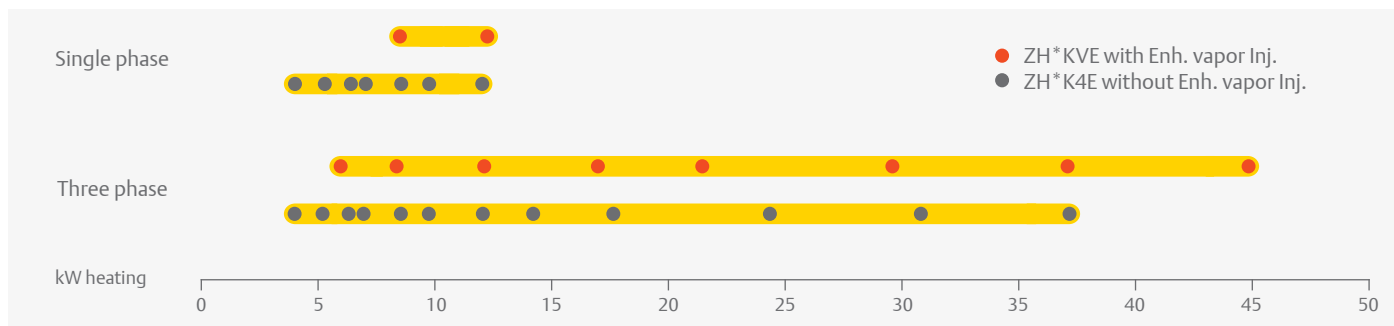
Enhanced Vapor Injection: System Design



Enhanced Vapor Injection: Enthalpy Diagram

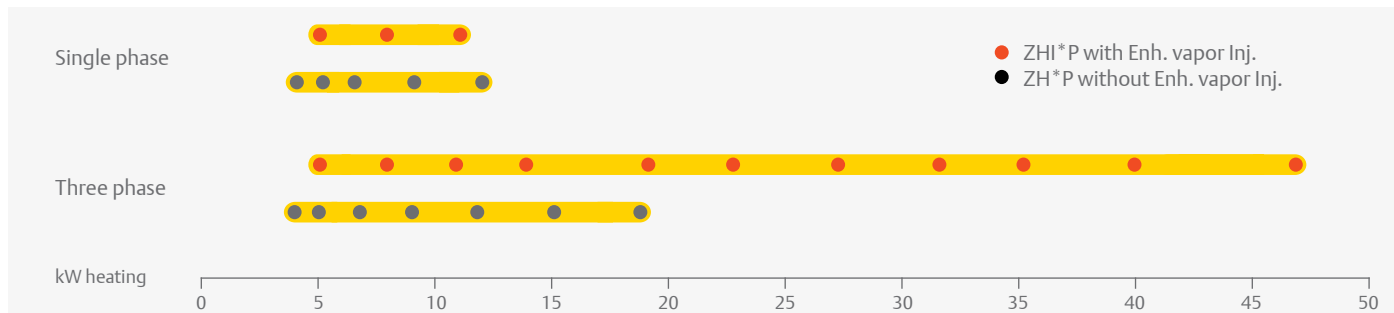


ZH* K4E / ZH* KVE Scroll Compressor Line-up R407C



Conditions: Evaporating -7°C, Condensing 50°C, 4K Subcooling, 5K Superheat

ZH* P / ZHI* P Scroll Compressor Line-up R410A



Conditions: Evaporating -7°C, Condensing 50°C, 4K Subcooling, 5K Superheat

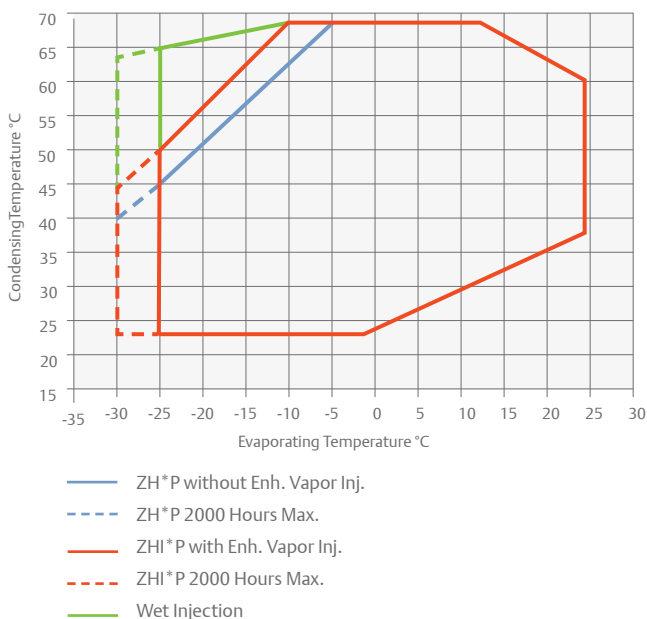
Features and Benefits

- Copeland Scroll™ axial and radial compliance for high reliability
- High efficiency and increased heating capacity
- High water temperature for all applications
- Low sound and low vibration level
- Tandem combination for superior seasonal efficiency
- Enhanced Vapor Injection technology for best seasonal efficiency

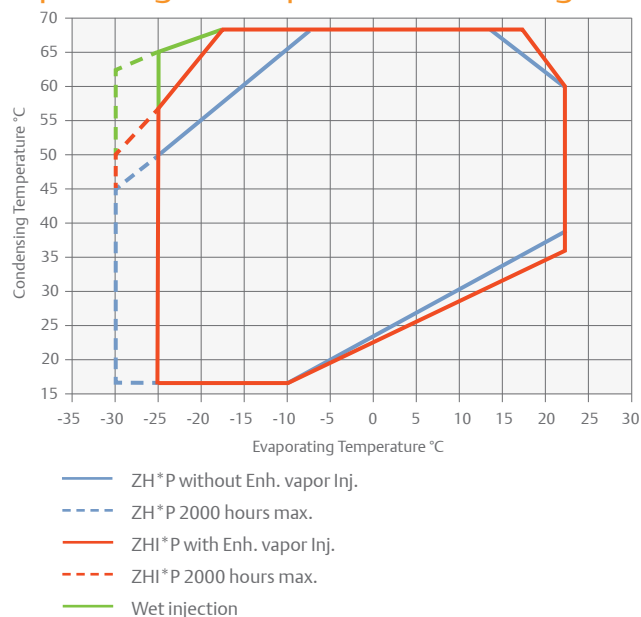
Maximum Allowable Pressure (PS)

- ZH(I)04K1P to ZH(I)23K1P:
Low Side PS 28 bar(g) / High Side PS 45 bar(g)
- ZHI27K1P to ZHI46K1P:
Low Side PS 29.5 bar(g) / High Side PS 53 bar(g)
- ZH12K4E to ZH45K4E:
Low Side PS 20 bar(g) / High Side PS 32 bar(g)
- ZH56K4E to ZH11M4E:
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)
- ZH09KVE to ZH18KVE:
Low Side PS 20 bar(g) / High Side PS 32 bar(g)
- ZH24KVE to ZH48KVE:
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)

Operating Envelope R410A Heating



Operating Envelope R407C Heating



Refer to Emerson's Select Software for individual model operating envelopes and other refrigerants.

Technical Overview

R410A	Nominal hp	Capacity (kW)	COP	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 - dB(A) ***
										1 Ph*	3 Ph**	1 Ph*	3 Ph**	1 Ph*	3 Ph**	
ZH04 K1P	1.8	4.2	2.8	3.4	3/4	1/2	0.7	229/198/388	22	PFZ	TFM	9	5	50	28	62
ZH05 K1P	2.0	5.0	2.8	4.0	3/4	1/2	0.7	229/198/388	22	PFZ	TFM	13	5	60	28	62
ZH06 K1P	2.7	6.6	2.9	5.1	7/8	1/2	1.2	242/242/418	31	PFZ	TFM	17	6	83	44	62
ZH09 K1P	3.5	9.0	3.1	6.9	7/8	1/2	1.2	242/242/418	33	PFZ	TFM	23	7	108	52	62
ZH12 K1P	4.5	11.4	3.0	8.9	7/8	1/2	1.2	242/242/418	35	PFZ	TFM	28	10	130	62	65
ZH15 K1P	5.0	15.1	3.1	11.7	7/8	1/2	1.9	245/249/442	39		TFM		13		75	67
ZH19 K1P	6.5	18.7	3.2	14.8	7/8	3/4	1.9	239/244/443	39		TFM		17			67
ZHI05 K1P	1.9	5.2	3.0	3.4	3/4	1/2	0.7	229/198/388	22	PFZ	TFM	14	4	60	28	63
ZHI08 K1P	2.8	8.2	3.1	5.1	7/8	1/2	1.2	242/242/418	31	PFZ	TFM	19	6	108	43	63
ZHI11 K1P	3.6	10.8	3.2	6.9	7/8	1/2	1.2	242/242/418	31	PFZ	TFM	25	9	130	52	65
ZHI14 K1P	4.6	13.9	3.3	8.9	7/8	1/2	1.2	242/242/418	34		TFM		11		70	65
ZHI18 K1P	5.0	17.9	3.4	11.7	7/8	1/2	1.9	249/245/443	41		TFM		15			67
ZHI23 K1P	6.5	22.8	3.4	14.8	7/8	3/4	1.9	239/244/443	41		TFM		19			67
ZHI27 K1P	9.0	27.0	3.3	16.8	1 3/8	7/8	3.3	280/280/533	63		TFD		21.0		118	77
ZHI32 K1P	10.0	31.7	3.2	19.8	1 3/8	7/8	3.3	280/280/533	63		TFD		26.0		140	75
ZHI35 K1P	12.0	35.6	3.2	22.1	1 3/8	7/8	3.3	280/284/568	63		TFD		32.5		174	76
ZHI40 K1P	13.0	39.7	3.3	24.9	1 3/8	7/8	3.3	284/280/568	64		TFD		33.0		174	76
ZHI46 K1P	15.0	46.6	3.3	29.1	1 3/8	7/8	3.4	284/280/568	64		TWD		37.4		168	78

Conditions: Evaporating -7°C, Condensing 50°C, Superheat 5K, Subcooling 4K

* 1 Ph: 230V/ 50Hz

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

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

R407C	Nominal hp	Capacity (kW)	COP	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 - dB(A) ***
										1 Ph*	3 Ph**	1 Ph*	3 Ph**	1 Ph*	3 Ph**	
ZH12K4E	1.7	3.7	3.0	4.7	3/4	1/2	0.7	229/198/388	21	PFZ		10		44		53
ZH15K4E	2.0	4.6	3	5.8	3/4	1/2	1.3	243/242/364	23	PFJ	TFD	11	4	61	26	60
ZH21K4E	3.0	6.5	3.1	8.0	3/4	1/2	1.5	243/242/387	27	PFJ	TFD	16	5	76	32	59
ZH26K4E	3.5	8.2	3.1	10.0	3/4	1/2	3.1	243/242/400	28	PFJ	TFD	20	7	97	46	63
ZH30K4E	4.0	9.5	3.1	11.7	7/8	1/2	1.9	247/241/438	38	PFJ	TFD	25	8	108	52	62
ZH38K4E	5.0	11.7	3.2	14.4	7/8	1/2	1.9	247/241/438	38	PFZ	TFD	31	10	150	64	63
ZH45K4E	6.0	14.0	3.2	17.1	7/8	1/2	1.9	250/246/438	36		TFD		12		74	64
ZH56K4E	7.5	17.4	3.1	20.9	1 3/8	7/8	4.0	357/321/497	93		TWD		17		99	69
ZH75K4E	10.0	24.2	3.2	28.8	1 3/8	7/8	4.0	357/321/497	93		TWD		21		127	70
ZH92K4E	13.0	30.7	3.3	35.6	1 3/8	7/8	4.1	356/320/505	95		TWD		25		167	72
ZH11M4E	15.0	37.0	3.3	42.8	1 5/8	7/8	4.1	357/321/579	112		TWD		32		198	72
ZH06KVE	2.5	6.2	3.3	5.8	3/4	1/2	1.3	243/243/364	27.5		TFM		4		26	62
ZH09KVE	3.0	8.2	3.3	8.0	3/4	1/2	1.5	243/243/386	30	PFZ	TFD	21	7	97	40	62
ZH13KVE	4.0	11.8	3.4	11.7	7/8	1/2	1.9	244/241/438	38	PFZ	TFD	30	10	160	64	65
ZH18KVE	6.0	16.7	3.4	17.1	7/8	1/2	1.9	244/241/438	41		TFD		14		101	67
ZH24KVE	7.5	21.3	3.3	20.9	1 3/8	7/8	4.0	368/321/525	93		TWD		18		99	73
ZH33KVE	10.0	29.5	3.4	29.0	1 3/8	7/8	4.0	368/321/525	93		TWD		24		127	73
ZH40KVE	13.0	37.0	3.4	35.5	1 3/8	7/8	4.1	368/321/532	103		TWD		30		167	73
ZH48KVE	15.0	44.7	3.4	42.8	1 5/8	7/8	4.1	368/323/579	112		TWD		36		198	76

Conditions: Evaporating -7°C, Condensing 50°C, Superheat 5K, Subcooling 4K

* 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 +50°C															
R410A	Heating Capacity (kW)							R410A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-30	-15	-10	-5	0	+5	+15	Model	-30	-15	-10	-5	0	+5	+15
ZH04 K1P	n.a.	3.3	3.9	4.5	5.2	6.0	7.6	ZH04 K1P	n.a.	1.4	1.5	1.5	1.5	1.5	1.5
ZH09 K1P	n.a.	7.1	8.2	9.5	10.9	12.5	16.4	ZH09 K1P	n.a.	2.8	2.9	3.0	3.0	3.0	3.0
ZH12 K1P	n.a.	9.2	10.5	12.1	13.9	15.9	21.0	ZH12 K1P	n.a.	3.7	3.7	3.8	3.8	3.8	3.8
ZH15 K1P	n.a.	12.0	13.8	15.9	18.4	21.1	27.7	ZH15 K1P	n.a.	4.7	4.9	5.0	5.1	5.2	5.2
ZH19 K1P	n.a.	15.2	17.5	20.2	23.2	26.7	35.1	ZH19 K1P	n.a.	6.0	6.2	6.3	6.4	6.5	6.5
Models With Enhanced Vapor Injection															
ZHI05 K1P	2.6	4.2	4.8	5.4	6.1	6.9	8.6	ZHI05 K1P	1.7	1.7	1.7	1.8	1.8	1.8	1.7
ZHI08 K1P	5.0	6.7	7.6	8.4	9.4	10.5	13.1	ZHI08 K1P	2.5	2.6	2.6	2.6	2.6	2.6	2.4
ZHI11 K1P	6.4	9.0	10.1	11.3	12.6	14.0	17.2	ZHI11 K1P	3.2	3.3	3.3	3.3	3.3	3.3	3.1
ZHI14 K1P	8.5	11.6	13.0	14.5	16.2	18.1	22.3	ZHI14 K1P	3.9	4.1	4.2	4.2	4.2	4.2	4.0
ZHI18 K1P	10.8	14.9	16.7	18.7	20.9	23.2	28.7	ZHI18 K1P	5.1	5.3	5.4	5.4	5.4	5.3	5.2
ZHI23 K1P	13.8	19.0	21.3	23.9	26.6	29.7	36.7	ZHI23 K1P	6.6	6.8	6.9	6.9	6.9	6.8	6.6
ZHI27 K1P	14.2	22.1	25.1	28.4	31.8	35.5	43.8	ZHI27 K1P	7.9	8.2	8.2	8.1	8.1	7.9	7.5
ZHI32 K1P	16.4	26.1	29.5	33.2	37.1	41.4	51.1	ZHI32 K1P	8.7	9.7	9.8	9.8	9.7	9.6	9.4
ZHI35 K1P	19.5	29.2	33.1	37.3	41.9	46.7	57.4	ZHI35 K1P	11.0	10.8	10.9	11.0	11.1	11.2	11.1
ZHI40 K1P	21.7	32.5	36.9	41.7	47.0	52.7	65.6	ZHI40 K1P	12.0	12.0	12.1	12.1	12.2	12.2	12.3
ZHI46 K1P	26.1	38.7	43.5	48.7	54.3	60.4	74.0	ZHI46 K1P	13.2	14.0	14.1	14.1	14.1	14.1	14.0

Conditions: Suction Superheat 5K / Subcooling 4K

Condensing Temperature +50°C															
R407C	Heating Capacity (kW)							R407C	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-30	-15	-10	-5	0	+5	+15	Model	-30	-15	-10	-5	0	+5	+15
ZH12K4E	n.a.	2.8	3.3	3.9	4.6	5.4	7.5	ZH12K4E	n.a.	1.2	1.2	1.3	1.3	1.3	1.4
ZH15K4E	n.a.	3.6	4.3	5.0	5.8	6.8	9.2	ZH15K4E	n.a.	1.5	1.5	1.6	1.6	1.6	1.9
ZH21K4E	n.a.	5.1	5.9	6.9	8.1	9.6	13.2	ZH21K4E	n.a.	2.0	2.1	2.1	2.2	2.3	2.4
ZH26K4E	n.a.	6.3	7.4	8.7	10.3	12.1	16.5	ZH26K4E	n.a.	2.5	2.6	2.7	2.7	2.8	3.0
ZH30K4E	n.a.	7.3	8.6	10.1	11.9	14.0	19.2	ZH30K4E	n.a.	2.9	3.0	3.1	3.2	3.3	3.4
ZH38K4E	n.a.	9.0	10.6	12.5	14.6	17.2	23.4	ZH38K4E	n.a.	3.5	3.6	3.8	3.9	4.0	4.2
ZH45K4E	n.a.	10.8	12.7	14.9	17.4	20.3	27.2	ZH45K4E	n.a.	4.2	4.3	4.5	4.6	4.7	5.1
ZH56K4E	n.a.	13.4	15.8	18.6	21.8	25.5	34.1	ZH56K4E	n.a.	5.3	5.5	5.7	6.0	6.2	6.8
ZH75K4E	n.a.	18.5	21.9	25.8	30.3	35.5	47.6	ZH75K4E	n.a.	7.0	7.4	7.7	8.0	8.2	8.5
ZH92K4E	n.a.	23.4	27.8	32.8	38.5	45.1	60.3	ZH92K4E	n.a.	8.5	9.0	9.5	10.0	10.4	11.2
ZH11M4E	n.a.	28.4	33.6	39.5	46.3	54.3	72.7	ZH11M4E	n.a.	10.3	10.9	11.5	11.9	12.5	13.4
Models With Enhanced Vapor Injection															
ZH06KVE	3.3	4.9	5.7	6.5	7.4	8.4	10.8	ZH06KVE	1.7	1.8	1.9	1.9	2.0	2.0	2.1
ZH09KVE	4.1	6.6	7.6	8.7	9.9	11.2	14.3	ZH09KVE	2.1	2.4	2.4	2.5	2.6	2.6	2.6
ZH13KVE	5.7	9.5	10.9	12.5	14.3	16.2	20.7	ZH13KVE	3.0	3.4	3.5	3.5	3.6	3.6	3.7
ZH18KVE	8.0	13.5	15.4	17.6	20.0	22.6	28.7	ZH18KVE	4.2	4.8	4.9	5.0	5.1	5.1	5.2
ZH24KVE	9.7	17.0	19.6	22.5	25.5	28.9	36.7	ZH24KVE	5.2	6.2	6.4	6.6	6.7	6.8	7.0
ZH33KVE	14.3	23.7	27.2	31.1	35.3	40.0	50.7	ZH33KVE	7.0	8.2	8.5	8.8	9.1	9.3	9.6
ZH40KVE	18.1	29.6	34.1	39.1	44.7	50.9	65.5	ZH40KVE	8.9	10.2	10.6	11.0	11.3	11.7	12.4
ZH48KVE	21.1	35.6	41.1	47.2	54.1	61.8	80.4	ZH48KVE	10.0	12.2	12.7	13.2	13.5	14.0	15.1

Conditions: Suction Superheat 5K / Subcooling 4K

XHV & ZHW Copeland Scroll™ Variable Speed Compressor Ranges for R410A With Inverter Drive

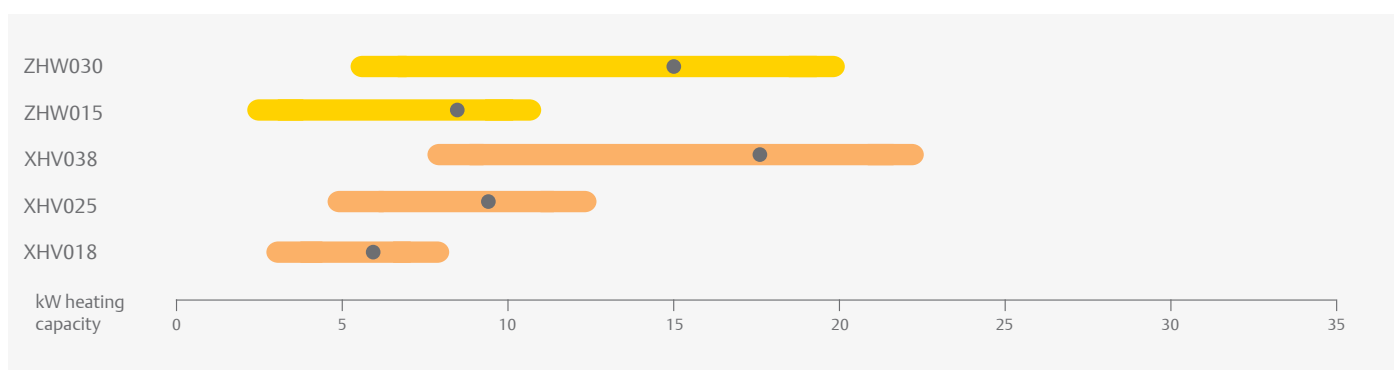
XHV and ZHW Variable Speed scroll compressors for R410A, for outstanding performance for cooling and heating applications.

The new Emerson solution for variable speed applications with capacity modulated compressors. XHV and ZHW compressors deliver outstanding performances, both in new building and retrofit applications. Variable Speed Copeland Scroll compressors feature a state-of-the-art brushless permanent magnet motor matched with a highly efficient drive and vapor injection technology (ZHW only). In addition to Copeland market-proven robustness, XHV and ZHW compressors with the qualified inverter drive meet and exceed the level of reliability expected for these demanding applications.



ZHW Copeland Scroll Variable Speed Compressor and Drive

XHV & ZHW Variable Speed Scroll Compressor Line-Up

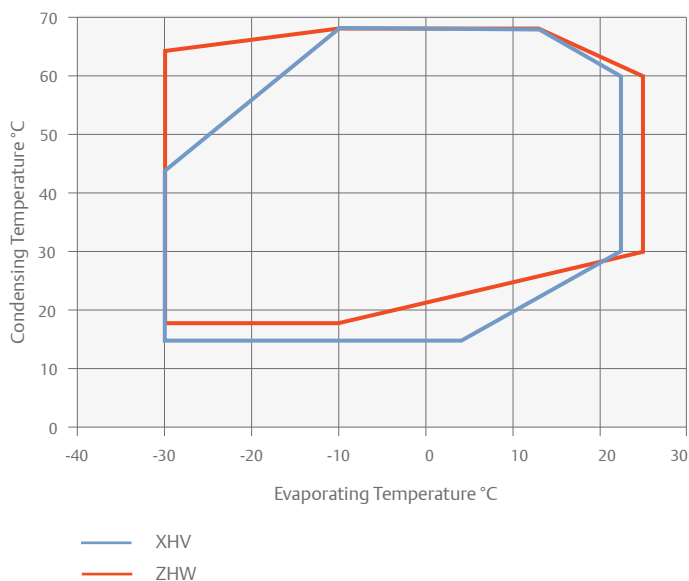


Conditions: Cooling kW Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K
 Heating kW Evaporating -7°C, Condensing 50°C, 5K Superheat, 4K Subcooling

Features and Benefits

- Highest efficiency throughout the operating envelope and speed range
- Envelope and speed management information for the system controller (real-time communication via Modbus RS485)
- Enhanced Vapor Injection technology for best seasonal efficiency (ZHW)
- High water temperature for all applications
- Compliance with electromagnetic-compatibility (EMC) and electromagnetic-interference (EMI) requirements for residential applications
- VDE certification for ZHW compressor matched with Emerson inverter drive
- Wide speed range 15-120Hz
- Mutually optimized and qualified scroll and drive

Operating Envelope R410A



Maximum Allowable Pressure (PS)

- ZHW:
Low side PS 28 bar(g) / High side PS 45 bar(g)
- XHV:
Low side PS 28 bar(g) / High side PS 45 bar(g)

Technical Overview

Compressor										
R410A	Heating Capacity (kW)		COP*	Displacement (cm ³)	Stub Suction (inch)	Stub Discharge (inch)	Oil Quantity (l)	Length/Width/Height (mm)	Net Weight (kg)	Sound Pressure @1 m - dB(A)**
	Min	Max								
ZHW0152P	2.7	10.4	2.9	15.0	3/4	1/2	1.7	229/198/394	20	68
ZHW0302P	5.5	19.8	3.2	30.0	3/4	1/2	1.7	229/198/394	20	68
XHV0181P	2.6	10.7	3.0	18.0	3/4	1/2	0.7	218/198/334	15	61
XHV0251P	3.7	14.8	3.1	25.0	3/4	1/2	0.7	218/198/334	16	65
XHV0382P	5.5	22.8	3.1	38.0	3/4	1/2	1.2	218/198/384	20	64

Conditions: Heating kW (-7/50)

*@ Nominal Speed (90Hz)

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

Inverter Drive												
Model	Matched Compressor	Power Input (kW)		Amps (A)	Cooling	Frequency (Hz)		Net Weight (kg)	1Ph 230V	3Ph 400V	Comm.	Length/Width/Height (mm)*
		Nominal	Nominal			Min	Max					
EV2055M	ZHW015	5.5			Air / Liquid	15	120	3.6	√	√	Modbus	228/260/119
EV2080M	ZHW030	8.0				15	120	5.1	√	√		228/260/156
ED3015A	XHV018-25	3.8		15	Air / Liquid	15	120	2.8	√	n.a.	Modbus	205/240/143
ED3020A	XHV025-38	5.5		20		15	120	3.6	√	n.a.		205/250/180
ED3013B	XHV018-25	4.4		13		15	120	3.4	n.a.	√		205/250/183
ED3018B	XHV025-38	6.0		18		15	120	4.4	n.a.	√		205/250/183
ED3022B	XHV038	8.8		22		15	120	5.2	n.a.	√		233/316/150

Conditions: Suction Superheat 5K, Subcooling 4K

*Air-cooled version including fins

Capacity Data

Condensing Temperature +50°C																	
R410A		Heating Capacity (kW)							R410A		Power Input (kW)						
		Evaporating Temperature (°C)									Evaporating Temperature (°C)						
Model		-30	-15	-10	-5	0	+5	+15	Model		-30	-15	-10	-5	0	+5	+15
ZHW0152P	Max	6.0	8.6	9.7	11.0	12.0	12.0	12.4	ZHW0152P	Max	3.1	3.3	3.3	3.4	3.2	2.9	2.4
	Min	2.0	2.6	2.8	2.9	3.1	3.1	3.8		Min	1.3	1.1	1.1	1.0	0.9	0.9	0.9
ZHW0302P	Max	11.3	16.3	18.5	20.8	22.6	22.6	23.7	ZHW0302P	Max	5.7	6.0	6.1	6.1	5.7	5.4	4.4
	Min	4.2	5.2	5.8	5.9	6.6	6.6	8.1		Min	2.4	2.0	2.0	1.9	1.7	1.7	1.7

Condition: Suction Superheat 10K, Subcooling 4K

Condensing Temperature +50°C																	
R410A		Heating Capacity (kW)							R410A		Power Input (kW)						
		Evaporating Temperature (°C)									Evaporating Temperature (°C)						
Model		-20	-15	-10	-5	0	+5	+15	Model		-20	-15	-10	-5	0	+5	+15
XHV0181P	Max	7.7	8.7	9.9	11.3	12.9	14.4	16.2	XHV0181P	Max	3.4	3.5	3.6	3.7	3.7	3.6	3.1
	Min	2.2	2.4	2.5	2.6	2.5	2.8	3.7		Min	1.0	1.0	1.0	0.9	0.8	0.8	0.8
XHV0251P	Max	10.3	11.8	13.6	15.7	18.1	20.4	22.8	XHV0251P	Max	4.5	4.7	4.9	5.0	5.1	5.1	4.4
	Min	3.2	3.4	3.6	3.7	3.5	4.0	5.0		Min	1.4	1.4	1.3	1.2	1.1	1.1	1.0
XHV0382P	Max	15.8	18.1	20.9	24.1	27.8	31.4	35.0	XHV0382P	Max	6.9	7.1	7.4	7.6	7.8	7.8	6.7
	Min	4.7	5.1	5.5	5.6	5.4	6.1	7.7		Min	2.1	2.1	2.0	1.9	1.6	1.6	1.6

Condition: Suction Superheat 5K, Subcooling 4K

ZH Copeland Scroll™ for Heat Recovery and High Condensing Applications for R134a

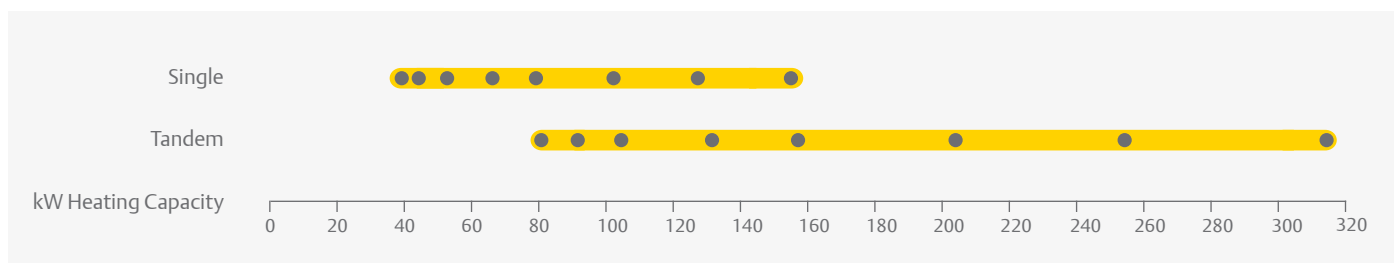
ZH*KCE R134a Copeland Scroll compressors were developed for the recovery and reuse of available heat. For example, the heat generated by processes or machining cooling equipment can be recovered and not wasted. This contributes to reducing the total energy cost of installations. On a water-cooled chiller, heat recovery on the condensing water loop can be used to produce high temperature water for sanitary or premise heating. With a typical evaporating temperature between 20°C and 40°C and condensing up to 85°C, ZH*KCE scrolls offer many opportunities of heat recovery.

The range of products goes from the ZH40KCE (7.5hp) to the ZH150 (30hp) which can be tandemized.



ZH*KCE Scroll Compressor for Heat Recovery

ZH*KCE Scroll Compressor Line-Up R134a



Conditions: Evaporating 40°C, Condensing 85°C, Superheat 10K, Subcooling 5K

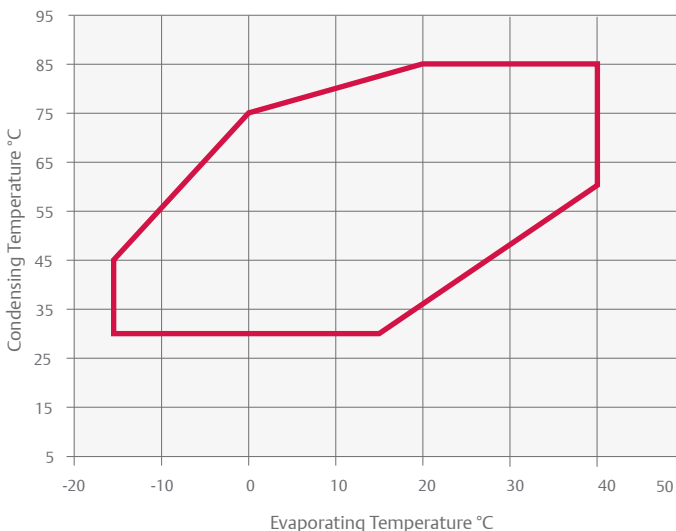
Features and Benefits

- Copeland Scroll axial and radial compliance for superior reliability and efficiency
- Wide scroll line-up R134a with 8 models and tandem
- Low sound and vibration level
- Low oil circulation rate
- Copeland qualified tandem

Typical Applications

- Heat recovery on the dry cooler water circuit of a water-cooled chiller to produce sanitary water or other heating
- Re-inject energy to district heating network and avoid wasting it
- Process industry where the water returning from the machinery comes back between 20 and 40°C
- Food industry where one areas needs cooling and another heating at the same time
- Air-to-water heat pump, even during the warm season
- Exhaust air heat recovery system
- Heat recovery on Fluegas

Operating Envelope R134a



Maximum Allowable Pressure (PS)

Low side PS 20 bar(g) / High side PS 32 bar(g)

Technical Overview

Models	Nominal hp	Heating Capacity (kW)	COP	Displacement (m ³ /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 - dB(A) **
										3 Ph*	3 Ph*	3 Ph*	
ZH40KCE	7.5	39.0	4.3	22.1	1 1/8	7/8	2.7	264 / 285 / 476	57	TFD	19	95	63
ZH45KCE	9.0	44.0	4.6	24.9	1 3/8	7/8	3.4	264 / 285 / 533	60	TFD	21	111	63
ZH50KCE	10.0	50.9	4.5	29.1	1 3/8	7/8	3.4	264 / 285 / 533	61	TFD	23	118	63
ZH64KCE	13.0	63.7	4.3	36.4	1 3/8	7/8	3.4	264 / 285 / 552	65	TFD	27	140	68
ZH75KCE	15.0	76.0	4.2	43.4	1 3/8	7/8	3.4	264 / 285 / 552	66	TFD	35	174	71
ZH100KCE	20.0	96.1	4.0	56.6	1 5/8	1 3/8	4.7	432 / 376 / 694	140	TWD	42	225	72
ZH125KCE	25.0	120.0	4.1	71.4	1 5/8	1 3/8	6.8	447 / 392 / 717	160	TWD	53	272	74
ZH150KCE	30.0	148.8	4.2	87.5	1 5/8	1 3/8	6.3	447 / 427 / 717	177	TWD	67	310	76

Conditions Evaporating 40°C - Condensing 85°C - Superheat 5K - Subcooling 4K

* 3 Ph: 380-420V/ 50Hz

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

Capacity Data

Condensing Temperature +80°C															
R134a	Heating Capacity (kW)							R134a	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Models	+10	+15	+20	+25	+30	+35	+40	Models	+10	+15	+20	+25	+30	+35	+40
ZH40KCE	16.9	19.7	22.9	26.5	30.7	35.6	41.1	ZH40KCE	8.3	8.3	8.2	8.1	8.1	8.1	8.1
ZH45KCE	20.2	23.2	26.5	30.5	35.0	40.3	46.5	ZH45KCE	8.7	8.7	8.7	8.7	8.7	8.7	8.7
ZH50KCE	23.1	26.6	30.6	35.2	40.5	46.7	53.8	ZH50KCE	10.2	10.2	10.2	10.2	10.2	10.2	10.2
ZH64KCE	28.7	33.1	38.1	43.9	50.7	58.4	67.3	ZH64KCE	13.5	13.5	13.4	13.4	13.5	13.5	13.6
ZH75KCE	34.8	39.9	45.8	52.6	60.5	69.7	80.3	ZH75KCE	16.2	16.2	16.2	16.2	16.3	16.4	16.7
ZH100KCE	46.4	52.6	59.9	68.3	77.9	88.9	101.5	ZH100KCE	21.1	21.3	21.4	21.5	21.5	21.5	21.6
ZH125KCE	57.6	65.4	74.4	84.8	96.9	111.0	127.0	ZH125KCE	27.6	26.6	26.6	26.5	26.4	26.3	26.3
ZH150KCE	71.0	80.7	91.9	105.0	120.0	137.0	157.0	ZH150KCE	30.7	31.2	31.5	31.8	32.0	32.3	32.5

Conditions: Suction Superheat 5K / Subcooling 4K

ZRH & ZRHV Copeland Scroll™ Horizontal Compressor Ranges for R407C and R134a, for the specific needs of transport air conditioning

Air conditioning for passenger comfort is a pre-requisite in today's public transport vehicles. At the same time, maximization of passenger space and streamlining of high speed trains increasingly impose limitations on height.

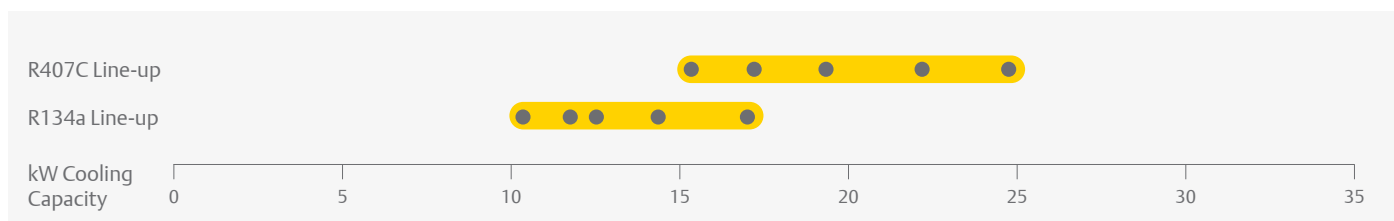
ZRH compressors are based on the unique Copeland Scroll design and provide the same reliability as a standard Copeland Scroll. An additional oil pump covers the specific needs of transport air conditioning and of horizontal compressor arrangement in general.

The low profile design and modulation capabilities of the ZRH compressor range are the ideal response to these market needs.



ZRH Horizontal Scroll Compressor

ZRH Scroll Compressors Line-up R407C and R134a



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

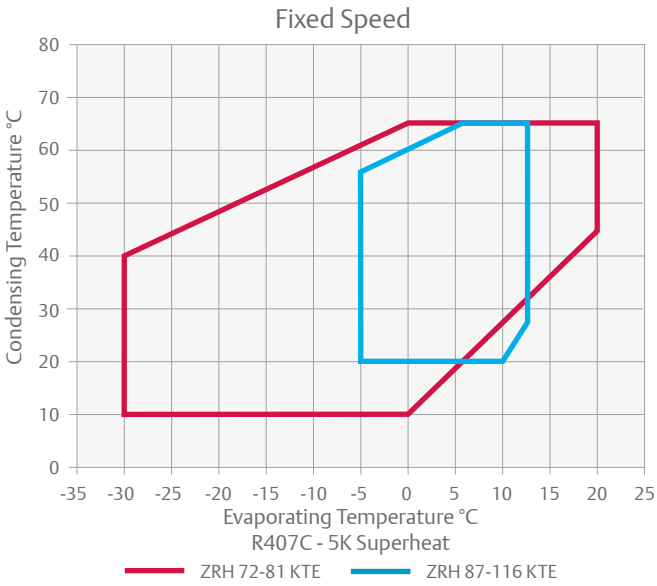
Features and Benefits

- Compactness and low weight
- Horizontal design below 200mm height
- Copeland Scroll compliance for superior reliability and efficiency
- Two oil-pumps
- Hermetic design for leak-free operation
- Wide operating envelope for heat pump and cooling applications
- 25 - 100 Hz capacity modulation range for precise control and increase of the seasonal performance
- IP56 terminal box

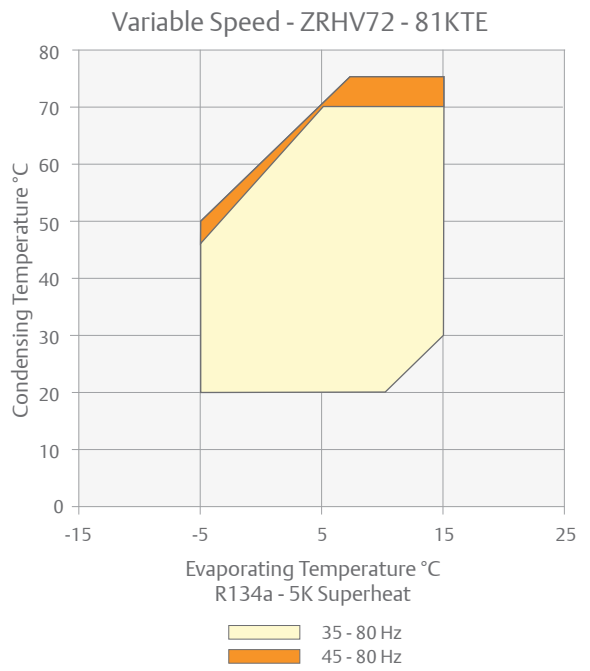
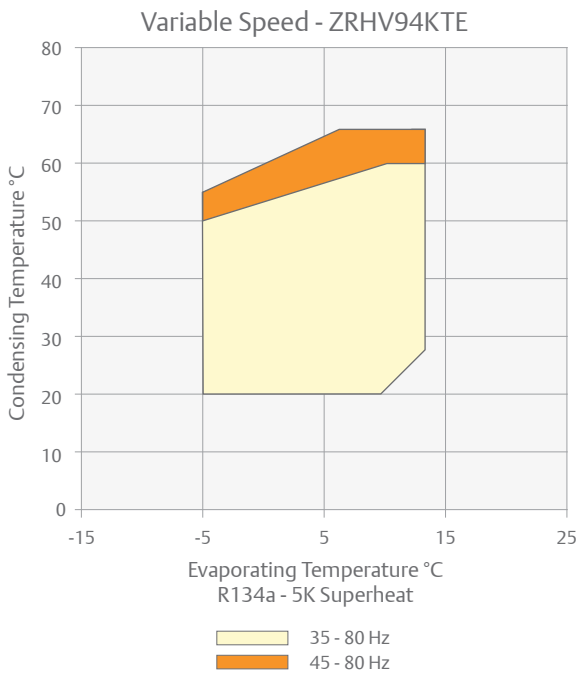
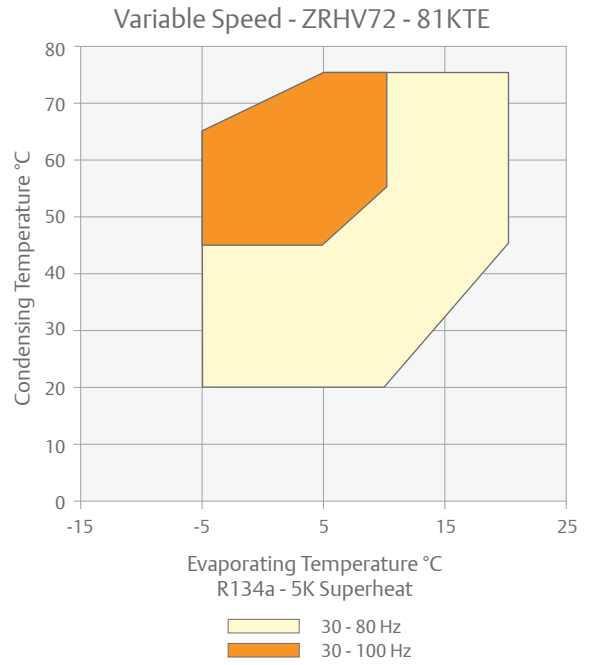
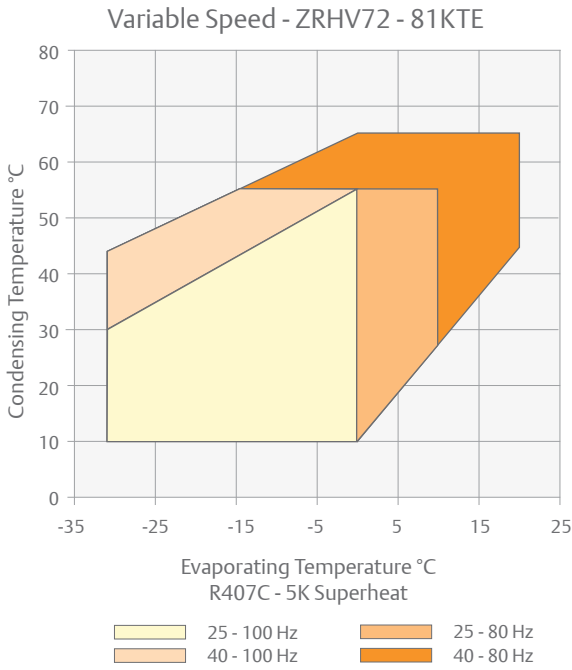
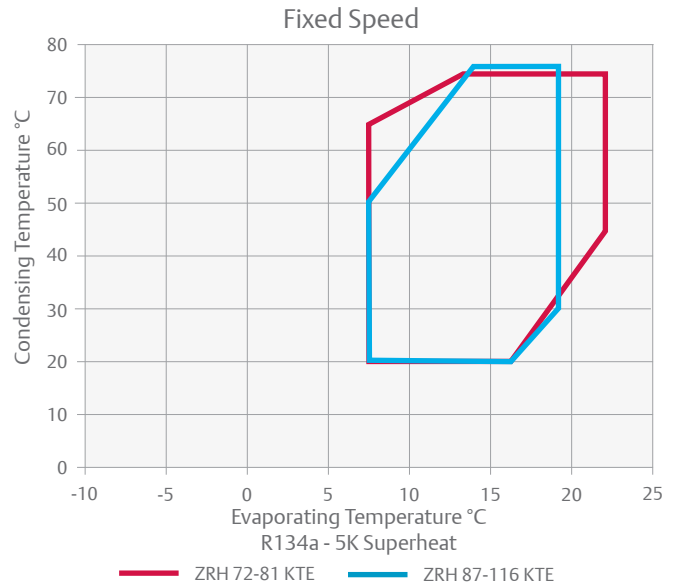
Maximum Allowable Pressure (PS)

Low Side PS 21 bar(g) / High Side PS 28.8 bar(g)

Operating Envelope R407C



Operating Envelope R134a



Technical Overview - Fixed Speed Models

Models	Nominal hp	R407C Capacity (kW)	R134a Capacity (kW)	EER	Displacement (m ³ /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 - dB(A)**
											3 Ph*	3 Ph*	3 Ph*	
ZRH72KTE	6.0	15.3	10.4	3.2	17.1	7/8	3/4	2.7	567/290/191	49	TFD	12	92	61
ZRH81KTE	6.8	17.2	11.7	3.2	18.8	7/8	3/4	2.7	567/290/191	49	TFD	12	92	61
ZRH87KTE	7.5	19.2	12.3	3.1	22.1	1 3/8	7/8	1.6	586/314/245	60	TFD	16	95	63
ZRH100KTE	9.0	22.1	14.2	3.2	24.9	1 3/8	7/8	1.6	586/314/245	63	TFD	18	111	63
ZRH116KTE	10.0	24.9	17.0	3.1	29.1	1 3/8	7/8	1.6	586/314/245	64	TFD	20	118	63

Conditions: EN12900 R407C - HT: Evaporating +5°C, Condensing +50°C, suction Superheat 10K, Subcooling 0K

*TFD: 3Ph 380-420V/50Hz - 460/60Hz; TF5 200-220V/50Hz, 200-230V/60Hz

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

Capacity Data - Fixed Speed Models

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	
ZRH72KTE	5.9	7.7	9.8	12.3	15.1	18.3	21.9	ZRH72KTE	4.9	4.9	5.0	5.0	5.1	5.1	5.2	
ZRH81KTE	6.2	8.2	10.5	13.0	15.9	19.2	23.0	ZRH81KTE	5.4	5.4	5.4	5.4	5.4	5.5	5.5	
ZRH87KTE			15.6	14.8	18.8	23.5		ZRH87KTE			6.1	6.2	6.2	6.2		
ZRH100KTE			13.8	17.4	21.5	26.3		ZRH100KTE			6.7	6.8	6.9	6.9		
ZRH116KTE			16.1	20.2	25.1	30.8		ZRH116KTE			7.9	8.0	8.0	8.1		

Conditions: Suction Superheat 10K / Subcooling 0K

Condensing Temperature +50°C																
R134a	Cooling Capacity (kW)							R134a	Power Input (kW)							
	Evaporating Temperature (°C)								Evaporating Temperature (°C)							
Model	-20	-10	-5	0	+5	+10	+15	Model	-20	-10	-5	0	+5	+10	+15	
ZRH72KTE			6.8	8.5	10.4	12.7	15.3	ZRH72KTE			3.2	3.3	3.3	3.4	3.4	
ZRH81KTE			7.6	9.5	11.7	14.2	17.0	ZRH81KTE			3.5	3.6	3.6	3.7	3.7	
ZRH87KTE			7.7	9.8	12.3	15.2	18.7	ZRH87KTE			4.1	4.1	4.1	4.1	4.0	
ZRH100KTE			8.7	11.2	14.2	17.6	21.7	ZRH100KTE			4.4	4.5	4.5	4.5	4.5	
ZRH116KTE			10.8	13.6	16.9	20.8	25.3	ZRH116KTE			5.6	5.6	5.5	5.5	5.5	

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Technical Overview - Variable Speed Models

Models	Capacity (kw)		EER	Displacement (m ³ /h) 50Hz	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 - dB(A)**
	Min	Max								3 Ph*	3 Ph*	3 Ph*	
ZRHV72KTE	7.2	23.5	3.0	20.6	7/8	3/4	2.7	567/290/191	49	TX7	26		70
ZRHV81KTE	7.6	25.9	3.0	22.6	7/8	3/4	2.7	567/290/191	49	TX7	26		70
ZRHV94KTE	17.4	31.4	3.1	26.7	1 3/8	7/8	1.6	586/314/245	60	TF7	24	140	73

Conditions: EN12900 R407C - HT: Evaporating +5°C, Condensing +50°C, Suction Superheat 10K, Subcooling 0K

**TF7 For VFD Control 380/3/75Hz V/F curve

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

Capacity Data - Variable Speed Models

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
ZRHV72KTE	Max	12.6	15.8	19.8	24.7	25.0	30.3	36.2	ZRHV72KTE	Max	11.0	11.0	11.2	11.3	8.2	8.3	8.3
	Min	4.4	5.9	4.7	5.9	7.2	8.7	17.0		Min	4.2	4.1	2.6	2.6	2.5	2.5	4.2
ZRHV81KTE	Max	14.0	18.0	22.3	27.4	25.9	31.1	37.1	ZRHV81KTE	Max	8.4	8.5	8.6	8.7	8.8	9.0	9.2
	Min	4.6	6.3	4.6	6.0	7.6	9.4	18.4		Min	4.6	4.6	3.1	3.1	3.0	3.0	4.5
ZRHV94KTE	Max			18.9	24.6	31.4	38.9		ZRHV94KTE	Max			10.0	10.5	10.6	10.8	
	Min			7.8	10.1	12.9	15.9			Min			4.4	4.6	4.6	4.7	

Conditions: Suction Superheat 10K / Subcooling 0K

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
ZRHV72KTE	Max	8.4	10.6	13.3	16.5	16.8	20.3	24.3	ZRHV72KTE	Max	7.3	7.4	7.5	7.5	5.5	5.5	5.6
	Min	2.9	3.9	3.1	3.9	4.8	5.8	11.4		Min	2.8	2.8	1.8	1.7	1.7	1.7	2.8
ZRHV81KTE	Max	9.4	12.1	14.9	18.4	17.4	20.8	24.9	ZRHV81KTE	Max	5.6	5.7	5.7	5.8	5.9	6.0	6.2
	Min	3.1	4.2	3.1	4.0	5.1	6.3	12.3		Min	3.1	3.1	2.1	2.1	2.0	2.0	3.0
ZRHV94KTE	Max			13.0	16.9	21.4	26.4	31.4	ZRHV94KTE	Max			6.9	7.2	7.3	7.5	8.0
	Min			8.0	6.7	8.8	10.9	12.9		Min			3.5	3.2	3.2	3.2	3.5

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Refrigeration Applications

Refrigeration Applications

Emerson offers a wide range of solutions for commercial refrigeration applications. With its long-lasting expertise in semi-hermetic reciprocating compressor technology as well as in scroll technology, we can meet the requirements for most applications - at the small end just like at the large end of commercial refrigeration.

Completed by the various offerings in the segment of refrigeration units, Emerson is able to offer the best solution and performance, whether you are looking for applications in foodservice or processing, supermarkets, hypermarkets, petrol stations or refrigerated warehousing.

Emerson prime focus for its semi-hermetic reciprocating technology is at the large end of commercial refrigeration. Here aspects such as reliability, serviceability and capacity modulation are of importance and they are perfectly provided by Emerson semi-hermetic reciprocating compressors. Innovations like the Discus™ and Stream technologies, digital modulation and CoreSense™ technology for advanced protection and preventive maintenance keep semi-hermetic at the forefront of compressor technology.

Especially when compact equipment, energy efficiency and reliability are musts, the scroll technology is the preferred choice for refrigeration applications. With developments such as vapor injection and digital modulation, scroll has become the leading technology and is widely recognized in the refrigeration market.

CoreSense Diagnostics is now also available as an option for the new scroll Summit series for medium and low temperature applications.

Whatever the chosen technology and product solution, Emerson's range meets the specific refrigeration needs covering the entire spectrum of medium and low temperature applications whether using standard HFCs, low GWP or natural refrigerants.

ZS, ZB & ZF*KA Copeland Scroll™ Small Compressor Range for Medium and Low Temperature Applications

As an extension to the existing ZB*KCE and ZF*K4E scroll range, the new Copeland Scroll ZS*KA, ZB*KA and ZF*KA compressors represent the latest innovation in scroll technology for refrigeration equipment covering a small size displacement range of 2.4 m³/h to 6.7 m³/h.

ZS*KA and ZB*KA models are intended for medium temperature refrigeration type systems, and are ideally suited for applications such as walk-in coolers, reach-in coolers, cold rooms, display cases and milk tank units. The ZB*KA scrolls cover a range from 0.7hp to 1.3hp, while ZS*KA cover 1.3hp to 1.8hp.

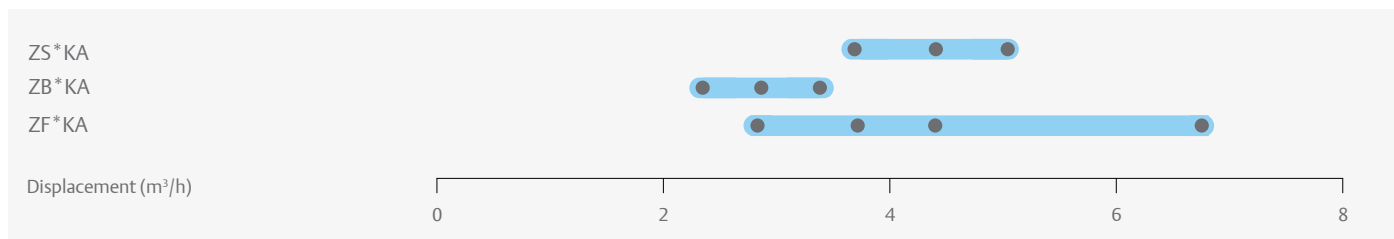
ZF*KA models are suitable for low temperature type systems such as walk-in freezers and reach-in freezers. They cover a range from 1hp to 2.5hp.

ZS, ZB and ZF*KA are multi-refrigerant capable and feature low sound and low vibration, which is particularly important in the retail and food service sector and recommended for supermarkets, restaurants, convenience stores and milk cooling operations. Their compact design provides seasonal efficiencies up to 28% higher than the equivalent hermetic reciprocating compressors. They are qualified for today's HFC as well as new low GWP refrigerants and HFO blends.



ZS*KA Copeland Scroll™ Compressor Range for Medium Temperature Refrigeration Applications

Compressor Line-up



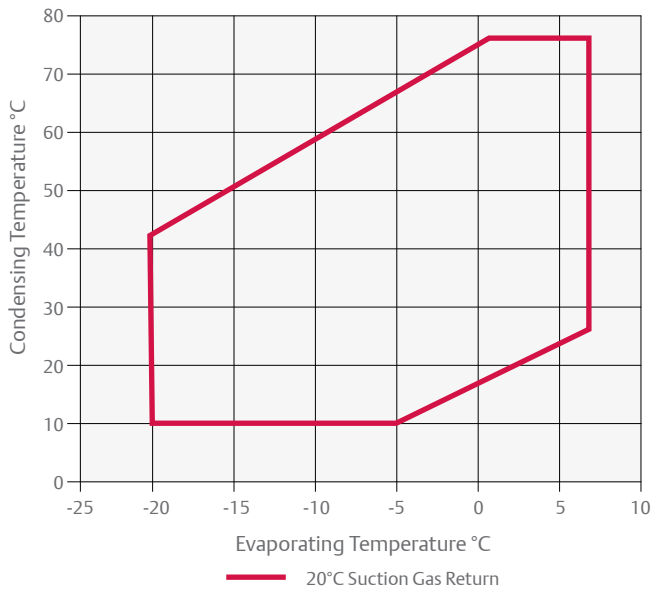
Features and Benefits

- Copeland Scroll axial and radial compliance for superior reliability and efficiency
- High seasonal efficiencies as scrolls are designed at the condition where equipment runs most of the time
- Up to 15% efficiency advantage over hermetic reciprocating compressors at rating conditions, and up to 28% improvement at lower condensing temperatures
- Availability of optional sound shell on all models providing up to 10 dBA additional sound attenuation for silent operation
- Wide operating ranges: from -25°C to 10°C covering a minimum condensing limit of 10°C for ZS*KA and ZB*KA and -40°C to -12°C for ZF*KA
- Qualified for R407A/F/C, R448A, R449A, R404A and R134a refrigerants

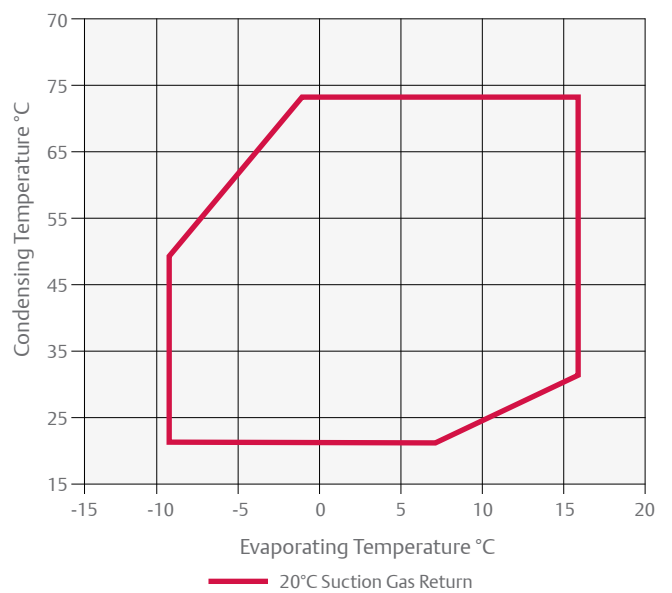
Maximum Allowable Pressure (PS)

- ZS09 to ZS13KA:
Low Side PS 21.6 bar(g) / High Side PS 31.9 bar(g)
- ZB06 to ZB08KA:
Low Side PS 21.0 bar(g) / High Side PS 28.8 bar(g)
- ZF03 to ZF07KA:
Low Side PS 21.0 bar(g) / High Side PS 28.8 bar(g)

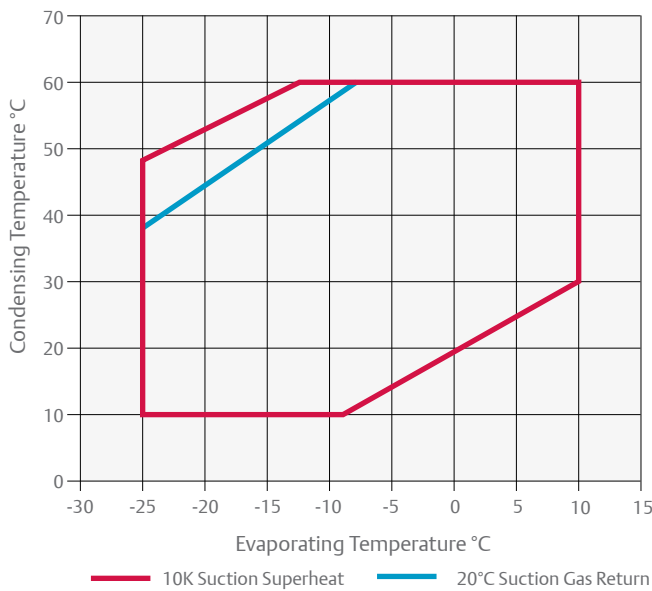
Operating Envelope ZS* KA R134a



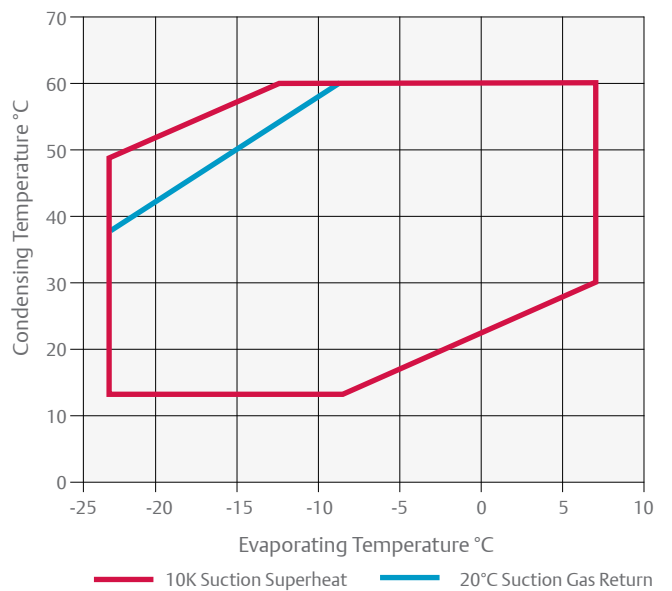
Operating Envelope ZB* KA R134a



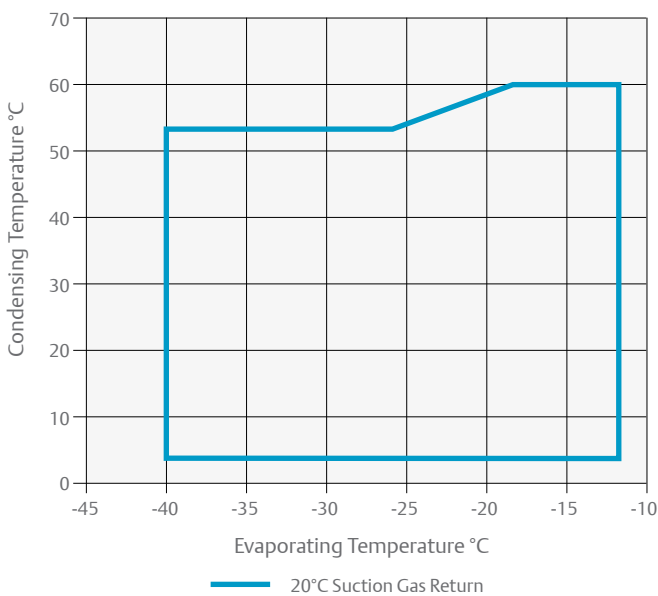
Operating Envelope ZS* KA R448A/R449A



Operating Envelope ZB* KA R448A/R449A



Operating Envelope ZF* KA R448A/R449A



Technical Overview

Models	Nominal hp	Displacement (m ³ /h)	Rotolock Suction (inch)	Rotolock 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 - dB(A)***
								1 Ph*	3 Ph**	1 Ph*	3 Ph**	1 Ph*	3 Ph**	
Medium Temperature														
ZB06KAE	0.8	2.4	3/4	1/2	0.7	246/246/380	21	PFJ	TFD	5	2	32	15	59
ZB07KAE	1.0	2.9	3/4	1/2	0.7	246/246/380	23	PFJ	TFD	6	2	45	20	59
ZB08KAE	1.2	3.4	3/4	1/2	0.7	246/246/380	23	PFJ	TFD	7	2	45	20	59
ZS09KAE	1.3	3.7	3/4	1/2	0.7	246/246/399	22	PFJ	TFD	7	3	45	27	58
ZS11KAE	1.5	4.4	3/4	1/2	0.7	246/246/399	22	PFJ	TFD	9	3	45	27	58
ZS13KAE	1.8	5.0	3/4	1/2	0.7	246/246/399	22	PFJ	TFD	10	4	54	29	59
Low Temperature														
ZF03KAE	1.0	2.8	3/4	1/2	0.7	246/246/387	22	PFJ	TFD	5	2	40	20	40
ZF04KAE	1.3	3.7	3/4	1/2	0.7	246/246/387	22	PFJ	TFD	6	3	45	27	45
ZF05KAE	1.5	4.4	3/4	1/2	0.7	246/246/387	22	PFJ	TFD	7	5	45	27	45
ZF07KAE	2.5	6.7	3/4	1/2	0.7	246/246/387	23	PFJ	TFD	11	4	79	27	79

* 1Ph: 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															
R407A	Cooling Capacity (kW)							R407A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZB06KAE				0.9	1.1	1.4	1.7	ZB06KAE				0.6	0.6	0.6	0.6
ZB07KAE				1.0	1.3	1.7	2.1	ZB07KAE				0.7	0.7	0.7	0.8
ZB08KAE				1.2	1.5	1.9	2.3	ZB08KAE				0.8	0.8	0.9	0.9
ZS09KAE		0.9	1.2	1.5	1.8	2.2	2.6	ZS09KAE		0.7	0.8	0.8	0.8	0.8	0.9
ZS11KAE		1.1	1.4	1.7	2.1	2.6	3.1	ZS11KAE		0.9	0.9	1.0	1.0	1.0	1.1
ZS13KAE		1.2	1.6	2.0	2.4	2.9	3.6	ZS13KAE		1.0	1.1	1.1	1.2	1.2	1.2
Low Temperature															
ZF03KAE	0.5*	0.6*	0.8*	0.9*	1.2*			ZF03KAE	0.6*	0.6*	0.7*	0.7*	0.7*		
ZF04KAE	0.6*	0.8*	1.1*	1.4*	1.7*			ZF04KAE	0.7*	0.8*	0.8*	0.9*	0.9*		
ZF05KAE	0.8*	1.0*	1.3*	1.6*	2.0*			ZF05KAE	0.9*	1.0*	1.0*	1.0*	1.0*		
ZF07KAE	1.3*	1.6*	2.0*	2.5*	3.1*			ZF07KAE	1.3*	1.4*	1.4*	1.5*	1.6*		

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

*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	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZB06KAE				0.9	1.1	1.4	1.7	ZB06KAE				0.6	0.6	0.6	0.6
ZB07KAE				1.0	1.3	1.7	2.1	ZB07KAE				0.7	0.7	0.7	0.8
ZB08KAE				1.2	1.5	1.9	2.3	ZB08KAE				0.8	0.8	0.9	0.9
ZS09KAE			1.2*	1.5	1.9	2.3	2.7	ZS09KAE			0.8*	0.8	0.9	0.9	0.9
ZS11KAE			1.4*	1.8	2.2	2.7	3.3	ZS11KAE			1.0*	1.0	1.1	1.1	1.1
ZS13KAE			1.6*	2.1	2.6	3.1	3.7	ZS13KAE			1.1*	1.2	1.2	1.2	1.3
Low Temperature															
ZF03KAE	0.5*	0.6*	0.8*	1.0*	1.2*			ZF03KAE	0.6*	0.6*	0.7*	0.7*	0.8*		
ZF04KAE	0.6*	0.8*	1.1*	1.4*	1.7*			ZF04KAE	0.7*	0.8*	0.8*	0.9*	1.0*		
ZF05KAE	0.8*	1.0*	1.3*	1.6*	2.0*			ZF05KAE	0.9*	1.0*	1.0*	1.0*	1.0*		
ZF07KAE	1.3*	1.6*	2.0*	2.5*	3.1*			ZF07KAE	1.3*	1.4*	1.4*	1.5*	1.6*		

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

*Conditions: Suction Superheat 10K, Subcooling 0K

Capacity Data

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZB06KAE				0.9	1.2	1.4	1.7	ZB06KAE				0.6	0.6	0.6	0.6
ZB07KAE				1.1	1.4	1.7	2.1	ZB07KAE				0.7	0.7	0.8	0.8
ZB08KAE				1.2	1.5	1.9	2.3	ZB08KAE				0.8	0.9	0.9	0.9
ZS09KAE		0.9	1.1	1.4	1.7	2.1	2.5	ZS09KAE		0.7	0.8	0.8	0.9	0.9	0.9
ZS11KAE		1.0	1.3	1.6	2.0	2.5	3.1	ZS11KAE		0.8	0.9	1.0	1.0	1.0	1.0
ZS13KAE		1.4	1.8	2.3	2.8	3.4	4.1	ZS13KAE		1.1	1.3	1.4	1.4	1.5	1.5
Low Temperature															
ZF03KAE	0.5*	0.7*	0.8*	1.0*	1.3*			ZF03KAE	0.7*	0.7*	0.7*	0.7*	0.7*		
ZF04KAE	0.7*	0.9*	1.1*	1.4*	1.8*			ZF04KAE	0.7*	0.8*	0.8*	0.9*	1.0*		
ZF05KAE	0.8*	1.1*	1.3*	1.7*	2.1*			ZF05KAE	1.0*	1.0*	1.0*	1.0*	1.0*		
ZF07KAE	1.3*	1.7*	2.1*	2.6*	3.2*			ZF07KAE	1.3*	1.4*	1.4*	1.5*	1.6*		

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)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZB06KAE					0.7	0.9	1.1	ZB06KAE					0.4	0.4	0.4
ZB07KAE					0.8	1.0	1.3	ZB07KAE					0.5	0.5	0.5
ZB08KAE					0.9	1.2	1.5	ZB08KAE					0.5	0.6	0.6
ZS09KAE				0.9	1.1	1.4	1.7	ZS09KAE				0.5	0.6	0.6	0.6
ZS11KAE				1.1	1.3	1.7	2.0	ZS11KAE				0.6	0.7	0.7	0.7
ZS13KAE				1.2	1.5	1.9	2.3	ZS13KAE				0.7	0.8	0.8	0.8

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

ZB Copeland Scroll™ Compressor Ranges for Medium Temperature Refrigeration Using R407A/F/C, R448A/R449A, R404A, R134a, R450A and R513A

Emerson offers ZB compressors with a wide displacement range from 5.9 m³/h to 87.5 m³/h. It includes digital compressor models that offers continuous capacity modulation technology.

Copeland Scroll compressors have 3 times less moving parts than reciprocating compressors and feature a scroll compliance mechanism which makes them particularly robust and reliable under severe conditions including liquid slugging.

They have the advantage of light weight and compactness, making them ideal for the usage in refrigeration units, compact refrigeration systems or special process units.

The Summit Series from 7 to 15 hp is designed to provide seasonal efficiencies 15% higher than traditional semi-hermetic compressors. These compressors are extremely quiet and can be fitted with an external sound shell for an additional 10 dBA sound reduction, which makes them best choice for refrigeration applications in urban and domestic areas.

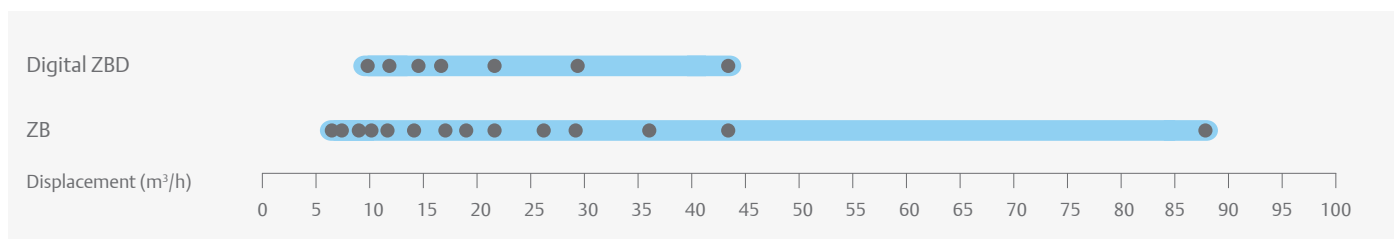
The ZB range also features ZB220 (30hp), the largest refrigeration scroll available on the market. These compressors are qualified for R407A/F/C, R448A, R449A, R404A and R134a. CoreSense™ Diagnostics is now available as an option for the ZB Scroll Summit series (ZB66K5E, ZB76K5E, ZB95K5E and ZB114K5E) as well as for Summit Digital ZBD *K5E Series.



ZB Compressor for Medium Temperature Refrigeration With and Without Sound Shell

For more details on digital models please refer to page 60 in the catalogue.

ZB and ZBD Compressor Line-up



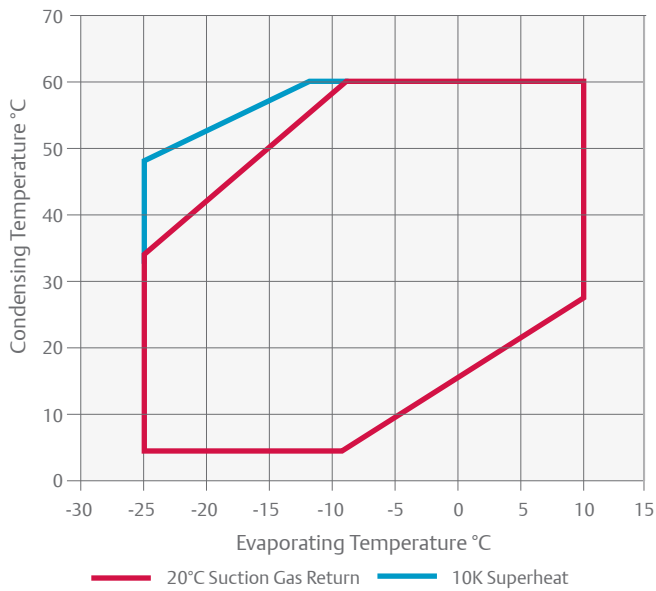
Features and Benefits

- Copeland Scroll axial and radial compliance for superior reliability and efficiency
- Wide operating envelope with 10°C condensing limit and fast pull-down capabilities
- High seasonal efficiencies as scrolls are designed at the condition where equipment runs most of the time
- Light weight and compactness, up to half the weight of equivalent semi-hermetic compressors
- Availability of optional sound shell on all models providing an additional 10 dBA sound attenuation for silent operation
- Includes 12 Digital Scroll compressor models for simple, stepless 10 to 100% capacity modulation
- One model for multiple refrigerants R407A/F/C, R448A/R449A, R404A, R134a, R450A and R513A

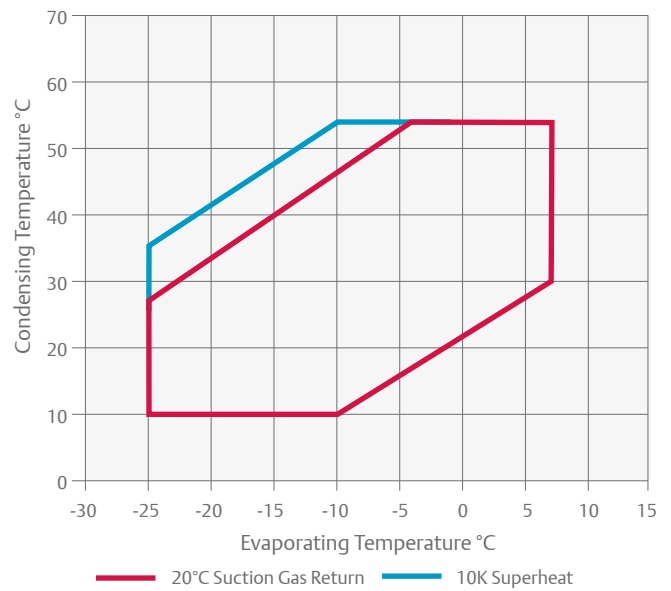
Maximum Allowable Pressure (PS)

- ZB15 to ZB45:
Low Side PS 21 bar(g) / High Side PS 32 bar(g)
- ZB50 to ZB220:
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)
- Digital ZBD:
Low Side PS 21 bar(g) / High Side PS 28.8 bar(g)
- Summit ZBD:
Low Side PS 22.6 bar(g) / High Side PS 32 bar (g)

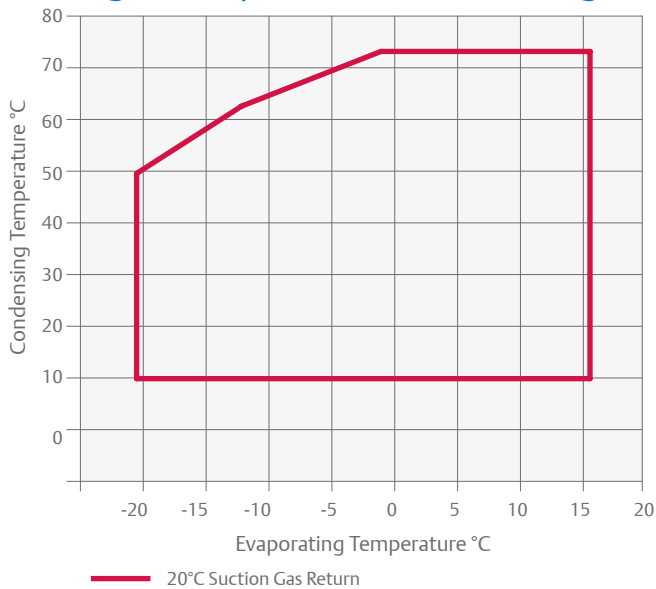
Operating Envelope R448A/R449A



Operating Envelope R407A



Operating Envelope R134a - for ZBD Digital Models



For individual model details please refer to select software.

Technical Overview

Models	Nominal hp	Displacement (m ³ /h)	Rotolock suction (inch)	Rotolock 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 - dB(A)***
								1 Ph*	3 Ph**	1 Ph*	3 Ph**	1 Ph*	3 Ph**	
ZB15KCE	2.0	5.9	1 1/4	1	1.3	241/241/369	25	PFJ	TFD	12	4	58	26	55
ZB19KCE	2.5	6.8	1 1/4	1	1.5	242/242/369	27	PFJ	TFD	12	6	61	32	55
ZB21KCE	3.0	8.6	1 1/4	1	1.2	243/244/391	29	PFJ	TFD	16	7	82	40	58
ZB26KCE	3.5	10.0	1 1/4	1	1.5	243/244/405	28	PFJ	TFD	18	8	97	46	60
ZB29KCE	4.0	11.4	1 1/4	1	1.5	246/246/423	29		TFD		10		50	58
ZB38KCE	5.0	14.4	1 1/4	1	1.9	242/242/438	37	PFJ	TFD	32	12	142	65	61
ZB42KCE	5.5	16.2	1 1/4	1	1.9	251/246/438	43	PFJ		35		150		62
ZB45KCE	6.0	17.1	1 1/4	1	1.9	242/242/438	39		TFD		13		74	61
ZB48KCE	6.5	18.8	1 1/4	1 1/4	1.8	246/250/442	39		TFD		14		101	62
ZB57KCE		21.4	1 1/4	1 1/4	1.9	246/256/442	39		TFD		15		102	68
ZB Summit Models														
ZB66K5E	10.0	25.7	1 3/4	1 1/4	3.4	280/280/534	60		TFD		17		111	66
ZB76K5E	12.0	28.8	1 3/4	1 1/4	3.4	280/280/534	61		TFD		20		118	67
ZB95K5E	13.0	36.4	1 3/4	1 1/4	3.4	280/280/552	65		TFD		28		140	69
ZB114K5E	15.0	43.4	1 3/4	1 1/4	3.4	280/280/552	66		TFD		33		174	72
ZB220KCE	30.0	87.5	2 3/4	1 3/4	6.3	448/392/715	176		TWM		69		310	78

* 1Ph: 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															
R407A	Cooling Capacity (kW)							R407A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
ZB15KCE				2.1*	2.8	3.5	4.2	ZB15KCE				1.5*	1.5	1.5	1.5
ZB19KCE				2.4*	3.2	4.0	5.0	ZB19KCE				1.5*	1.6	1.6	1.6
ZB21KCE				3.0*	4.0	5.1	6.3	ZB21KCE				2.0*	2.0	2.0	2.1
ZB26KCE				3.6*	4.7	5.8	7.1	ZB26KCE				2.3*	2.3	2.3	2.4
ZB29KCE					5.3	6.5	8.0	ZB29KCE					2.6	2.6	2.6
ZB38KCE				5.4*	7.2	8.9	11.0	ZB38KCE				3.2*	3.3	3.3	3.4
ZB42KCE**				6.1*	7.9	9.8	12.0	ZB42KCE**				3.9*	3.9	3.9	3.9
ZB45KCE				6.3*	8.2	10.2	12.4	ZB45KCE				3.9*	4.0	4.0	4.0
ZB48KCE					9.5	11.7	14.3	ZB48KCE					4.5	4.6	4.5
ZB57KCE				8.2*	10.6	13.1	15.8	ZB57KCE				4.4*	4.6	4.8	4.9
ZB Summit Models															
ZB66K5E				9.2*	12.4	15.6	19.3	ZB66K5E				5.5*	5.5	5.7	5.8
ZB76K5E				10.6*	14.2	18.1	22.4	ZB76K5E				6.5*	6.5	6.7	6.9
ZB95K5E				12.9*	17.7	22.5	27.8	ZB95K5E				8.3*	8.3	8.5	8.7
ZB114K5E				14.8*	20.5	26.3	32.8	ZB114K5E				10.2*	10.2	10.3	10.5

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

*Conditions: Suction Superheat 10K, Subcooling 0K

** Single Phase Only

Preliminary Data

Condensing Temperature 40°C															
R407F	Cooling Capacity (kW)							R407F	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
ZB15KCE					2.6*	3.4	4.2	ZB15KCE					1.6*	1.6	1.6
ZB19KCE					3.2*	4.2	5.1	ZB19KCE					1.9*	1.9	1.9
ZB21KCE					3.9*	5.0	6.2	ZB21KCE					2.2*	2.2	2.3
ZB26KCE					4.5*	5.8	7.2	ZB26KCE					2.6*	2.6	2.6
ZB29KCE					5.4*	7.0	8.7	ZB29KCE					2.8*	2.9	2.8
ZB38KCE				5.2*	6.9*	8.9	11.0	ZB38KCE				3.7*	3.7*	3.7	3.7
ZB42KCE**				5.9*	7.8*	10.1	12.5	ZB42KCE**				4.0*	4.0*	4.0	4.1
ZB45KCE				6.0*	8.1*	10.5	13.0	ZB45KCE				4.1*	4.2*	4.3	4.2
ZB48KCE				7.0*	9.3*	12.1	15.0	ZB48KCE				4.7*	4.8*	4.9	4.9
ZB57KCE				8.5*	10.9*	13.8	16.9	ZB57KCE				5.0*	5.1*	5.1	5.2
ZB Summit Models															
ZB66K5E				9.5*	13.0*	16.9	20.9	ZB66K5E				5.8*	5.8*	5.9	6.1
ZB76K5E				10.9*	14.9*	19.6	24.2	ZB76K5E				6.9*	6.8*	7.0	7.2
ZB95K5E				13.2*	18.6*	24.4	30.1	ZB95K5E				8.7*	8.8*	8.9	9.1
ZB114K5E				15.2*	21.5*	28.5	35.4	ZB114K5E				10.6*	10.7*	10.8	11.0

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

*Conditions: Suction Superheat 10K, Subcooling 0K

** Single Phase Only

Preliminary Data

Capacity Data

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
ZB15KCE			1.6*	2.2	2.9	3.6	4.4	ZB15KCE			1.6*	1.5	1.5	1.5	1.4
ZB19KCE			2.0*	2.6	3.3	4.1	5.1	ZB19KCE			1.6*	1.6	1.6	1.6	1.6
ZB21KCE			2.4*	3.3	4.2	5.2	6.4	ZB21KCE			2.1*	2.1	2.1	2.1	2.1
ZB26KCE			2.6*	3.8	4.8	5.9	7.2	ZB26KCE			2.4*	2.4	2.4	2.4	2.4
ZB29KCE			3.3*	4.5	5.5	6.8	8.3	ZB29KCE			2.6*	2.6	2.6	2.7	2.7
ZB38KCE			3.9*	5.7	7.2	8.9	10.9	ZB38KCE			3.4*	3.4	3.4	3.4	3.4
ZB42KCE**			4.4*	6.4	8.1	10.1	12.3	ZB42KCE**			3.9*	3.9	3.9	3.9	3.9
ZB45KCE			4.5*	6.6	8.5	10.5	12.8	ZB45KCE			3.9*	3.9	3.9	3.9	3.9
ZB48KCE			5.3*	7.6	9.7	12.1	14.7	ZB48KCE			4.5*	4.5	4.5	4.5	4.5
ZB57KCE			6.4*	8.6	10.8	13.4	16.4	ZB57KCE			4.4*	4.5	4.7	4.9	5.1
ZB Summit Models															
ZB66K5E			6.8*	9.4*	12.6	15.8	19.3	ZB66K5E			5.8*	5.8*	5.8	5.8	5.8
ZB76K5E			8.0*	11.1*	14.9	18.6	22.7	ZB76K5E			6.5*	6.6*	6.6	6.6	6.7
ZB95K5E			8.8*	13.2*	18.2	22.8	27.8	ZB95K5E			8.6*	8.6*	8.6	8.6	8.7
ZB114K5E			10.5*	15.5*	21.5	27.3	33.7	ZB114K5E			10.4*	10.3*	10.3	10.3	10.4
ZB220KCE			32.4*	43.1	53.7	65.7		ZB220KCE			20.3*	20.3	20.4	20.6	

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

*Conditions: Suction Superheat 10K, Subcooling 0K

** Single Phase Only

Preliminary Data

Condensing Temperature 40°C															
R404A	Cooling Capacity (kW)							R404A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
ZB15KCE			1.9	2.4	3.0	3.7	4.5	ZB15KCE			1.7	1.7	1.6	1.6	1.5
ZB19KCE			2.3	2.9	3.5	4.2	5.1	ZB19KCE			1.9	1.9	1.9	1.9	1.9
ZB21KCE			3.0	3.7	4.5	5.5	6.6	ZB21KCE			2.2	2.2	2.2	2.2	2.2
ZB26KCE			3.5	4.3	5.3	6.4	7.6	ZB26KCE			2.6	2.6	2.6	2.6	2.6
ZB29KCE			4.0	4.9	6.0	7.2	8.6	ZB29KCE			2.9	2.9	2.9	2.9	2.9
ZB38KCE			5.1	6.3	7.7	9.3	11.2	ZB38KCE			3.8	3.8	3.8	3.8	3.8
ZB42KCE**			5.7	7.1	8.7	10.6	12.7	ZB42KCE**			4.2	4.2	4.2	4.2	4.2
ZB45KCE			6.0	7.4	9.1	11.0	13.2	ZB45KCE			4.3	4.3	4.3	4.3	4.3
ZB48KCE			6.9	8.6	10.5	12.7	15.2	ZB48KCE			4.9	4.9	4.9	4.9	4.9
ZB57KCE			7.9	9.7	11.9	14.3	17.1	ZB57KCE			4.7	4.9	5.2	5.4	5.5
ZB Summit Models															
ZB66K5E			9.1	11.4	13.9	16.8	20.1	ZB66K5E			6.2	6.2	6.2	6.3	6.4
ZB76K5E			10.5	13.1	16.2	19.7	23.6	ZB76K5E			7.2	7.2	7.3	7.4	7.5
ZB95K5E			10.7*	16.0	20.1	24.5	29.3	ZB95K5E			9.3*	9.2	9.3	9.3	9.4
ZB114K5E			12.5*	18.7	23.4	28.7	34.7	ZB114K5E			11.3*	11.3	11.3	11.4	11.4
ZB220KCE			28.5*	39.2	47.7	57.5	68.9	ZB220KCE			21.4*	21.8	22.0	22.2	22.4

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

*Conditions: Suction Superheat 10K, Subcooling 0K

** Single Phase Only

Capacity Data

Condensing Temperature 40°C															
R134a	Cooling Capacity (kW)							R134a	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
ZB15KCE				1.4	1.7	2.2	2.7	ZB15KCE				0.9	0.9	0.9	0.9
ZB19KCE				1.6	2.0	2.5	3.1	ZB19KCE				1.1	1.1	1.1	1.1
ZB21KCE				2.0	2.5	3.2	4.0	ZB21KCE				1.3	1.3	1.3	1.3
ZB26KCE				2.3	2.9	3.7	4.6	ZB26KCE				1.5	1.5	1.5	1.5
ZB29KCE				2.5	3.2	4.0	5.0	ZB29KCE				1.7	1.7	1.7	1.7
ZB38KCE				3.2	4.2	5.4	6.7	ZB38KCE				2.1	2.1	2.1	2.2
ZB42KCE**				3.8	4.8	6.0	7.5	ZB42KCE**				2.5	2.5	2.5	2.4
ZB45KCE				4.0	5.1	6.4	8.0	ZB45KCE				2.4	2.4	2.5	2.5
ZB48KCE				4.8	6.0	7.5	9.1	ZB48KCE				2.8	2.8	2.9	2.9
ZB57KCE				5.0	6.4	8.1	10.1	ZB57KCE				3.4	3.4	3.4	3.5
ZB Summit Models															
ZB66K5E				6.0	7.5	9.5	11.8	ZB66K5E				3.8	3.7	3.8	3.8
ZB76K5E				6.9	8.6	10.8	13.5	ZB76K5E				4.4	4.4	4.4	4.5
ZB95K5E				8.2	10.8	13.8	17.1	ZB95K5E				5.4	5.5	5.5	5.6
ZB114K5E				9.6	12.7	16.3	20.4	ZB114K5E				6.6	6.6	6.7	6.7
ZB220KCE					27.3	34.1	42.1	ZB220KCE					13.0	13.2	13.5

*Conditions: Suction Superheat 10K, Subcooling 0K

** Single Phase Only

ZF Copeland Scroll™ Compressor Ranges for Low Temperature Refrigeration Using R407A/F, R448A/R449A and R404A

Emerson developed the ZF range to provide the best performance in low temperature. The range has a wide application envelope as it can operate from -40°C evaporating temperature to +7°C. They have been optimized in their design to perfectly fit frozen food application requirements. Thanks to their scroll compliance mechanism, these scroll compressors feature particularly high tolerance to liquid slugging.

The range consists of:

- The ZF*K4E models that operate with liquid injection in order to control discharge temperature and increase the operating envelope.
- The ZF*KVE models that are optimized for vapor injection with use of a sub-cooler. This boosts refrigeration system's cooling capacity and efficiency.
- The Summit ZF*K5E models that operate both with liquid injection or vapor injection.

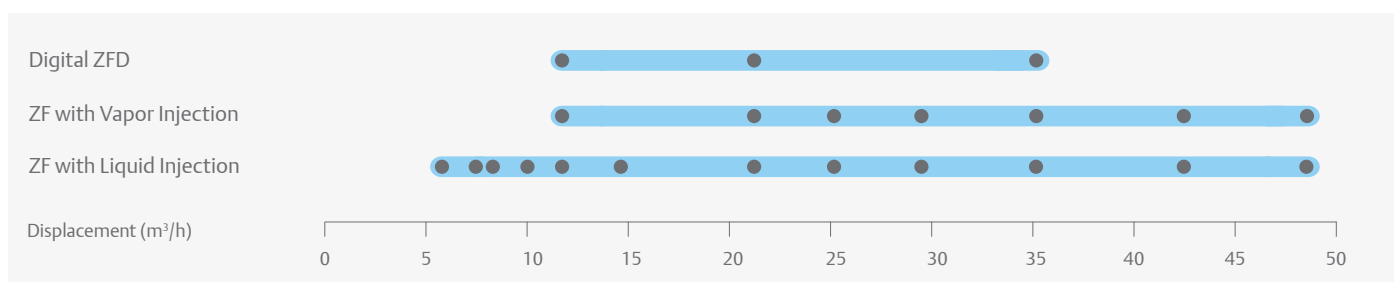
These compressors are qualified for R407A/F, R448A/R449A, R404A and R134a for certain models. For more details on Digital Scroll models please refer to page 60 in the catalogue.

CoreSense™ Diagnostics is now available as an option for the ZF Scroll Summit series (ZF34K5E-ZF54K5E) as well as for Summit Digital ZFD41K5E.



ZF Compressor for Low Temperature Refrigeration With and Without Sound Shell

ZF and ZFD Compressor Line-Up



Features and Benefits

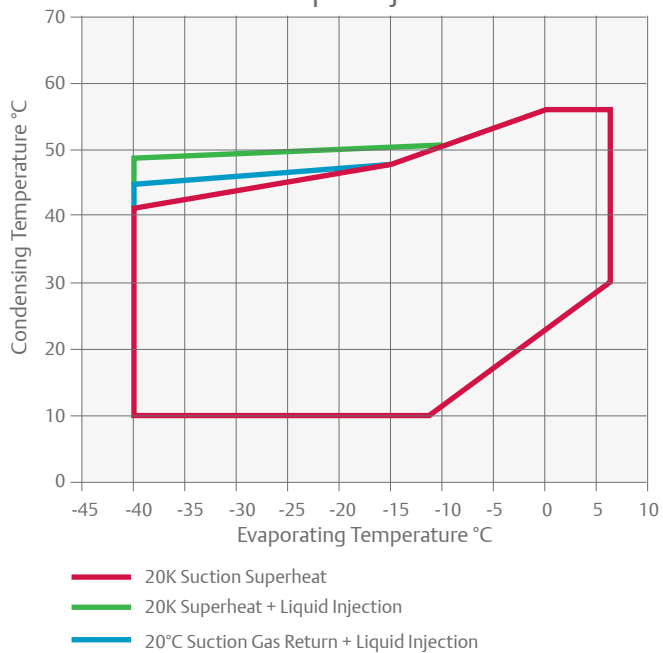
- Wide operating envelope with 10°C low condensing temperature to minimize energy consumption
- One model for multiple refrigerants
- Light weight and compactness, up to half the weight of equivalent semi-hermetic compressor
- Optional Sound Shell allowing up to 10 dBA sound attenuation
- ZF models with liquid injection
 - Easy, efficient and reliable injection via Discharge Temperature Control Valve (DTC)
- ZF models with enhanced vapor injection
 - Seasonal efficiencies compared to Emerson's best semi-hermetic compressors
 - Improved system capacity and efficiency by 40% and 25% respectively, making them the most efficient compressors on the market.
 - Possibility to reduce the equipment and component sizes by using smaller compressors

Maximum Allowable Pressure (PS)

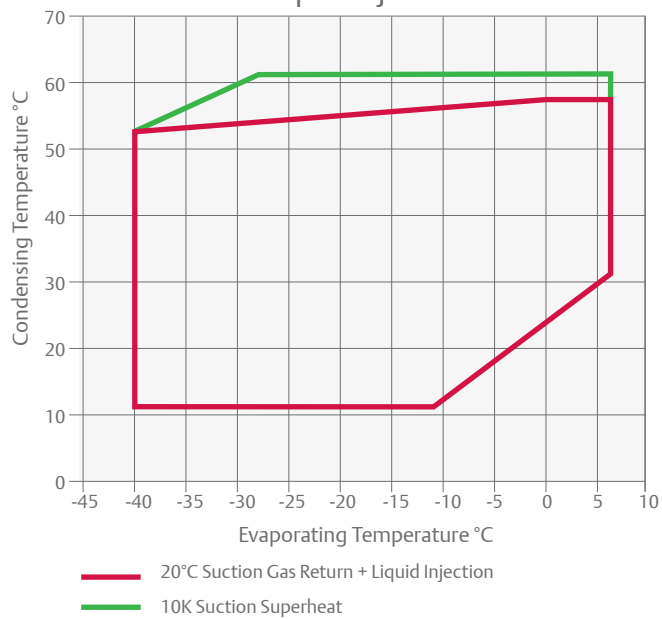
- ZF06 to ZF18 (K4E/KVE):
Low Side PS 21 bar(g) / High Side PS 32 bar(g)
- ZF25 to ZF54 (K5E):
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)
- Digital ZFD:
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)

Operating Envelope R407A

For Vapor Injection

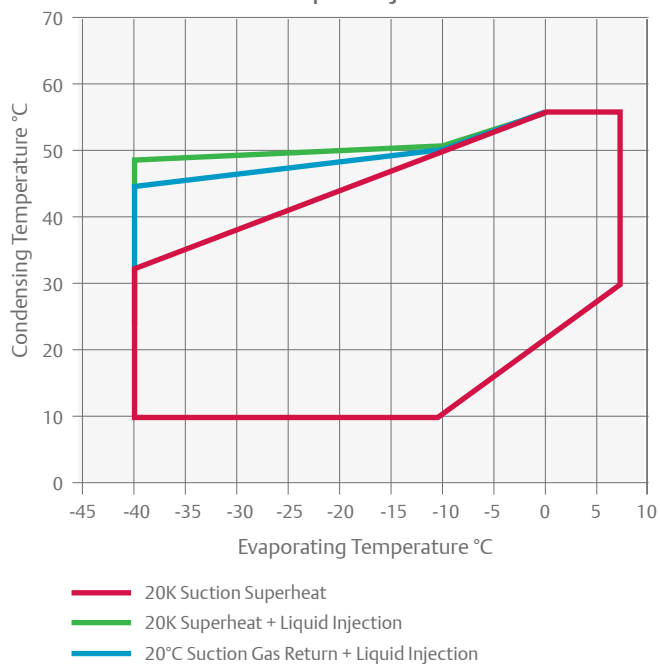


For Liquid Injection

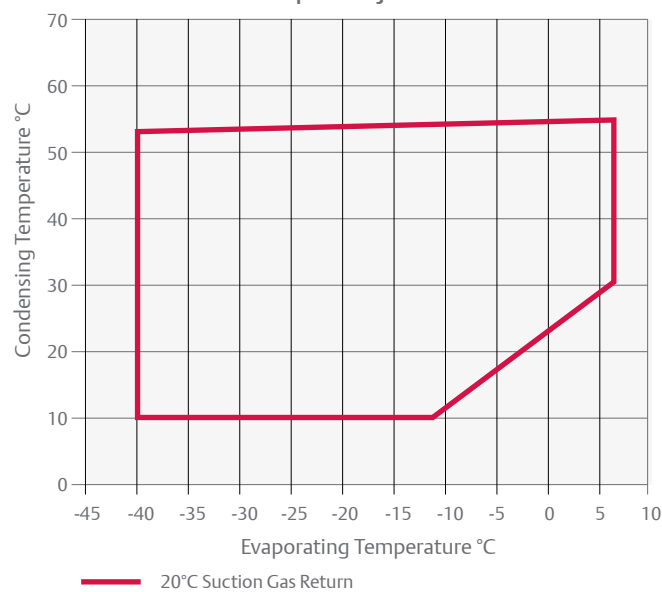


Operating Envelope R407F

For Vapor Injection

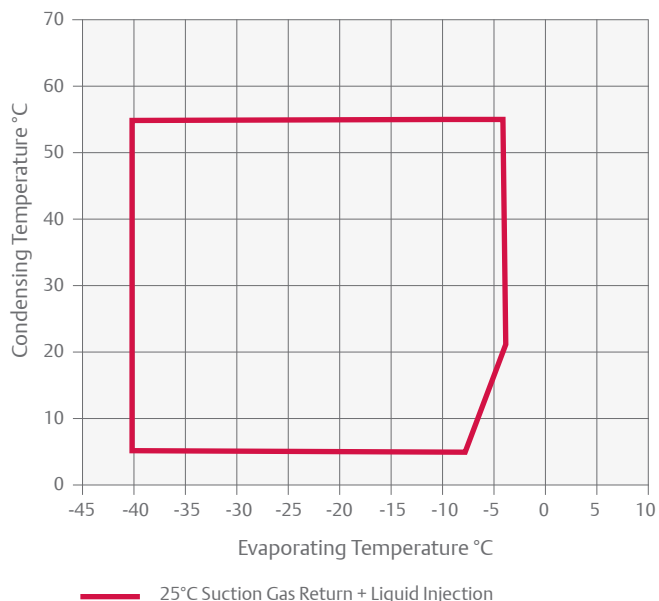


For Liquid Injection



Operating Envelope R448A/R449A

For Liquid Injection



For individual model details please refer to Select Software.

Technical Overview

Models	Nominal hp	Displacement (m ³ /h)	Rotolock Suction (inch)	Rotolock 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 - db(A)***
								3 Ph**	3 Ph**	3 Ph**	
Models with Liquid Injection only											
ZF06K4E	2.0	5.9	1 1/4	1	1.3	243/245/369	25.4	TFD	5	26	57
ZF08K4E	2.5	7.3	1 1/4	1	1.5	243/245/391	27.2	TFD	6	32	59
ZF09K4E	2.8	8.0	1 1/4	1	1.5	243/244/391	27.0	TFD	6	40	62
ZF11K4E	3.5	9.9	1 1/4	1	1.5	243/244/405	28.0	TFD	7	46	63
ZF13K4E	4.0	11.8	1 1/4	1	1.9	246/251/442	38.0	TFD	8	51	65
ZF15K4E	5.0	14.5	1 1/4	1	1.9	246/251/442	39.0	TFD	10	64	65
ZF18K4E	6.0	17.1	1 1/4	1	1.9	246/251/442	41.0	TFD	12	74	67
Models with Vapor Injection only											
ZF13KVE	4.0	11.7	1 1/4	1	1.9	246/251/442	38.0	TFD	9	64	63
ZF18KVE	6.0	17.1	1 1/4	1	1.9	246/251/442	39.5	TFD	13	74	67
Models which can have Liquid or Vapor Injection											
ZF25K5E	7.5	21.4	1 1/4	1 1/4	1.9	246/257/452	39.5	TFD	16	102	70
ZF34K5E	10.0	29.1	1 3/4	1 1/4	3.4	280/280/534	63.1	TFD	25	100	68
ZF41K5E	13.0	35.3	1 3/4	1 1/4	3.4	280/280/534	63.1	TFD	29	118	69
ZF49K5E	15.0	42.4	1 3/4	1 1/4	3.4	280/280/552	66.2	TFD	30	139	72
ZF54K5E	17.0	48.3	1 3/4	1 1/4	3.4	363/312/552	66.2	TFD	31	168	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	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Models with Liquid Injection Only															
ZF06K4E	1.2	1.5	1.9	2.3	2.8	3.5	4.2	ZF06K4E	1.2	1.2	1.2	1.3	1.4	1.4	1.5
ZF08K4E	1.4	1.9	2.4	3.0	3.6	4.4	5.3	ZF08K4E	1.4	1.4	1.5	1.6	1.6	1.7	1.8
ZF09K4E	1.6	2.0	2.6	3.2	3.9	4.8	5.9	ZF09K4E	1.5	1.5	1.6	1.6	1.7	1.8	1.9
ZF11K4E	2.0	2.6	3.2	4.0	4.9	6.0	7.3	ZF11K4E	1.9	1.9	1.9	2.0	2.0	2.2	2.3
ZF13K4E	2.2	2.9	3.6	4.5	5.6	6.8	8.3	ZF13K4E	2.3	2.3	2.4	2.5	2.5	2.6	2.8
ZF15K4E	2.7	3.5	4.4	5.5	6.8	8.4	10.2	ZF15K4E	2.7	2.8	2.9	3.1	3.2	3.4	3.6
ZF18K4E	3.3	4.3	5.4	6.7	8.3	10.2	12.4	ZF18K4E	3.3	3.4	3.5	3.6	3.8	3.9	4.1
Models with Vapor Injection Only															
ZF13KVE	3.1	3.9	4.9	5.9	7.2	8.7	10.4	ZF13KVE	2.4	2.4	2.5	2.6	2.7	2.7	2.7
ZF18KVE	4.9	6.0	7.3	8.8	10.8	13.3	16.4	ZF18KVE	3.4	3.5	3.6	3.7	3.9	4.1	4.4
Models which can have Liquid or Vapor Injection															
ZF25K5E	4.3	5.5	6.9	8.6	10.7	13.2	16.0	ZF25K5E	4.0	4.2	4.5	4.7	4.9	5.2	5.4
ZF25K5E (EVI)	6.1	7.7	9.4	11.4	13.5	15.8	18.2	ZF25K5E (EVI)	4.3	4.4	4.6	4.8	5.0	5.3	5.5
ZF34K5E	5.9	7.6	9.6	12.1	15.0	18.3	22.3	ZF34K5E	5.1	5.5	5.9	6.2	6.6	6.9	7.3
ZF34K5E (EVI)	8.0	9.9	12.1	14.6	17.4	20.7	24.2	ZF34K5E (EVI)	5.3	5.5	5.7	5.9	6.1	6.3	6.4
ZF41K5E	7.3	9.3	11.7	14.5	17.9	21.8	26.4	ZF41K5E	6.2	6.7	7.1	7.6	8.0	8.4	8.9
ZF41K5E (EVI)	10.1	12.6	15.5	18.7	22.1	25.8	29.7	ZF41K5E (EVI)	6.7	6.9	7.2	7.4	7.6	7.8	8.0
ZF49K5E	8.6	11.2	14.1	17.7	21.9	26.8	32.5	ZF49K5E	7.6	8.2	8.7	9.2	9.7	10.2	10.7
ZF49K5E (EVI)	12.1	15.1	18.4	22.3	26.8			ZF49K5E (EVI)	8.0	8.3	8.5	8.8	9.1		
ZF54K5E	9.5	12.2	15.4	19.3	23.8			ZF54K5E	8.1	8.6	9.3	10.0	10.8		
ZF54K5E (EVI)	14.5	17.8	21.6	26.1	31.4			ZF54K5E (EVI)	9.7	10.1	10.4	10.7	11.1		

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

Preliminary Data

Capacity Data

Condensing Temperature 40°C															
R407F	Cooling Capacity (kW)							R407F	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Models with Liquid Injection Only															
ZF06K4E	1.2	1.5	1.9	2.3	2.8	3.5	4.2	ZF06K4E	1.3	1.3	1.3	1.4	1.4	1.5	1.6
ZF08K4E	1.4	1.9	2.4	3.0	3.6	4.4	5.3	ZF08K4E	1.5	1.5	1.6	1.6	1.7	1.8	1.9
ZF09K4E	1.6	2.0	2.6	3.2	3.9	4.8	5.9	ZF09K4E	1.6	1.6	1.6	1.7	1.8	1.9	2.0
ZF11K4E	2.0	2.6	3.2	4.0	4.9	6.0	7.3	ZF11K4E	1.9	2.0	2.0	2.1	2.2	2.3	2.4
ZF13K4E	2.2	2.9	3.6	4.5	5.6	6.8	8.3	ZF13K4E	2.4	2.4	2.5	2.6	2.7	2.8	2.9
ZF15K4E	2.7	3.5	4.4	5.5	6.8	8.4	10.2	ZF15K4E	2.8	3.0	3.1	3.2	3.4	3.5	3.8
ZF18K4E	3.3	4.3	5.4	6.7	8.3	10.2	12.4	ZF18K4E	3.5	3.6	3.7	3.8	4.0	4.1	4.3
Models with Vapor Injection Only															
ZF13KVE	3.3	4.3	5.4	6.7	8.1	9.7	11.5	ZF13KVE	2.8	2.9	3.0	3.0	3.1	3.2	3.3
ZF18KVE	4.9	6.1	7.6	9.3	11.3	13.5	16.0	ZF18KVE	3.8	4.0	4.1	4.2	4.4	4.5	4.7
Models which can have Liquid or Vapor Injection															
ZF25K5E	4.5	5.8	7.3	9.1	11.3	13.8	16.8	ZF25K5E	4.2	4.4	4.7	4.9	5.2	5.4	5.7
ZF25K5E (EVI)	6.4	8.0	9.9	11.9	14.2	16.6	19.1	ZF25K5E (EVI)	4.5	4.7	4.9	5.1	5.3	5.5	5.8
ZF34K5E	6.2	8.0	10.1	12.7	15.7	19.3	23.4	ZF34K5E	5.6	5.8	6.0	6.2	6.4	6.6	6.8
ZF34K5E (EVI)	8.3	10.4	12.7	15.4	18.4	21.7	25.4	ZF34K5E (EVI)	5.3	5.5	5.7	5.9	6.1	6.3	6.4
ZF41K5E	7.6	9.7	12.3	15.2	18.8	22.9	27.7	ZF41K5E	6.5	7.0	7.5	8.0	8.4	8.9	9.3
ZF41K5E (EVI)	10.6	13.3	16.3	19.6	23.2	27.1	31.2	ZF41K5E (EVI)	7.0	7.3	7.5	7.7	8.0	8.2	8.4
ZF49K5E	9.1	11.7	14.8	18.6	23.0	28.1	34.2	ZF49K5E	8.0	8.6	9.1	9.6	10.2	10.7	11.2
ZF49K5E (EVI)	14.1	17.1	20.5	24.5	28.9			ZF49K5E (EVI)	9.1	9.7	10.3	10.8	11.3		
ZF54K5E	9.9	12.6	15.8	19.5	23.9			ZF54K5E	8.5	9.1	9.8	10.5	11.3		
ZF54K5E (EVI)	15.2	18.7	22.7	27.4	33.0			ZF54K5E (EVI)	10.2	10.6	10.9	11.3	11.6		

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

Preliminary Data

Capacity Data

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Models with Liquid Injection Only															
ZF06K4E	1.2	1.5	1.9	2.4	2.9	3.6	4.3	ZF06K4E	1.3	1.4	1.4	1.4	1.5	1.5	1.6
ZF08K4E	1.4	1.8	2.3	2.9	3.5	4.4	5.3	ZF08K4E	1.4	1.5	1.6	1.6	1.7	1.8	1.9
ZF09K4E	1.7	2.1	2.6	3.3	4.0	4.9	5.9	ZF09K4E	1.5	1.5	1.6	1.7	1.8	1.9	2.0
ZF11K4E	2.1	2.6	3.3	4.0	4.9	6.0	7.2	ZF11K4E	2.0	2.0	2.1	2.2	2.3	2.4	2.6
ZF13K4E	2.4	3.1	3.9	4.8	5.9	7.2	8.6	ZF13K4E	2.1	2.2	2.3	2.4	2.5	2.6	2.8
ZF15K4E	3.0	3.8	4.8	5.9	7.2	8.6	10.3	ZF15K4E	2.8	2.8	3.0	3.1	3.3	3.4	3.6
ZF18K4E	3.6	4.7	5.9	7.2	8.8	10.7	12.9	ZF18K4E	3.6	3.6	3.6	3.6	3.7	3.9	4.0
Models with Vapor Injection Only															
ZF13KVE	3.2	4.1	5.1	6.2	7.5	9.0	10.6	ZF13KVE	2.5	2.6	2.7	2.8	2.8	2.9	2.9
ZF18KVE	4.9	6.0	7.4	9.0	10.9	13.0	15.5	ZF18KVE	3.4	3.7	3.9	4.0	4.1	4.2	4.3
Models which can have Liquid or Vapor Injection															
ZF25K5E	4.9	6.1	7.6	9.4	11.4	13.8	16.6	ZF25K5E	3.8	3.9	4.1	4.3	4.5	4.8	5.0
ZF25K5E (EVI)	6.1	7.7	9.4	11.3	13.4	15.6	17.9	ZF25K5E (EVI)	4.0	4.3	4.6	4.9	5.2	5.4	5.6
ZF34K5E	6.1	7.8	9.8	12.1	14.9	18.1	21.7	ZF34K5E	5.1	5.3	5.4	5.7	6.0	6.3	6.7
ZF34K5E (EVI)	8.1	10.3	12.7	15.5	18.6	22.1	26.0	ZF34K5E (EVI)	5.7	6.1	6.5	7.0	7.5	8.1	8.7
ZF41K5E	7.4	9.4	11.8	14.6	17.8	21.5	25.8	ZF41K5E	5.8	6.1	6.5	7.0	7.7	8.4	9.4
ZF41K5E (EVI)	9.8	12.5	15.5	18.9	22.6	26.9	31.6	ZF41K5E (EVI)	7.0	7.5	8.0	8.6	9.2	9.9	10.7
ZF49K5E	9.1	11.6	14.6	18.1	22.2	27.0	32.5	ZF49K5E	7.7	7.8	8.0	8.4	8.9	9.4	10.0
ZF49K5E (EVI)	11.8	14.8	18.2	22.1	26.6			ZF49K5E (EVI)	8.6	9.1	9.6	10.2	10.9		
ZF54K5E	10.0	12.7	15.9	19.8	24.3			ZF54K5E	8.0	8.6	9.3	10.1	10.9		
ZF54K5E (EVI)	14.1	17.4	21.4	25.9	31.2			ZF54K5E (EVI)	10.5	11.1	11.7	12.4	13.3		

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

Preliminary Data

ZFD & ZBD Copeland Scroll Digital™ Compressor Range for Low and Medium Temperature Refrigeration

Copeland Scroll Digital ZBD and ZFD compressors provide stepless continuous capacity modulation in medium and low temperature refrigeration applications.

Based on the unique Copeland Compliant Scroll™ design, the Digital modulation operates on a simple mechanism. Capacity control is achieved by separating the scroll sets axially over a small period of time. It is a simple mechanical solution allowing precise temperature control and system efficiency.

Digital Scroll technology is a simple modulation solution that can easily and quickly be implemented into any existing system design as no other components are required.

Digital Scroll technology provides continuous, stepless modulation from 10% to 100% with no operating envelope restriction. As a result, system pressures and temperatures are tightly controlled. These compressors provide optimum performance for refrigeration units, refrigeration packs, process and agricultural units.

The Digital Scroll range consists of:

- ZBD models dedicated to medium temperature applications
- ZFD models with vapor injection for low temperature applications
- ZOD model designed for use in R744 (CO₂) - see page 68

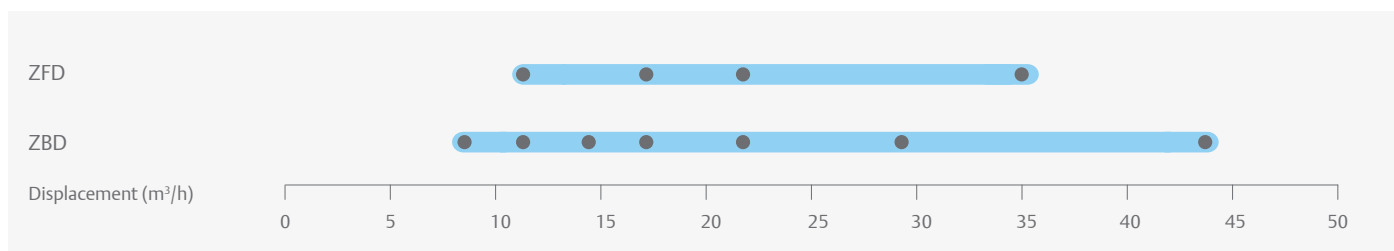


Copeland Scroll Digital for Low and Medium Temperature Refrigeration With and Without Sound Shell

CoreSense™ Diagnostics is now available as an option for the ZBD Scroll Summit series (ZBD76K5E and ZBD114K5E) as well as for ZFD41K5E.

These compressors are qualified for R407A/F/C, R448A/R449A and R404A for all digital models and R134a, R450A and R513 for ZBD only.

Digital Scroll Compressor Line-Up



Features and Benefits

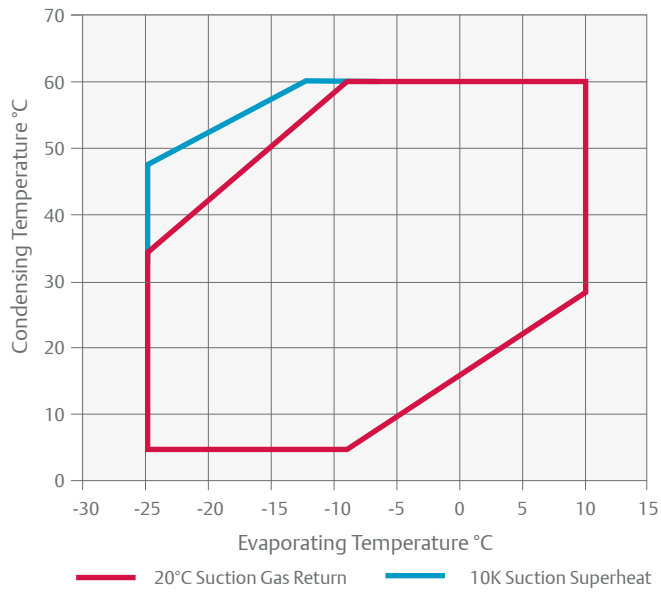
- Continuous modulation from 10% to 100% ensuring a perfect match of capacity and power to the desired load
- An economical and reliable alternative to variable speed drive
- Precise suction pressure control with associated energy savings
- Food quality is maintained by stable evaporating temperatures in the refrigerated areas
- Longer lasting refrigeration equipment due to fewer compressor cycling
- Quick and easy integration into refrigeration equipment, similar to any other scroll compressor
- Availability of optional sound shell on all models providing up to 10 dBA additional sound attenuation for silent operation
- Availability of Emerson's series of controllers that operate the Digital Scroll compressor
- Possibility of digital and liquid injection control via optional CoreSense technology

Maximum Allowable Pressure (PS)

- Digital ZBD:
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)
- Digital ZFD:
Low Side PS 22.6 bar(g) / High Side PS 32 bar(g)

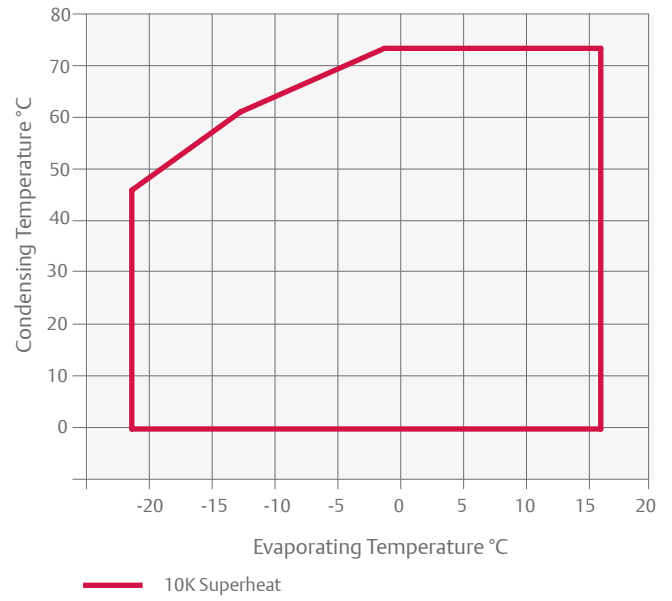
Operating Envelope R448A/R449A

For ZBD Digital Models



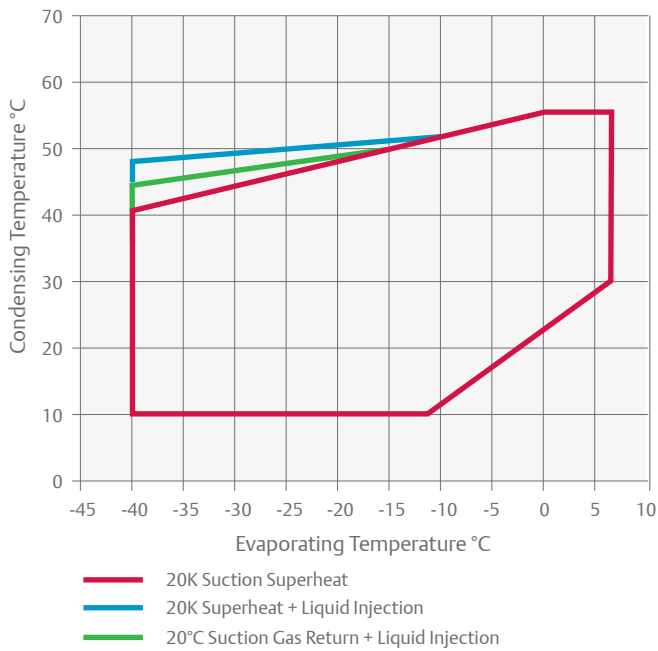
Operating Envelope R134a

For ZBD Digital Models



Operating Envelope R448A/R449A

For ZFD Digital Models



For individual model details please refer to Select software.

Technical Overview

Models	Nominal hp	Displacement (m ³ /h)	Rotolock Suction (inch)	Rotolock 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 - db(A)***	
								1 Ph*	3 Ph**	1 Ph*	3 Ph**	1 Ph*	3 Ph**		
Medium Temperature															
ZBD21KCE	3.0	8.3	1 1/4	1	1.2	243/243/432	30	PFJ	TFD	16	6	97	40	62	
ZBD29KCE	4.0	11.4	1 1/4	1	1.4	245/243/463	32		TFD		7		48	58	
ZBD38KCE	5.0	14.4	1 1/4	1	1.9	246/250/481	38		TFD		11		64	67	
ZBD45KCE	6.0	17.1	1 1/4	1	1.9	241/246/481	39		TFD		12		74	61	
ZBD57KCE	7.5	21.4	1 1/4	1 1/4	1.9	246/257/481	43		TFD		15		102	68	
ZBD76K5E	10.0	28.8	1 3/4	1 1/4	3.4	299/280/534	61		TFD		24		118	66	
ZBD114K5E	15.0	43.3	1 3/4	1 1/4	3.4	299/280/552	68		TFD		33		174	71	
Low Temperature															
ZFD13KVE EVI	4.0	11.7	1 1/4	1	1.9	246/250/481	38		TFD		9		64	65	
ZFD18KVE EVI	6.0	17.1	1 1/4	1	1.9	300/299/481	43		TFD		13		74	67	
ZFD25KVE EVI	7.5	21.4	1 1/4	1 1/4	1.9	246/250/481	43		TFD		16		102	70	
ZFD41K5E	10.0	35.3	1 3/4	1 1/4	3.4	310/280/534	66		TFD		20		118	73	
ZFD41K5E EVI	13.0	35.3	1 3/4	1 1/4	3.4	310/280/534	66		TFD		20		118	72	

* 1ph: 230V/ 50Hz

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

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

For capacity data of ZFD54K5E 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	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZBD21KCE				3.4*	4.3	5.2	6.3	ZBD21KCE				1.8*	1.9	1.9	2.0
ZBD29KCE				4.2*	5.5	6.8	8.4	ZBD29KCE				2.6*	2.6	2.6	2.6
ZBD38KCE				5.5*	7.3	9.1	11.2	ZBD38KCE				3.4*	3.4	3.4	3.5
ZBD45KCE				6.1*	8.1	10.1	12.5	ZBD45KCE				3.8*	3.8	3.8	3.9
ZBD57KCE				8.4*	11.1	13.8	17.0	ZBD57KCE				5.2*	5.2	5.3	5.3
ZBD76K5E			8.2*	11.3	14.5	18.4	22.8	ZBD76K5E			7.5*	7.1	7.1	7.3	7.5
ZBD114K5E			10.8*	15.6	20.5	26.3	32.8	ZBD114K5E			10.3*	10.2	10.2	10.3	10.5
Low Temperature with Enhanced Vapor Injection															
ZFD13KVE EVI	3.1	4.1	5.2	6.4	7.7	9.2	10.9	ZFD13KVE EVI	2.7	2.8	2.8	2.9	2.9	3.0	3.1
ZFD18KVE EVI	4.9	6.0	7.3	8.8	10.8	13.3	16.4	ZFD18KVE EVI	3.4	3.5	3.6	3.7	3.9	4.1	4.4
ZFD25KVE EVI	6.1	7.7	9.4	11.4	13.5	15.8	18.2	ZFD25KVE EVI	4.3	4.4	4.6	4.8	5.0	5.3	5.5
ZFD41K5E	7.3	9.3	11.8	14.6				ZFD41K5E	6.2	6.7	7.2	7.5			
ZFD41K5E EVI	10.1	12.6	15.5	18.7	22.1	25.8	23.7	ZFD41K5E EVI	6.7	6.9	7.2	7.4	7.6	7.8	8.0

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

*Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary Data

Condensing Temperature 40°C															
R407F	Cooling Capacity (kW)							R407F	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZBD21KCE						5.1	6.3	ZBD21KCE						2.0	2.0
ZBD29KCE					5.8*	7.3	8.9	ZBD29KCE					2.9*	2.9	2.9
ZBD38KCE				5.7*	7.1*	8.9	10.8	ZBD38KCE				3.0*	3.3*	3.5	3.6
ZBD45KCE				6.4*	8.4*	10.8	13.2	ZBD45KCE				3.7*	3.9*	4.1	4.3
ZBD57KCE				8.5*	10.8*	13.8	17.0	ZBD57KCE				5.2*	5.2*	5.3	5.3
ZBD76K5E				11.5*	15.2	19.3	23.9	ZBD76K5E				7.5*	7.4	7.6	7.9
ZBD114K5E				15.8*	21.5	27.6	34.4	ZBD114K5E				10.7*	10.7	10.8	11.0
Low Temperature with Enhanced Vapor Injection															
ZFD13KVE EVI	3.3	4.3	5.4	6.7	8.1	9.7	11.4	ZFD13KVE EVI	2.8	2.9	3.0	3.0	3.1	3.1	3.2
ZFD18KVE EVI	4.9	6.1	7.6	9.3	11.3	13.5	16.0	ZFD18KVE EVI	3.8	4.0	4.1	4.2	4.4	4.5	4.7
ZFD25KVE EVI	6.4	8.0	9.9	11.9	14.2	16.6	19.1	ZFD25KVE EVI	4.5	4.7	4.9	5.1	5.3	5.5	5.8
ZFD41K5E	7.3	9.3	11.8	14.6				ZFD41K5E	6.2	6.7	7.2	7.5			
ZFD41K5E EVI	23.5	29.8	37.2	45.9				ZFD41K5E KVE	6.4	6.6	6.8	7.1			

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

*Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary Data

Capacity Data

Condensing Temperature 40°C															
R448A/ R449A	Cooling Capacity (kW)							R448A/ R449A	Power Input (kW)						
	Evaporating Temperature (°C)								Evaporating Temperature (°C)						
Model	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium temperature															
ZBD21KCE			2.5*	3.3	4.2	5.2	6.4	ZBD21KCE			2.0*	2.0	2.0	2.0	2.0
ZBD38KCE			3.9*	5.7	7.2	8.9	10.9	ZBD38KCE			3.4*	3.4	3.4	3.4	3.4
ZBD45KCE			4.5*	6.6	8.4	10.5	12.8	ZBD45KCE			3.9*	3.9	3.9	3.9	3.9
ZBD57KCE			6.0*	8.7	11.0	13.6	16.5	ZBD57KCE			4.3*	4.5	4.7	4.9	5.1
ZBD76K5E					15.1	18.8	23.0	ZBD76K5E					6.9	6.9	7.0
ZBD114K5E					21.8	27.7	34.2	ZBD114K5E					10.7	10.8	10.9
Low Temperature with Enhanced Vapor Injection															
ZFD13KVE EVI	3.3	4.2	5.2	6.3	7.6	9.0	10.6	ZFD13KVE EVI	2.3	2.3	2.4	2.5	2.7	2.8	2.8
ZFD18KVE EVI	4.8	6.0	7.4	9.0	10.8	12.9	15.2	ZFD18KVE EVI	3.4	3.6	3.8	4.0	4.3	4.5	4.7
ZFD25KVE EVI	6.2	7.7	9.5	11.4	13.5	15.7	18.1	ZFD25KVE EVI	3.9	4.2	4.5	4.8	5.1	5.3	5.5
ZFD41K5E	7.4	9.4	11.8	14.6	17.9	21.7	26.2	ZFD41K5E	5.4	5.8	6.2	6.8	7.4	8.1	8.9
ZFD41K5E EVI	9.9	12.5	15.6	19.0	22.8	27.9	31.9	ZFD41K5E EVI	6.8	7.3	7.8	8.4	9.0	9.7	10.4

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

*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	-35	-30	-25	-20	-15	-10	-5	Model	-35	-30	-25	-20	-15	-10	-5
Medium Temperature															
ZBD21KCE			3.0	3.7	4.5	5.5	6.6	ZBD21KCE			1.9	1.9	2.0	2.1	2.1
ZBD29KCE			4.1	5.1	6.2	7.4	8.9	ZBD29KCE			2.5	2.6	2.7	2.8	2.8
ZBD38KCE			5.2	6.3	7.7	9.3	11.1	ZBD38KCE			3.1	3.2	3.4	3.5	3.6
ZBD45KCE			6.1	7.5	9.2	11.2	13.4	ZBD45KCE			3.7	3.8	4.0	4.2	4.4
ZBD57KCE			7.9	9.7	11.9	14.3	17.1	ZBD57KCE			4.7	4.9	5.2	5.4	5.5
ZBD76K5E			10.6	13.3	16.4	20.0	23.9	ZBD76K5E			7.5	7.5	7.6	7.7	7.8
ZBD114K5E			14.2	18.6	23.4	28.7	34.7	ZBD114K5E			11.3	11.3	11.3	11.4	11.4
Low Temperature with Enhanced Vapor Injection															
ZFD13KVE EVI	4.0	4.9	6.0	7.2	8.5	10.0	11.7	ZFD13KVE EVI	2.9	3.0	3.1	3.2	3.3	3.4	3.5
ZFD18KVE EVI	6.1	7.3	8.7	10.4	12.3	14.4	16.9	ZFD18KVE EVI	4.0	4.3	4.5	4.6	4.8	5.0	5.1
ZFD25KVE EVI	7.7	9.3	11.2	13.2	15.3	17.5	19.7	ZFD25KVE EVI	4.8	5.1	5.4	5.7	6.0	6.3	6.6
ZFD41K5E EVI	12.5	15.0	18.1	21.5	25.4	29.5	33.9	ZFD41K5E EVI	7.9	8.4	8.8	9.3	9.7	10.1	10.6
ZFD41K5E	8.6	10.6	13.0	15.7	18.9	22.6	27.0	ZFD41K5E	6.3	6.7	7.1	7.5	7.9	8.4	8.8

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

Preliminary Data

Capacity Data

Condensing Temperature 40°C																	
R134a		Cooling Capacity (kW)						R134a		Power Input (kW)							
		Evaporating Temperature (°C)								Evaporating Temperature (°C)							
Model		-35	-30	-25	-20	-15	-10	-5	Model		-35	-30	-25	-20	-15	-10	-5
Medium Temperature																	
ZBD21KCE					2.0*	2.7	3.3	4.0	ZBD21KCE					1.2*	1.3	1.4	1.4
ZBD29KCE					2.5*	3.3	4.2	5.2	ZBD29KCE					1.7*	1.7	1.7	1.7
ZBD38KCE					3.2*	4.4	5.5	6.8	ZBD38KCE					1.9*	2.1	2.2	2.3
ZBD45KCE					3.8*	5.1	6.4	7.9	ZBD45KCE					2.3*	2.4	2.5	2.6
ZBD57KCE					4.7*	6.4	8.1	10.1	ZBD57KCE					3.4*	3.4	3.4	3.5
ZBD76K5E*					6.2	7.9	10.0	12.6	ZBD76K5E					5.3	5.3	5.4	5.4
ZBD114K5E*					8.1	11.1	14.6	18.7	ZBD114K5E					7.4	7.4	7.4	7.5

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

* Conditions: Suction Superheat 10K, Subcooling 0K

Preliminary Data

Emerson Coresense™ Diagnostics for Refrigeration Scrolls

The CoreSense Diagnostics module is a breakthrough innovation for troubleshooting refrigeration system faults and is installed in the electrical box of all 8 - 17 hp Copeland Scroll™ K5 refrigeration compressors. By monitoring and analyzing data from the compressors (via module power, discharge line thermistor and the current transducer), the CoreSense module accurately detects the cause of electrical and system related issues and guides the service technician more quickly and accurately to the root cause of a problem via flashing LED indicators visible on the CoreSense box. Supermarket operators hence benefit from increased system uptime as well as reduced food losses and maintenance costs.



Coresense™ Diagnostics for Refrigeration Scrolls



Technical Specification

- Power supply 110-230V AC
- Front end: multi-color LEDs
- Communication protocol: Modbus®RTU
- Bus to system controller: RS485, 3-wire, (+,GND)
- Discharge temperature sensor
- Current sensor
- EEPROM memory
- Alarm reset button

Benefits

- Facilitate predictive maintenance & advanced diagnostics
- Reduce applied system costs
- Manage on-site compressor data
- Reduce maintenance costs
- Increase system uptime / reduce food loss
- Digital and liquid injection control through CoreSense
- Remote trouble shooting

Functions

- Current sensing based diagnostics
- Discharge temperature protection
- Phase monitor protection
- Liquid injection control
- Scroll Digital control
- Open circuit identification
- System trip protection
- Low voltage protection
- Locked rotor protection
- Alarm and operating history
- Asset information
- LED visual indication of alerts
- Modbus communication

ZO & ZOD Copeland Scroll™ Compressor Ranges for R744-Subcritical Refrigeration

ZO Copeland Scroll Compressors have been designed for use in R744 (CO₂) low temperature refrigeration systems. These compressors are suitable for usage in CO₂-subcritical cascade and booster systems.

Increasing environmental concerns about potential direct emissions from HFC-based refrigeration systems into the atmosphere have led to the revival of R744 in the European refrigeration market. Regionally, this trend is reinforced by legislation and taxation schemes which favor the usage of refrigerant R744.

In comparison with HFC refrigerants, the specific properties of R744 require changes in the design of the refrigeration system. The ZO range of Copeland Scroll compressors has been particularly designed to exploit the characteristics of the R744 refrigeration system. Efficiency, reliability and liquid handling advantages of the Copeland Scroll technology equally apply.

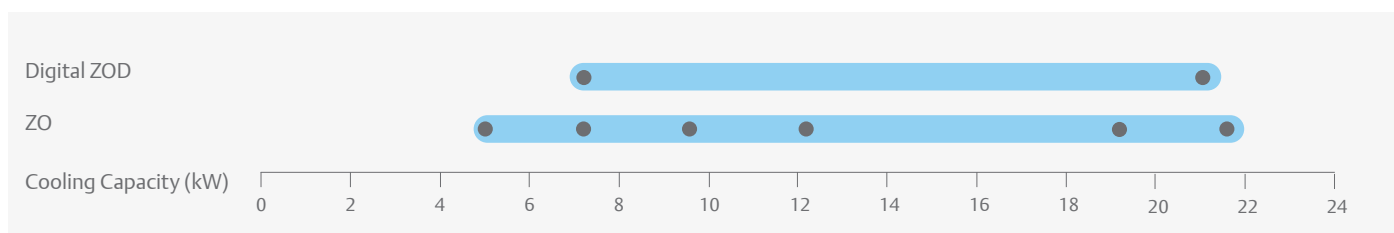
The optimized design of ZO compressors effectively address the challenges of R744 systems i.e., high pressure levels, higher mass flow for a given displacement while securing proper lubrication.

The range consists of 6 models including 2 digital models for 10 to 100% continuous cooling capacity modulation.



ZO Compressor for Low Temperature Refrigeration

ZO and ZOD Compressor Line-up



Conditions EN12900 R744: Evaporating -35°C, Refrigeration -5°C, Suction Superheat 10K, Subcooling 0K

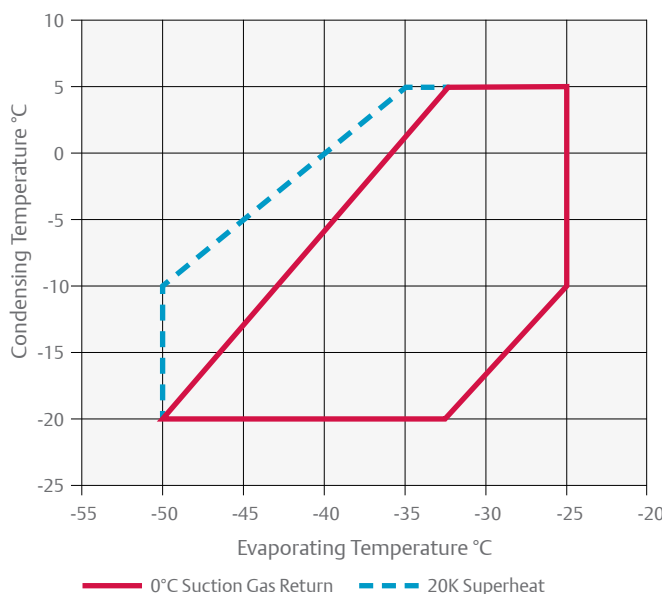
Features and Benefits

- Optimized for high efficiency in CO₂-subcritical cascade and booster systems
- High condensing temperature limit allowing for optimized overall system design
- Compact design minimizing required machine room space
- Half the weight of equivalent semi-hermetic compressors
- Optional Sound Shell allowing 10 dBA sound attenuation
- High bearing reliability and lubrication of all critical parts under all conditions including liquid slugging
- Availability of a digital model offering simple, stepless 10 to 100% capacity modulation

Maximum Allowable Pressure (PS)

- ZO: Low Side PS 30 bar(g) / High Side PS 52 bar(g)
- Digital ZOD: Low Side PS 30 bar(g) / High Side PS 45 bar(g)

Operating Envelope R744



For individual model details please refer to Select Software.

Technical Overview

Models	Nominal hp	Displacement (m ³ /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 - dB(A) ***
								3 Ph **	3 Ph **	3 Ph **	
ZO21K5E	1.5	2.6	1 1/4	1	1.0	228/228/388	22	TFD	3.6	27	52
ZO34K3E	2.0	4.1	1 1/4	1	1.4	242/242/381	30	TFD	5.5	26	54
ZO45K3E	2.5	5.4	1 1/4	1	1.4	242/242/403	31	TFD	6.2	35	56
ZO58K3E	3.5	6.9	1 1/4	1	1.4	242/242/417	32	TFD	8.0	48	56
ZO88KCE	5.0	10.1	1 1/4	1	1.9	245/249/440	40	TFD	11.8	64	60
ZO104KCE	6.0	11.7	1 1/4	1	1.9	242/242/461	40	TFD	15.0	74	61
Digital Models											
ZOD34K3E	2.0	4.07	1 1/4	1	1.4	242/242/377	30	TFD	5.5	26	55
ZOD104KCE	6.0	11.7	1 1/4	1	1.9	241/246/484	41	TFD	15.0	75	67

** 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
ZO21K5E	3.2	4.1	5.1	6.2	ZO21K5E	1.2	1.2	1.2	1.1
ZO34K3E	4.8	6.2	7.8	9.7	ZO34K3E	1.8	1.8	1.8	1.7
ZO45K3E	7.0	8.8	10.9	13.3	ZO45K3E	2.3	2.3	2.3	2.2
ZO58K3E	8.9	11.2	13.9	17.0	ZO58K3E	3.0	3.0	2.9	2.8
ZO88KCE	13.3	17.0	21.0	25.4	ZO88KCE	4.5	4.5	4.4	4.2
ZO104KCE	15.9	19.7	24.1	29.2	ZO104KCE	4.9	5.0	5.1	5.2
Digital Models									
ZOD34K3E	5.1	6.4	7.9	9.7	ZOD34K3E	1.8	1.8	1.8	1.7
ZOD104KCE	15.6	19.1	23.2	27.9	ZOD104KCE	5.0	5.0	5.1	5.3

Conditions: 10 K Superheat

Sound Shell for Copeland Scroll™ Compressors Quiet Operation in Sound Critical Environment

Environmental noise has become a serious problem that can lead to potential contentious situations. It is particularly true for refrigeration applications where kitchen equipment or compressor packs are often source of disturbing noise in domestic areas. Emerson put sound minimisation at the centre of any of its new compressor development along reliability, seasonal efficiency, size and weight reduction.

A large portion of equipment acoustic emissions come from condensers and compressors and in some critical sound sensitive applications the refrigeration installations need to be acoustically insulated. Simple solutions are now available to contain sound emissions. Emerson has developed a dedicated Sound Shell for all Copeland Scroll compressors from 2–15 hp. It completely

encapsulates the compressor, minimizing sound leaks while cooling performance remains uncompromised.

Groundbreaking design techniques and materials, derived from the automotive industry, were utilized to design the Sound Shell. The use of low pressure reaction injection moulded parts (top cap cover, terminal box cover and compressor base plate) allows a 10–12 dBA sound attenuation.

It is a significant improvement over conventional sound jackets available from other suppliers that reduce sound by 3–6 dBA depending on the application. Particular attention was also paid in the design stage to ensure ease of mounting in retrofit, service and new installation situations.

Sound Shell for Copeland Scroll



Technical Overview

	Small Scroll		Summit Scroll			Summit Digital Scroll	
	All Sizes		Small Size	Medium Size	Large Size	Small Size	Medium Size
Technical Data							
Sound Attenuation	10 - 12 dBA						
Total weight (kg)	3.4	4.8	4.9	5.1	5.3	5.6	
Mantle thickness	25mm						
Flammability	Conforms to IEC 60335-1 §30						
Material							
Mantle	Green felt layer (cotton + binder 1.2 kg/m ²)						
	Heavy layer (PVC 4.5 kg/m ²)						
	Closure by use of Velcro fastening - High frequency welded on PVC layer						
Base Plate	PU SRIM - Low pressure reaction injection moulding technology						
Top cap cover	PU SRIM - Low pressure reaction injection moulding technology						
	Inside insulation green felt and aluminium film						
	High temperature insulation ring						
Terminal box cover	PU SRIM - Low pressure reaction injection moulding technology						