

ZRH(V) & YRH(V) Copeland™ Scroll Horizontal Compressor Ranges for R513A, R454C, R407C and R134a

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.

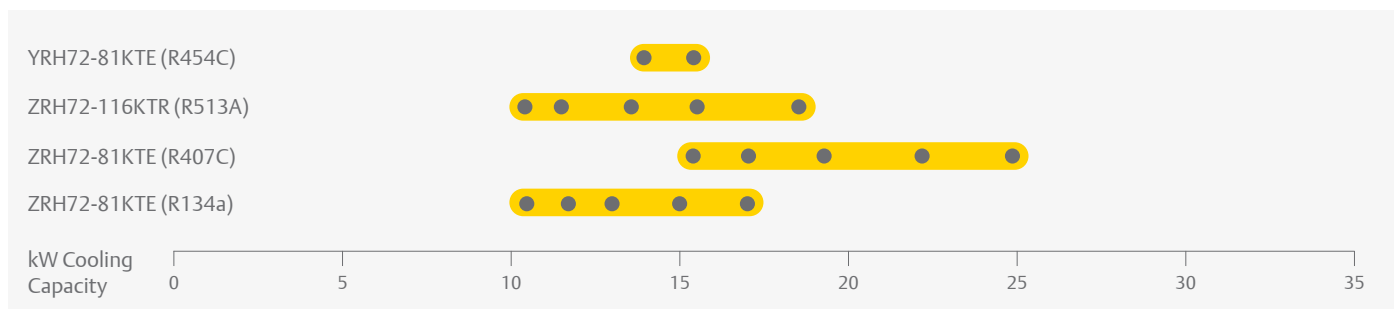
ZRH compressors are based on the unique Copeland scroll design and provide the same reliability as a standard Copeland scroll. An additional oil pump covers the specific needs of transport air conditioning and of horizontal compressor arrangement in general.

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

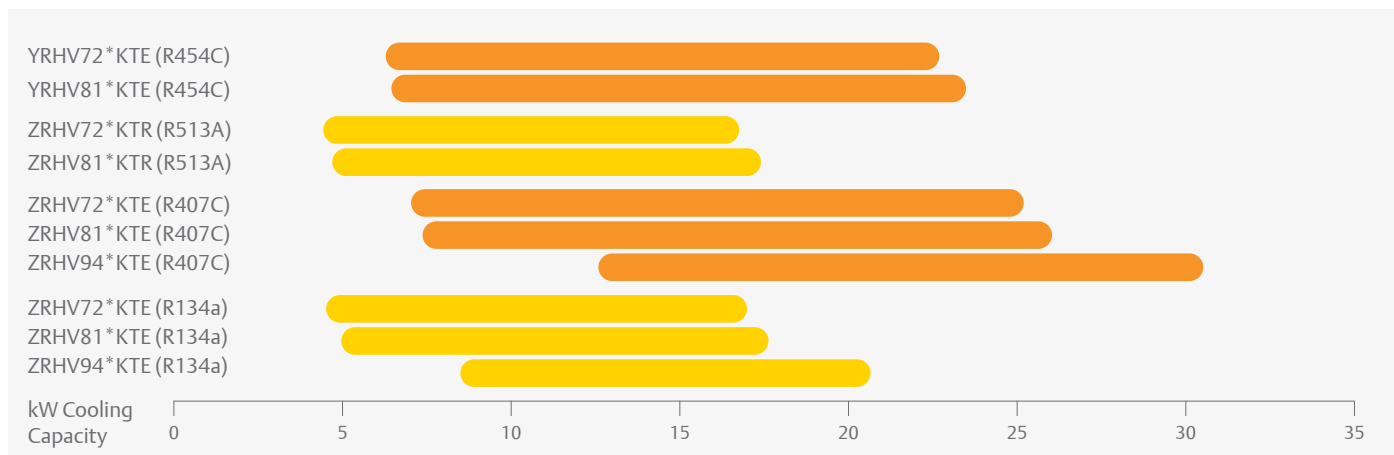


ZRH horizontal scroll compressor

ZRH & YRH Scroll Compressors Line-up R513A, R454C, R407C and R134a



ZRHV & YRHV Variable Speed Scroll Compressors Line-up R513A, R454C, R407C and R134a



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

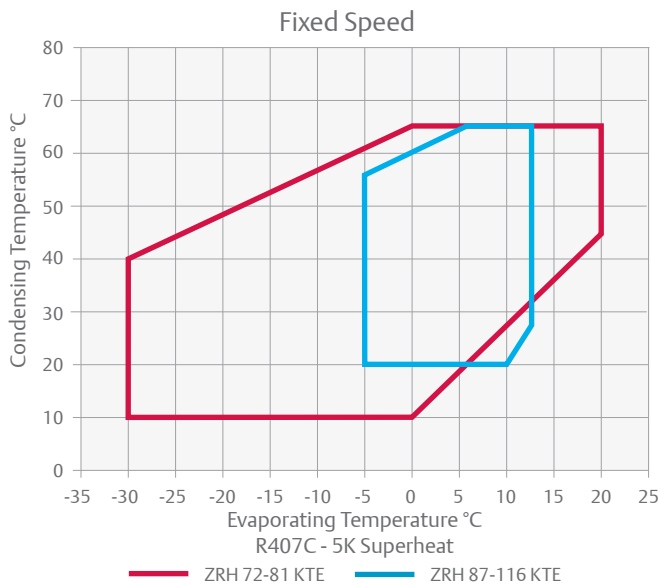
Features and Benefits

- Compact 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

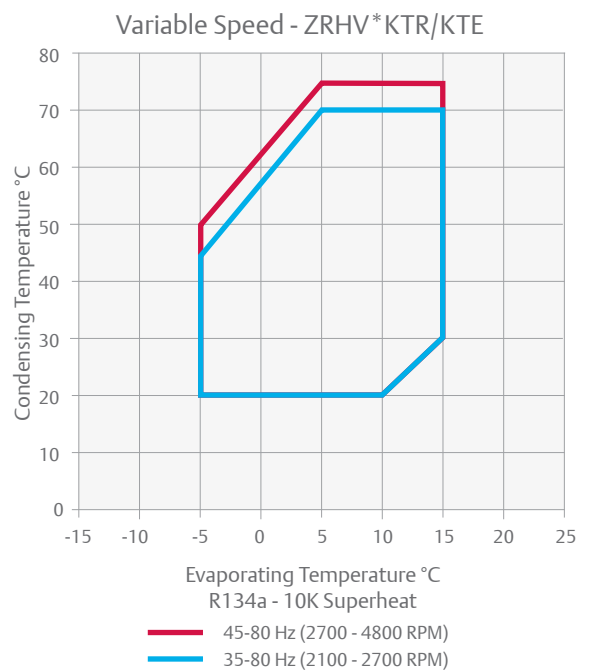
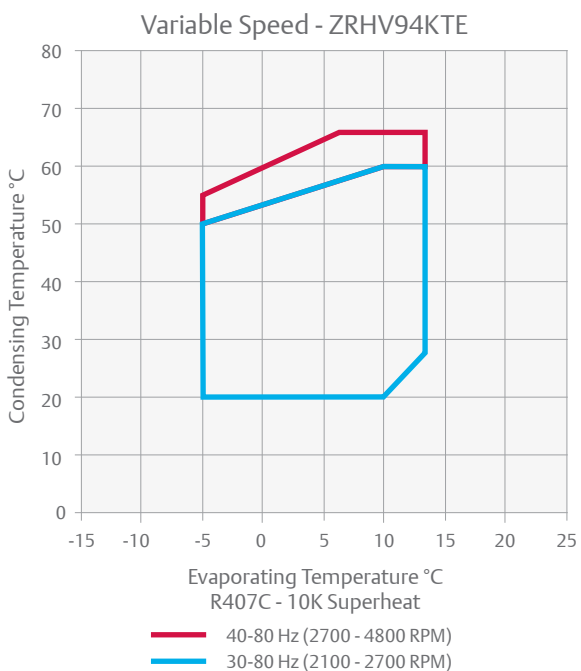
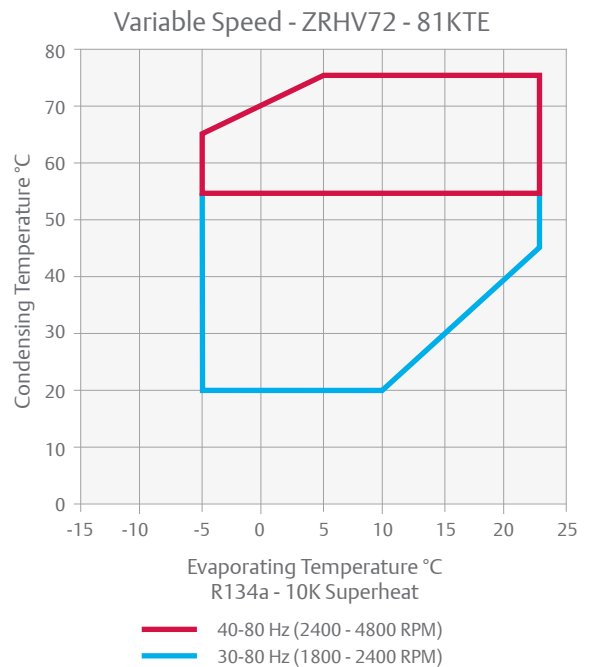
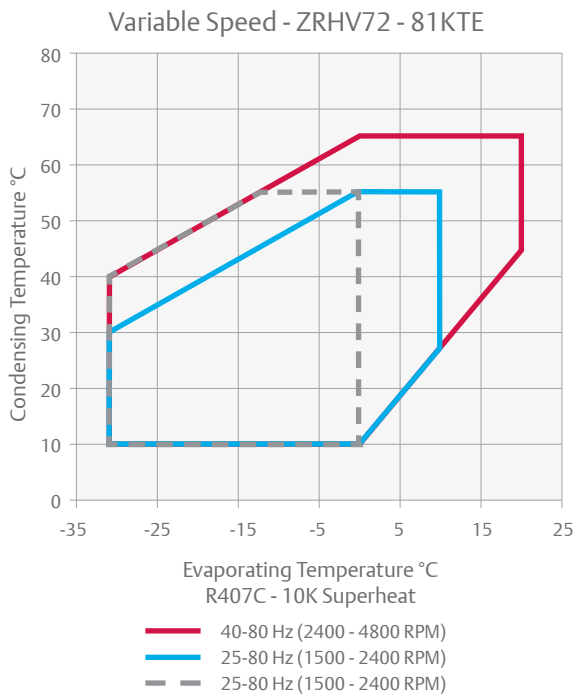
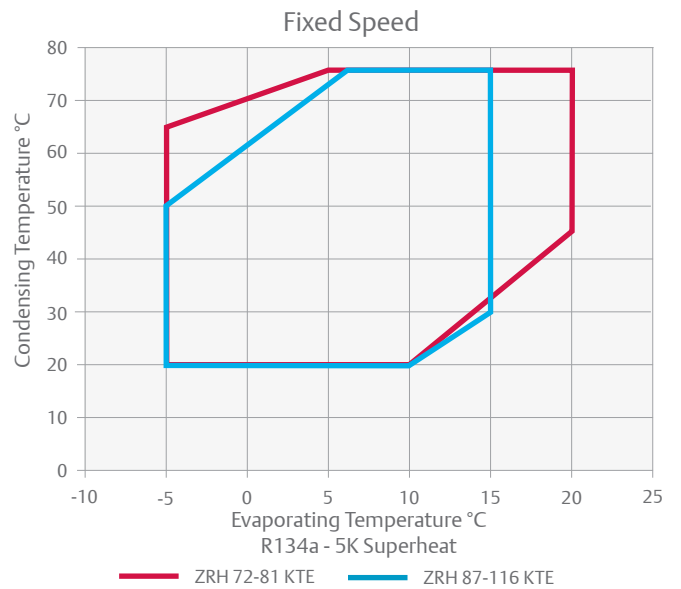
Maximum Allowable Pressure (PS)

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

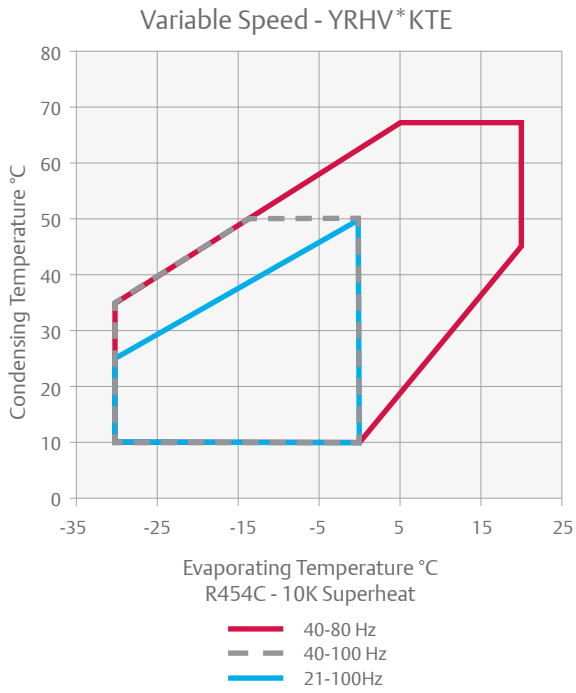
Operating Envelope R407C



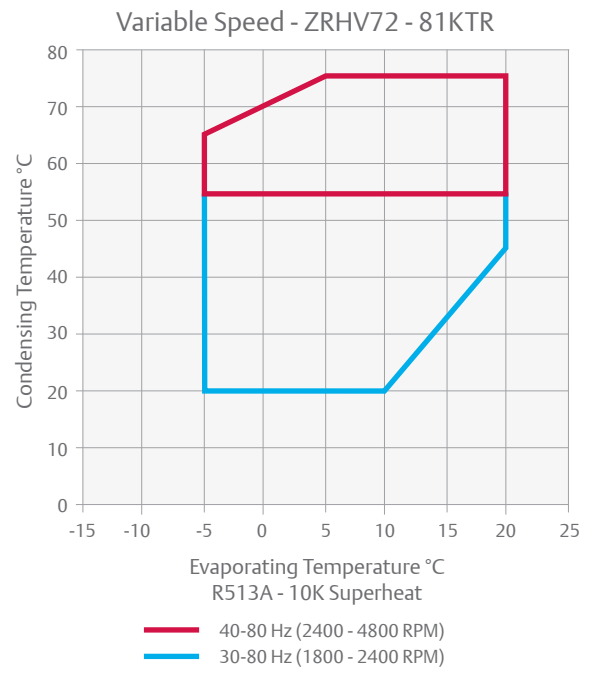
Operating Envelope R134a



Operating Envelope R454C



Operating Envelope R513A



Technical Overview - Fixed Speed Models

Models	Nominal hp	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)**
								3 Ph*	3 Ph*	3 Ph*	
ZRH72KTE/KTR	6.0	17.1	7/8	3/4	2.6	567/290/191	49	TFD	12	92	61
ZRH81KTE/KTR	6.8	18.8	7/8	3/4	2.7	567/290/191	49	TFD	12	92	61
ZRH87KTE/KTR	7.5	22.1	1 3/8	7/8	1.6	586/314/245	60	TFD	16	95	63
ZRH100KTE/KTR	9.0	24.9	1 3/8	7/8	1.6	586/314/245	63	TFD	18	111	63
ZRH116KTE/KTR	10.0	29.1	1 3/8	7/8	1.6	586/314/245	64	TFD	20	118	63
YRH72KTE	6.0	17.1	7/8	3/4	2.6	567/291/191	49	TFD	12	92	61
YRH81KTE	6.8	18.8	7/8	3/4	2.7	567/291/191	49	TFD	13	92	61

Conditions: EN12900 - 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	-10	-5	0	+5	+10	+15	Model	-10	-5	0	+5	+10	+15
ZRH72KTE	8.1	10.1	12.5	15.3	18.6	22.4	ZRH72KTE	4.8	4.8	4.8	4.83	4.9	5.0
ZRH81KTE	9.0	11.2	13.9	17.0	20.5	24.7	ZRH81KTE	5.2	5.2	5.3	5.3	5.4	5.4
ZRH87KTE		11.8	15.2	19.2	23.9		ZRH87KTE		6.2	6.3	6.3	6.3	
ZRH100KTE		14.2	17.9	22.1	26.9		ZRH100KTE		6.8	6.9	7.0	7.0	
ZRH116KTE		16.0	20.0	24.9	30.6		ZRH116KTE		8.1	8.2	8.2	8.2	

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	-10	-5	0	+5	+10	+15	Model	-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		8.0	10.3	13.0	16.2	20.0	ZRH87KTE		4.3	4.3	4.3	4.3	4.5
ZRH100KTE		9.6	12.1	15.0	18.3	22.1	ZRH100KTE		4.7	4.8	4.8	4.8	4.9
ZRH116KTE		10.9	13.6	16.9	20.7	25.0	ZRH116KTE		5.6	5.6	5.6	5.7	5.7

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Condensing Temperature +50°C													
R513A	Cooling Capacity (kW)						R513A	Power Input (kW)					
	Evaporating Temperature (°C)							Evaporating Temperature (°C)					
Model	-10	-5	0	+5	+10	+15	Model	-10	-5	0	+5	+10	+15
ZRH72KTR		6.9	8.6	10.6	12.9	15.5	ZRH72KTR		3.4	3.5	3.5	3.5	3.6
ZRH81KTR		7.7	9.7	11.9	14.4	17.3	ZRH81KTR		3.8	3.9	3.9	3.9	3.9
ZRH87KTR		8.6	10.9	13.5	16.6		ZRH87KTR		4.3	4.4	4.4	4.4	
ZRH100KTR		10.0	12.5	15.4	18.8		ZRH100KTR		4.8	4.9	4.9	4.9	
ZRH116KTR		11.8	14.8	18.2	22.1		ZRH116KTR		5.6	5.7	5.7	5.8	

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Condensing Temperature +50°C													
R454C	Cooling Capacity (kW)						R454C	Power Input (kW)					
	Evaporating Temperature (°C)							Evaporating Temperature (°C)					
Model	-10	-5	0	+5	+10	+15	Model	-10	-5	0	+5	+10	+15
YRH72KTE	6.9	8.7	10.7	13.1	15.8	18.9	YRH72KTE	4.2	4.2	4.3	4.3	4.3	4.4
YRH81KTE	8.1	10.2	12.5	15.3	18.5	22.1	YRH81KTE	5.0	5.0	5.0	5.0	5.0	5.1

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Technical Overview - Variable Speed Models

Models	Capacity (kw)	EER	Displacement (m³/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								3 Ph *	3 Ph *	3 Ph *	
YRHV72KTE	6.5	3.1	20.6	7/8	3/4	2.7	567/291/191	49	TX7	22	92	70
YRHV81KTE	6.8	3.1	22.6	7/8	3/4	2.7	567/291/191	49	TX7	26	92	70
ZRHV72KTE/KTR	7.2	3.1	20.6	7/8	3/4	2.7	567/291/191	49	TX7	22	92	70
ZRHV81KTE/KTR	7.6	3.1	22.6	7/8	3/4	2.7	567/291/191	49	TX7	26	92	70
ZRHV94KTE	17.4	3.1	26.7	1 3/8	7/8	1.6	586/314/245	60	TF7	24	145	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		-10	-5	0	+5	+10	+15	Model		-10	-5	0	+5	+10	+15
ZRHV72KTE/KTR	Max	15.8	19.8	24.7	25.0	30.3	36.2	ZRHV72KTE/KTR	Max	11.0	11.2	11.3	8.2	8.3	8.3
	Min	5.9	4.7	5.9	7.2	8.7	17.0		Min	4.1	2.6	2.6	2.5	2.5	4.2
ZRHV81KTE/KTR	Max	18.0	22.3	27.4	25.9	31.1	37.1	ZRHV81KTE/KTR	Max	8.5	8.6	8.7	8.8	9.0	9.2
	Min	6.3	4.6	6.0	7.6	9.4	18.4		Min	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		-10	-5	0	+5	+10	+15	Model		-10	-5	0	+5	+10	+15
ZRHV72KTE	Max	11.0	13.7	16.8	20.4	24.6	24.3	ZRHV72KTE	Max		5.5	5.6	5.6	5.7	5.7
	Min	3.1	3.9	4.8	5.8	11.4	11.4		Min		1.8	1.7	1.7	1.7	2.8
ZRHV81KTE	Max	12.4	15.5	19.0	23.1	27.8	24.9	ZRHV81KTE	Max		6.1	6.2	6.2	6.2	6.3
	Min	3.1	4.0	5.1	6.3	12.3	12.3		Min		2.1	2.1	2.0	2.0	3.0
ZRHV94KTE	Max	13.0	16.9	21.4	26.4	31.4	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	12.9		Min		3.5	3.2	3.2	3.2	3.5

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Condensing Temperature +50°C															
R513A		Cooling Capacity (kW)						R513A		Power Input (kW)					
		Evaporating Temperature (°C)								Evaporating Temperature (°C)					
Model		-10	-5	0	+5	+10	+15	Model		-10	-5	0	+5	+10	+15
ZRHV72KTR	Max		13.8	16.5	19.3	23.0	26.4	ZRHV72KTR	Max		13.8	16.5	19.3	23.0	26.4
	Min		5.7	7.1	6.5	8.7	9.6		Min		5.7	7.1	6.5	8.7	9.6
ZRHV81KTR	Max		15.3	17.8	21.7	24.7	29.4	ZRHV81KTR	Max		15.3	17.8	21.7	24.7	29.4
	Min		6.2	7.8	7.2	8.8	10.6		Min		6.2	7.8	7.2	8.8	10.6

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data

Condensing Temperature +50°C															
R454C		Cooling Capacity (kW)						R454C		Power Input (kW)					
		Evaporating Temperature (°C)								Evaporating Temperature (°C)					
Model		-10	-5	0	+5	+10	+15	Model		-10	-5	0	+5	+10	+15
YRHV72KTE	Max	15.5	19.1	23.4	26.4	31.1	34.8	YRHV72KTE	Max	10.7	10.6	10.5	9.2	8.6	7.9
	Min	4.0	4.7	5.9	7.2	7.7	12.6		Min	3.0	2.6	2.5	2.4	2.3	2.9
YRHV81KTE	Max	16.5	20.3	24.6	27.7	32.4	36.3	YRHV81KTE	Max	10.3	10.2	10.1	9.8	9.4	8.7
	Min	4.0	4.7	6.1	7.6	9.3	14.5		Min	3.5	3.1	3.0	2.8	2.7	3.3

Conditions: Suction Superheat 10K / Subcooling 0K

Preliminary Data