

Application Guidelines

Copeland Scroll™ Compressors for Heat Pump Applications YH04K1E to YH16K1E



YH06K1E - 4/10/12

2 Product description

2.1 General information about Copeland Scroll™ compressors

These application guidelines cover Copeland Scroll compressor models YH*K1E for heat pump applications. The available models are listed in **Table 1**.

NOTE: R454C and R1234yf are classified as A2L (mildly flammable) refrigerants.

Compressor	Cooling capacity (kW)					Motor
	R454C	R1234yf	R513A	R134a	R407C	
YH04K1E	4.2	1.9	2.2	2.1	3.1	TFMN
YH06K1E	5.9	2.62	3.0	2.9	4.3	TFMN
YH07K1E	7.5	3.4	3.8	3.6	5.5	TFMN
YH09K1E	8.4	3.81	4.3	4.2	6.1	TFMN
YH11K1E	10.6	4.72	5.4	5.2	7.8	TFMN
YH13K1E	12.7	5.74	6.5	6.2	9.2	TFMN
YH16K1E	16.5	7.05	8.2	7.8	11.6	TFMN

Table 1: YH* model overview, operation at -7 °C / 50 °C / 10 K / 0 K

The YH*K1E compressors have one scroll compression set driven by a three-phase induction motor. The scroll set is mounted at the upper end of the rotor shaft of the motor. The rotor shaft axis is in the vertical plane.

2.2 Nomenclature

The model designation contains the following technical information about the compressor:

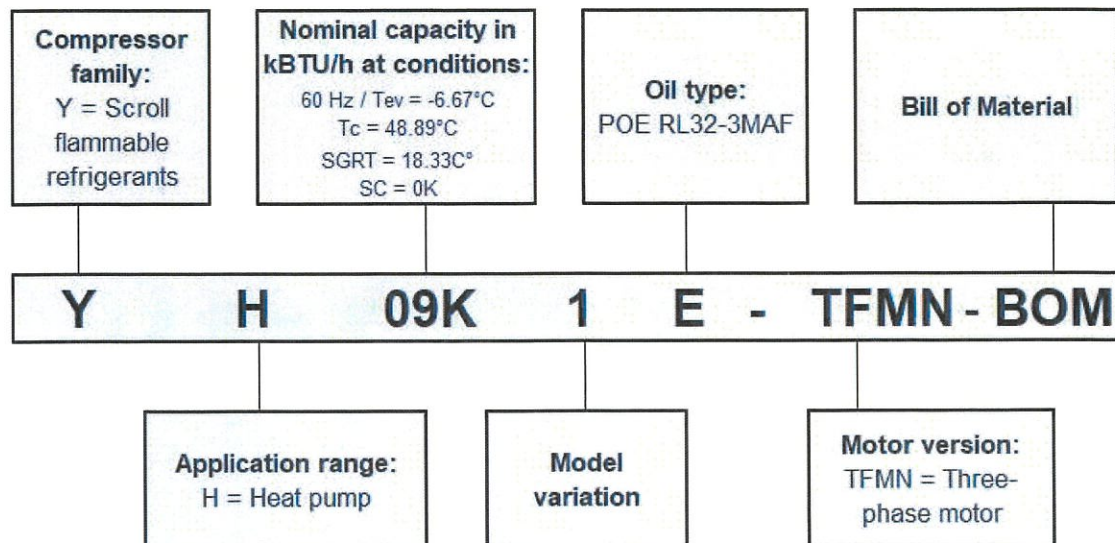


Figure 1: Nomenclature of YH*K1E compressors

2.3 BOM Variations

The BOM (bill of material) number at the end of the compressor designation indicates the different compressor layouts and details. YH*K1E compressor models are available in the following BOM versions:

BOM	Suction and discharge connections	T-Box	Mounting parts	Features
GBS	Brazing stub tubes	IP54	Without	Single compressor
GCG				Extra tube for paralleling

Table 2: BOM designation

Please refer to the Emerson price list for more details.

2.4 Application range

2.4.1 Qualified refrigerants and oils

Compressors	YH04K1E to YH16K1E
Qualified refrigerants	R454C, R1234yf, R513A, R134a, R407C
Copeland standard oil	RL32 3MAF
Servicing oil	RL32 3MAF

Table 3: Qualified refrigerants and oil

Oil recharge values can be taken from Copeland™ brand products Select software available at www.climate.emerson.com/en-gb.

2.4.2 Application limits



CAUTION

Inadequate lubrication! Compressor breakdown! The superheat at the compressor suction inlet must always be sufficient to ensure that no refrigerant droplets enter the compressor. For a typical evaporator-expansion valve configuration a minimum stable superheat of at least 5 K is required.

For application envelopes and technical data, please refer to Copeland brand products Select software available at www.climate.emerson.com/en-gb.

2.4.3 PED category and maximum allowable pressure PS

The YH*K1E compressor models covered in these guidelines are PED Class II, according to the Pressure Equipment Directive PED 2014/68/EU.

The pressure PS is the maximum allowable pressure at the low- and high-pressure sides of the compressor. The maximum pressure value PS for the individual compressor type is printed on the nameplate of the compressor. Safety is established in compliance with the relevant standards applicable to the given product.

Compressor	PS High-pressure side	PS Low-pressure side	TS Low-pressure side	PED Class R454C R1234yf	PED Class R513A R134a R407C
YH04K1E to YH16K1E	38 bar(g)	23.5 bar(g)	50 °C	2	1

Table 4: Maximum allowable pressures

2.5 Dimensions

2.5.1 Dimensions YH04K1E to YH09K1E

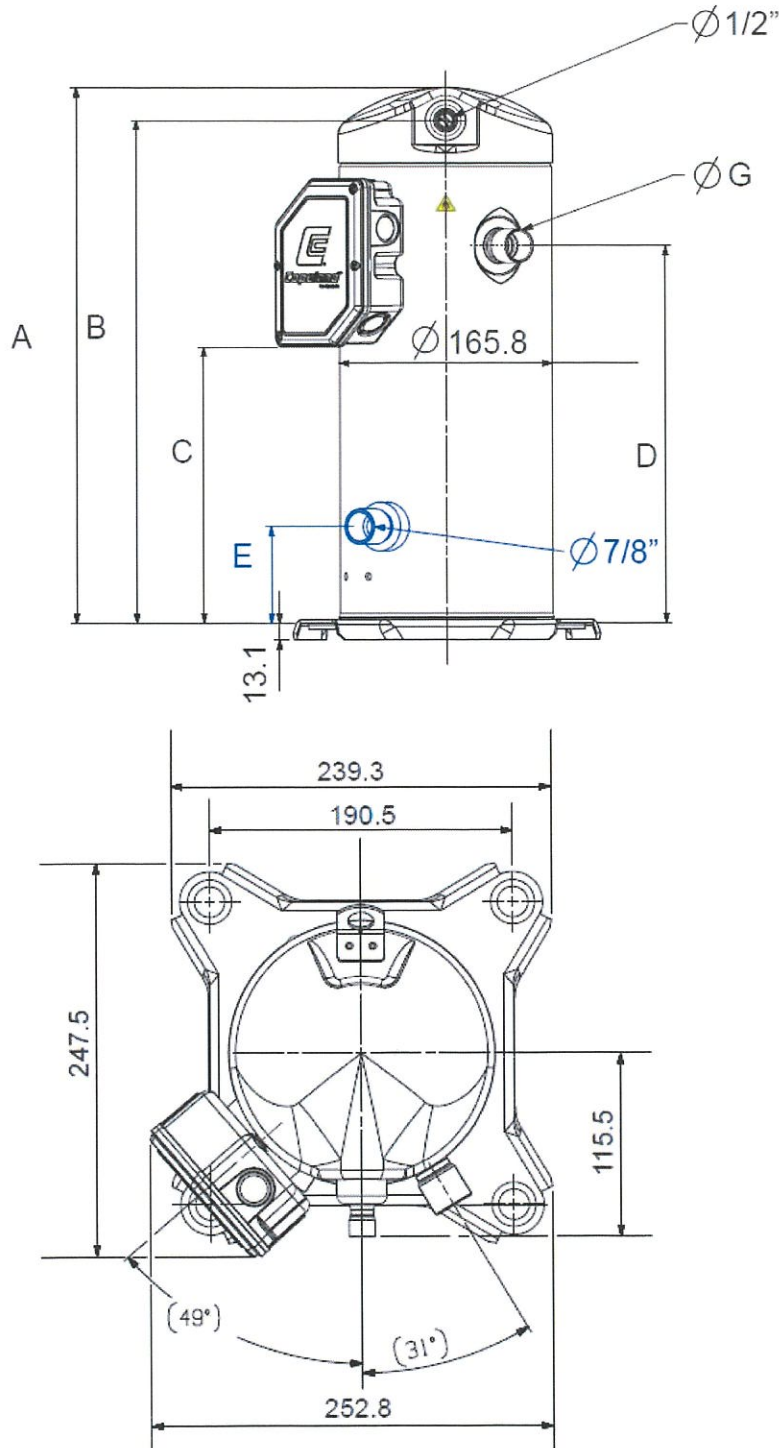


Figure 2

Compressor	A ± 3.0 (mm)	B (mm)	C ± 3.0 (mm)	D (mm)	E (mm)	$\text{Ø } G$ (inch)
YH04K1E	364.6	338.5	165.8	244.5	69.6	3/4"
YH06K1E	387.2	361.1	185.7	264.4	75.3	
YH07K1E	400.9	374.9	198.4	277.1		
YH09K1E	418	391.9	215.4	294.1		7/8"

Table 5: Dimensions for compressor models YH04K1E to YH09K1E

NOTE: The connection in blue colour is an additional connection for paralleling models.

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2.5.2 Dimensions YH11K1E to YH16K1E

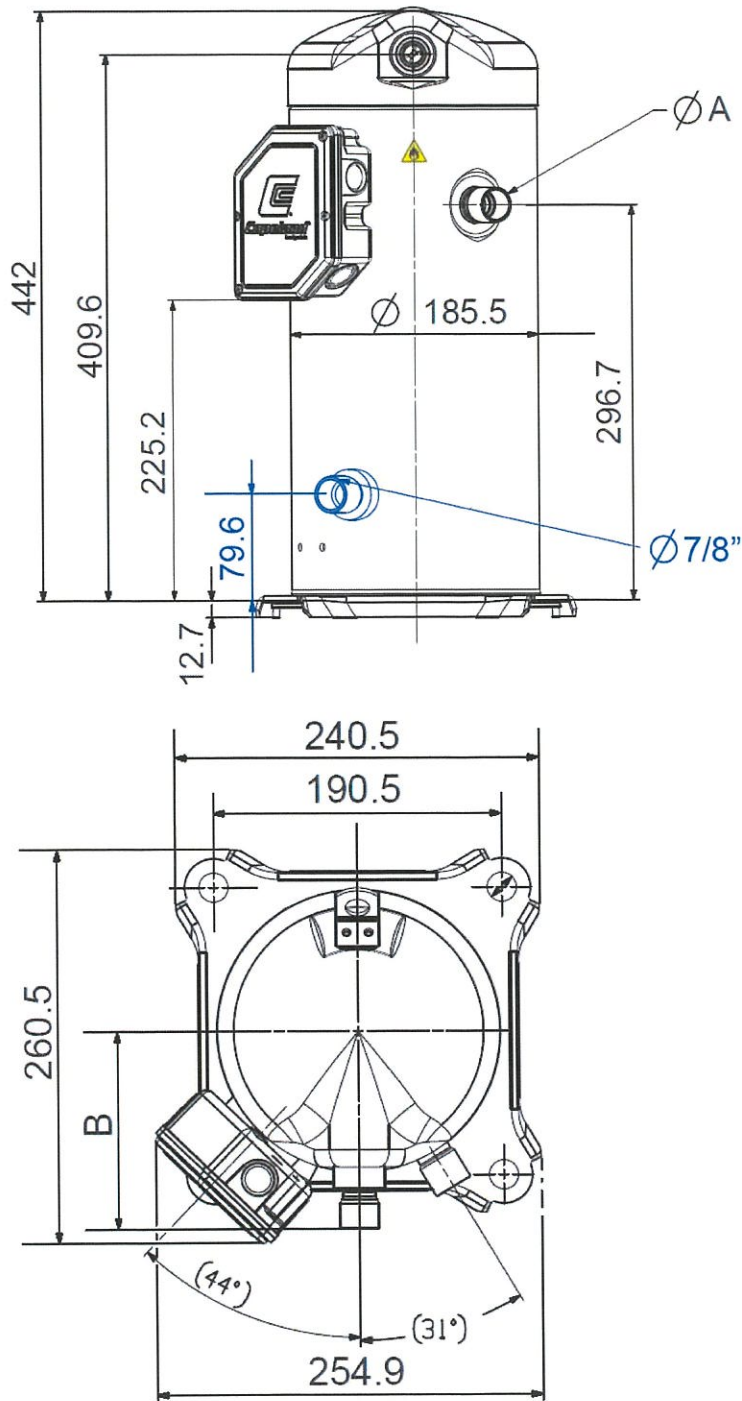


Figure 3

Compressor	Ø A (inch)	B (mm)
YH11K1E & YH13K1E	1/2"	124.7
YH16K1E	3/4"	131.0
YH11K1E & YH13K1E paralleling-ready	3/4"	124.7
YH16K1E paralleling-ready	3/4"	131.0

Table 6: Dimensions for compressor models YH11K1E to YH16K1E

NOTE: The connection in blue colour is an additional connection for paralleling models.