



Copeland Scroll™ Light Commercial Compressors From 7.5 to 15 hp

New Series of Copeland Scroll™ Compressors

Emerson Climate Technologies, the world's leading compressor manufacturer, is proud to introduce the new Copeland Scroll™ light commercial series for R407C and R410A. The new series of compressors will enable OEMs to design efficient, reliable and compact systems for air-conditioning, heat pump and process cooling applications.

Benefits

The design of the compressor range has been entirely reviewed, leading to an innovative series of scroll compressors dedicated to light commercial applications. As a result, this new range features significant improvements versus the existing series:

- Reduced weight and dimensions
- Increased efficiency
- Reduced sound levels
- Wider operating range, as shown in fig. 1
- Improved reliability (ASTP), as shown in fig. 2

Improvements of new series vs. existing series

Compared features for 7.5 hp model	Existing Model ZR90	New Model ZR94	Improvements
Cooling Capacity (kW) ⁽¹⁾	18.7	20.6	+10%
EER ⁽¹⁾	3.14	3.29	+5%
ESEER ⁽²⁾	3.26	3.40	+4%
Net weight (kg)	94	57	-39%
Footprint (mm)	220 x 220	190 x 190	-14%
Sound Power (dBA) ⁽³⁾	77	74	-3 dBA

⁽¹⁾ EN 12900: Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K

⁽²⁾ Actual value is depending on system design

⁽³⁾ Without new Sound Shell option

New Sound Shell For Applications With Low Noise Requirements

Emerson Climate Technologies has developed a dedicated Sound Shell for the light commercial series compressors. It encapsulates the compressor entirely and minimizes sound leaks. Ground-breaking design techniques and materials derived from the auto-

New Copeland Scroll™ light commercial compressor (left) and its dedicated Sound Shell (right)



otive industry were utilized to design the Sound Shell. The use of low pressure reaction injection moulded parts (notably for the top cap, the terminal box and the base of the compressor) allows a 10 to 12 dBA sound attenuation.

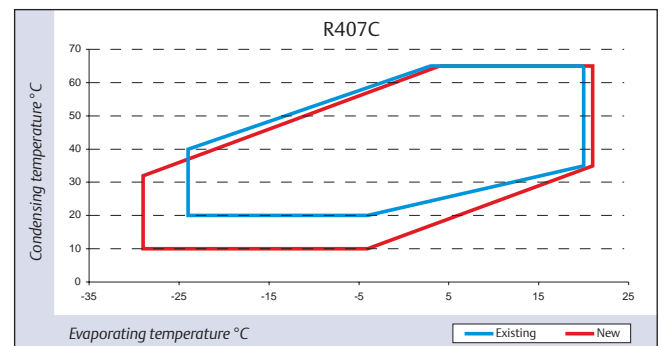
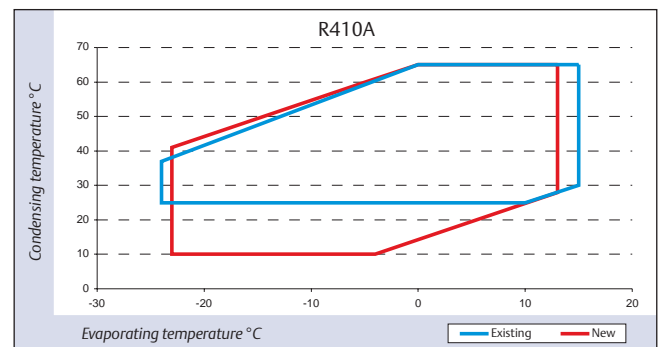


Figure 1: Enlarged operating envelope for low condensing R410A and R407C applications (10K superheat)

Improved Reliability: Advanced Scroll Temperature Protection

Advanced Scroll Temperature Protection (ASTP) is a temperature sensitive disc that acts to protect the compressor from discharge gas overheating. At a predefined critical temperature the ASTP feature will separate the scrolls, no pumping action, although the motor continues to run. After running for some time without pumping gas, the motor protector will open. ASTP cannot be bypassed so the compressor is protected at all times.

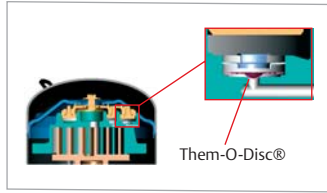
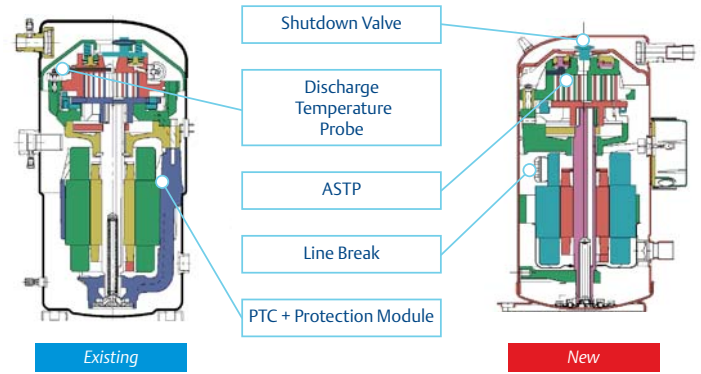


Figure 2: ASTP

Design Comparison



Model Overview

R407C	ZR90	ZR94	ZR11M	ZR108	ZR12M	ZR125	ZR144	ZR16M	ZR160	ZR19M	ZR190
Nominal Horsepower (hp)	7,5	7,5	9,0	9,0	10,0	10,0	12,0	13,0	13,0	15,0	15,0
kW (EN12900) @ 50Hz	18,7	20,6	22,7	23,0	26,3	26,9	30,9	32,0	33,4	39,5	39,2
COP (kW)	3,14	3,29	3,17	3,36	3,22	3,35	3,39	3,14	3,24	3,20	3,19
Sound Power (dBA)	77	74	78	74	78	74	75	78	78	80	80
A (mm)	524	476	524	533	524	533	533	532	551	578	551
B (mm)	484	444	484	501	484	501	501	492	519	533	519
C (mm)	305	94	305	122	305	122	122	305	140	305	140
Shell Diameter D (mm)	283	232	283	232	283	232	232	283	234	283	234
Suction Diameter E (inch ³)	1 ³ / ₈	1 ¹ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈
Discharge Diameter F (inch ³)	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³
Sight Glass External Diameter (inch ³)	1 ³ / ₄ UNF	1 ¹ / ₄ UNF	1 ³ / ₄ UNF	1 ¹ / ₄ UNF	1 ³ / ₄ UNF	1 ¹ / ₄ UNF	1 ¹ / ₄ UNF	1 ³ / ₄ UNF	1 ¹ / ₄ UNF	1 ³ / ₄ UNF	1 ¹ / ₄ UNF
Net Weight (kg)	94	57	96	59	100	61	61	103	64	119	66
Foot Mounting (mm)	220 x 220	190 x 190	220 x 220	190 x 190	220 x 220	190 x 190	190 x 190	220 x 220	190 x 190	220 x 220	190 x 190

R410A	ZP90	ZP103	ZP120	ZP137	ZP154	ZP180	ZP182	Dimensional drawings
Nominal Horsepower (hp)	7,5	9,0	10,0	12,0	13,0	15,0	15,0	
kW (EN12900) @ 50Hz	19,4	22,5	26,6	29,9	33,5	38,9	39,6	
COP (kW)	3,10	3,19	3,24	3,21	3,24	3,20	3,21	
Sound Power (dBA)	72	74	74	75	76	80	77	
A (mm)	495	552	552	552	570	578	570	
B (mm)	463	520	520	520	538	533	519	
C (mm)	112	141	141	141	159	305	159	
Shell Diameter D (mm)	232	232	232	232	232	283	232	
Suction Diameter E (inch ³)	1 ¹ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ³ / ₈	1 ⁵ / ₈	1 ³ / ₈	
Discharge Diameter F (inch ³)	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	7/8 ³	
Sight Glass External Diameter (inch ³)	1 ¹ / ₄ UNF	1 ¹ / ₄ UNF	1 ¹ / ₄ UNF	1 ¹ / ₄ UNF	1 ¹ / ₄ UNF	1 ³ / ₄ UNF	1 ¹ / ₄ UNF	
Net Weight (kg)	56	59	61	61	64	119	66	
Foot Mounting (mm)	190 x 190	190 x 190	190 x 190	190 x 190	190 x 190	220 x 220	190 x 190	

New Existing

For more details, see www.emersonclimate.eu

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