



Copeland™ Scroll Compressors

With the launch of scroll technology in the mid 1980s, Emerson revolutionized the market setting new standards in the air conditioning industry. Since then, Copeland scroll has become the reference not only in air conditioning but in refrigeration and heating applications too. Thousands of customers trust our proprietary technology: today, over 200 million Copeland scroll compressors are installed worldwide, more than any other scroll compressor brand. Copeland scroll compressors range from 1.5 to 60 hp and are designed to work with all the main refrigerants, including CO₂. With compressors built in both vertical and horizontal versions and capable of digital modulation, Emerson has expanded the capability of scroll technology to new heights.

Additional innovations such as Enhanced Vapor Injection, variable speed scroll with drive technology for heat pump compressors or the design of

the Emerson sound shell give manufacturers, installers and end users the right tools to reduce the carbon footprint of their installations, optimize system design, efficiency, sound and reliability, while ensuring long equipment lifetime and minimizing capital and operating costs.

Applications for scroll compressors continue to grow thanks to innovation and adaptation. Industry as a whole has embraced its responsibility to put the environment first in its list of priorities, and this has led to strategic imperatives such as the need to introduce larger capacity scrolls with improved seasonal performance, modulated systems and products designed for use with low GWP refrigerants such as “natural” compounds (R744, R290), R32 and HFO blends. Emerson is staying abreast of these challenges by successfully further developing its technologies in each of these areas.



Copeland™ YP Scroll Compressor Range for R32

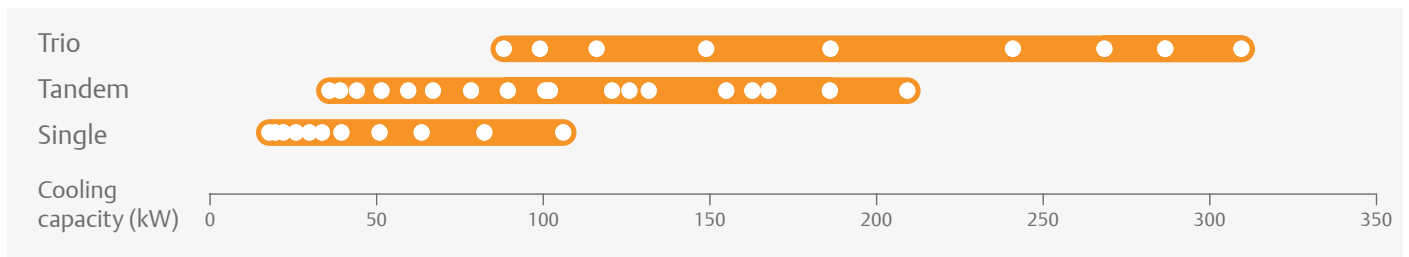
Copeland YP compressors are designed for R32. Thanks to advanced Emerson technologies, they reach the same field of application as equivalent Copeland scroll compressors with R410A. This is achieved without liquid injection or economizer. A dedicated scroll set minimizes the discharge temperature caused by the high heat of compression of the R32 refrigerant. R32 has a GWP of 675 and has been used for many years as main ingredient of R410A and is widely available.

YP compressors can be used for cooling only systems, as well as for reversible systems up to 700kW.



YP Copeland scroll compressor

YP Scroll Compressor Line-up R32



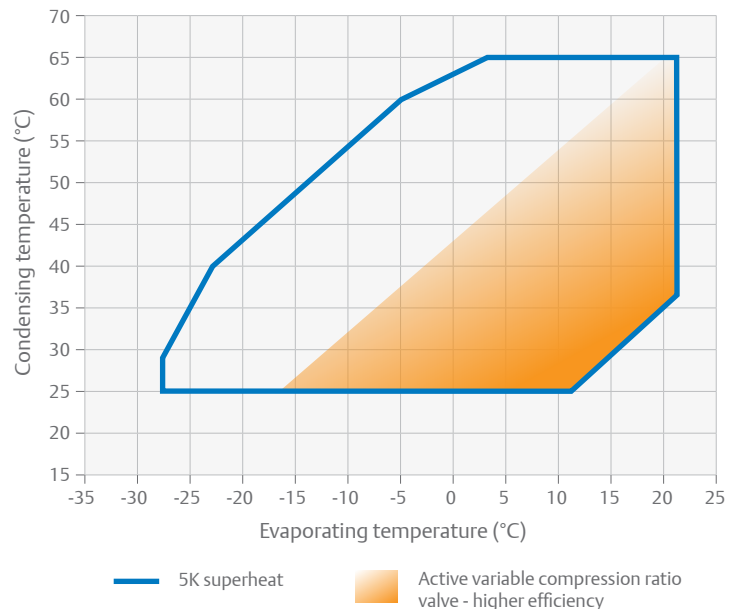
Features and Benefits

- Designed for R32
- Wide operating envelope
- Low leak discharge check valve
- High part load efficiency thanks to a variable compression ratio valve
- IP 54 terminal box
- Leak free hermetic design
- Tandem and trio capabilities
- Axial and radial compliance
- Emerson integrated solution ready

Maximum Allowable Pressure (PS)

- YP137, YP154 and YP182
Low side PS 30.4 bar(g) / High Side PS 49 bar(g)
- YP83 to YP122, YP154, YP385 and YP485
Low side PS 30.4 bar(g) / High Side PS 50 bar(g)

Operating Envelope R32



Copeland™ ZP 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.

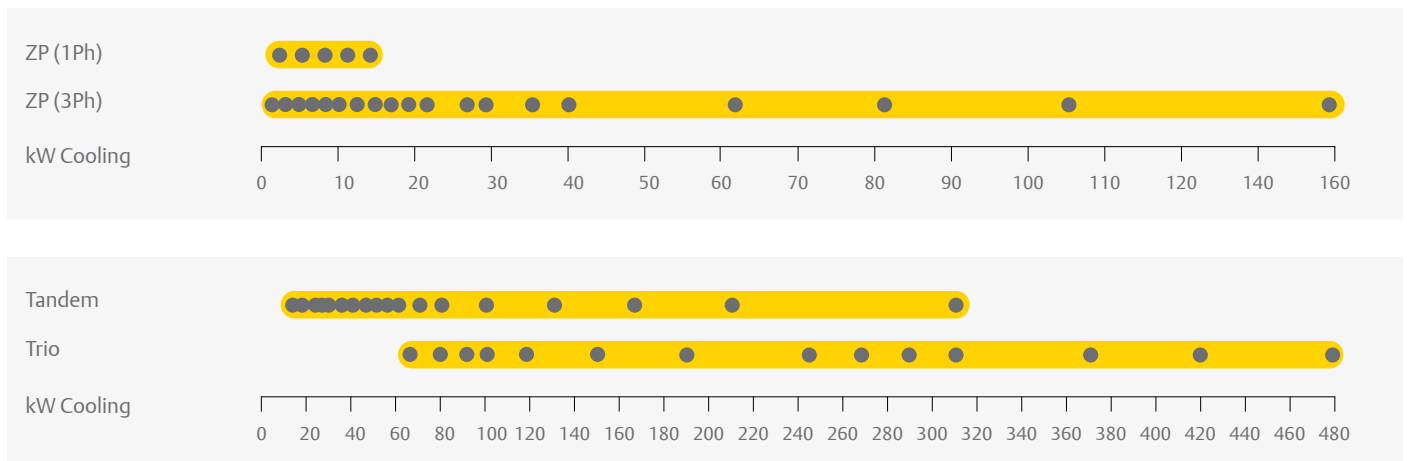
ZP Copeland scroll compressors are perfectly suitable for air-cooled chiller systems up to 900kW (1100 kW if water-cooled) featuring high comfort and superior seasonal efficiency (SEER / SEPR / SCOP). Whether used in stand-alone, tandem or trio configurations, the broad ZP Copeland scroll line-up meets 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

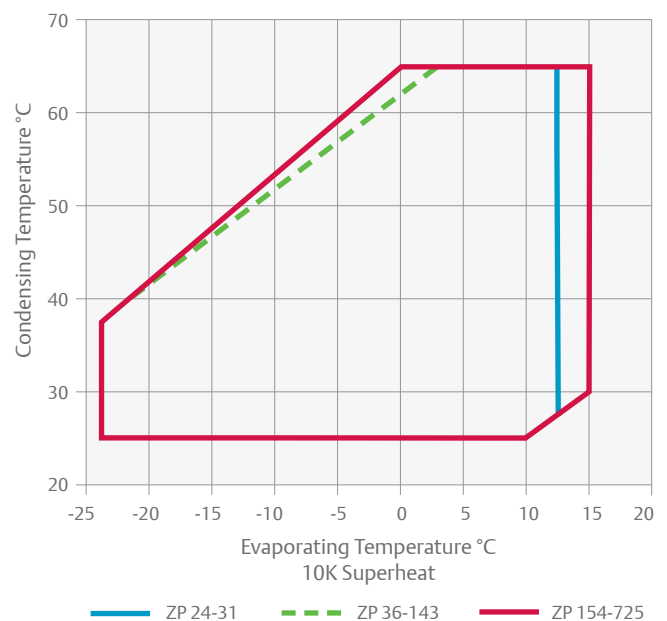
Features and Benefits

- Copeland qualified tandem and trio (now also uneven configurations) for superior seasonal efficiency (SEER / SEPR / 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 29.5 bar(g) / High side PS 45 bar(g)
- ZP104 to ZP725:
Low side PS 29.5 bar(g) / High side PS 45 bar(g)

Operating Envelope R410A



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

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

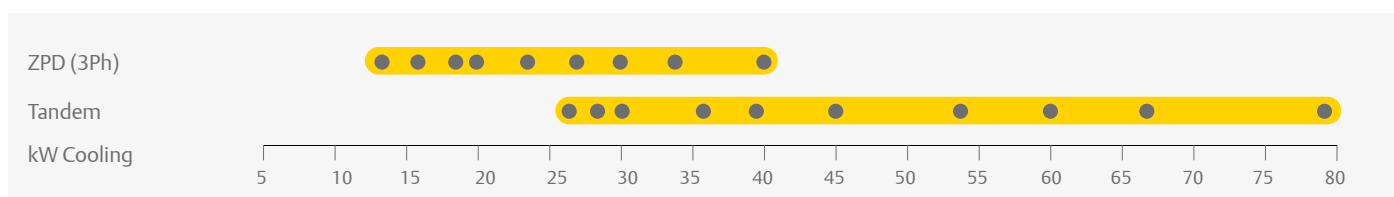
In many cooling and heating systems, the load and the operating conditions vary over a wide range thus requiring the use of capacity modulation. Digital scroll assures stepless modulation down to 10% of the nominal capacity, enabling precise temperature control, superior comfort and energy saving.

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

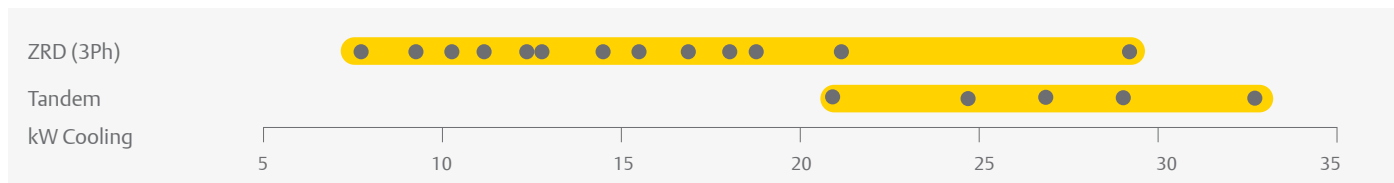
ZPD & ZRD scroll digital compressor



ZPD Digital Scroll Compressor Line-up R410A

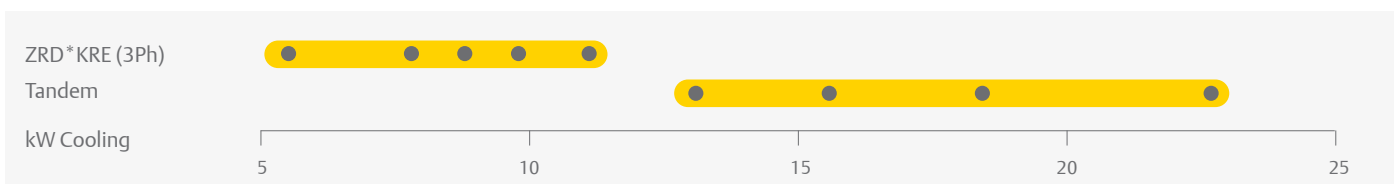


ZRD Digital Scroll Compressor Line-up R407C



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 ZPD42 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)

Copeland™ YPV Variable Speed Scroll Compressor Range for R32 with Inverter Drive

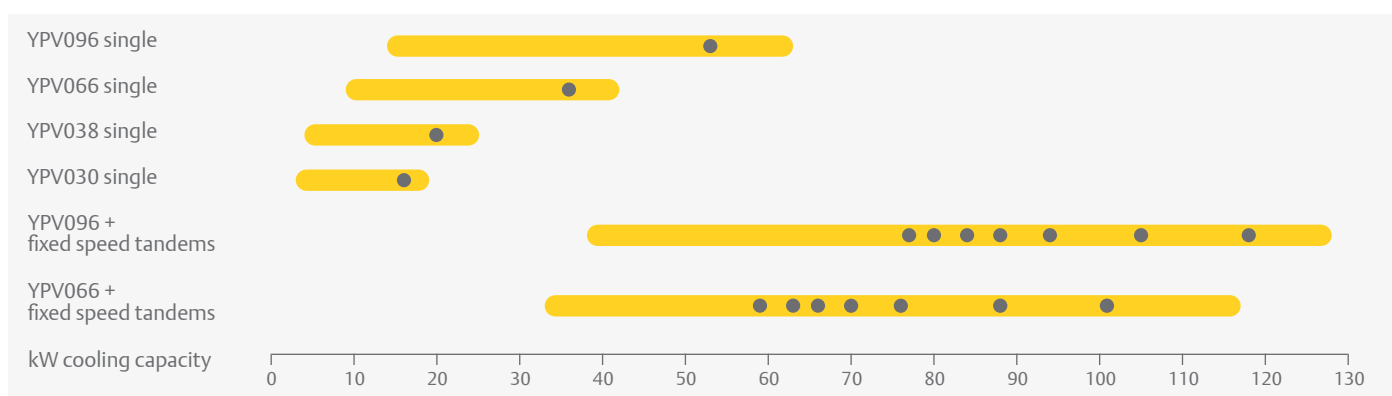
Copeland YPV variable speed compressors are designed for R32, a widely available refrigerant with a GWP of 675. These scroll compressors deliver maximum efficiency and superior performances to comply or exceed the most stringent EcoDesign directive targets. Thanks to advanced Emerson technologies, YPV compressors reach the same field of application as equivalent Copeland scroll compressors with R410A.

The outstanding efficiency of YPV across different load- and operating conditions reflects in a lower total lifecycle cost of the system, in diverse applications such as commercial comfort - with hydronic cooling, reversible units or rooftops - industrial chillers or close control units.



Copeland YPV variable speed scroll compressor and drive

YPV Variable Speed Scroll Compressor Line-up R32



Features and Benefits

- Designed for R32
- Wide operating envelope for cooling and heating
- Outstanding efficiency, thanks to variable speed high performance motors and to Emerson variable compression ratio valve
- Capability to tandemize YPV066-096 models with YP fixed speed scrolls for maximum flexibility in system design - no need for an oil separator
- Low leak discharge check valve
- Axial and radial compliance
- Emerson integrated solution ready

Maximum Allowable Pressure (PS)

- YPV066 – 096:
Low side PS 30.4 bar(g) / High Side PS 50.0 bar(g)

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

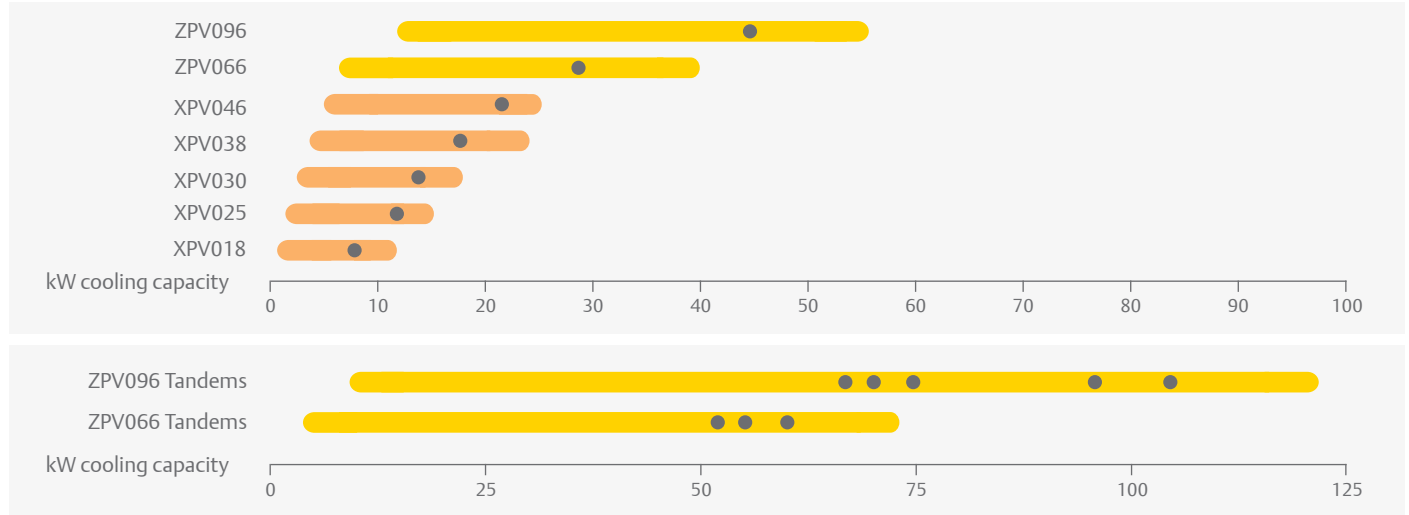
Copeland XPV and ZPV variable speed scroll compressors for R410A are designed to deliver maximum cooling and heating efficiency when you need it most. Equipped with the latest variable speed technology, they allow system manufacturers and building owners to achieve superior performance when designing 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.

ZPV066 variable speed scroll compressor and drive



XPV and ZPV Variable Speed Scroll Compressor Line-up



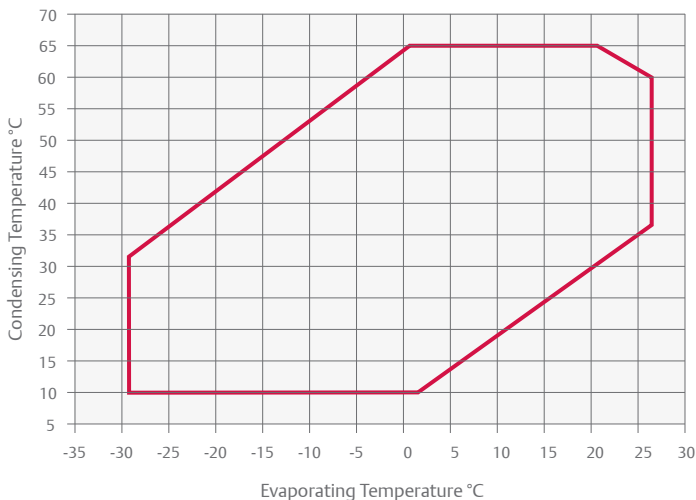
Features and Benefits

- 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

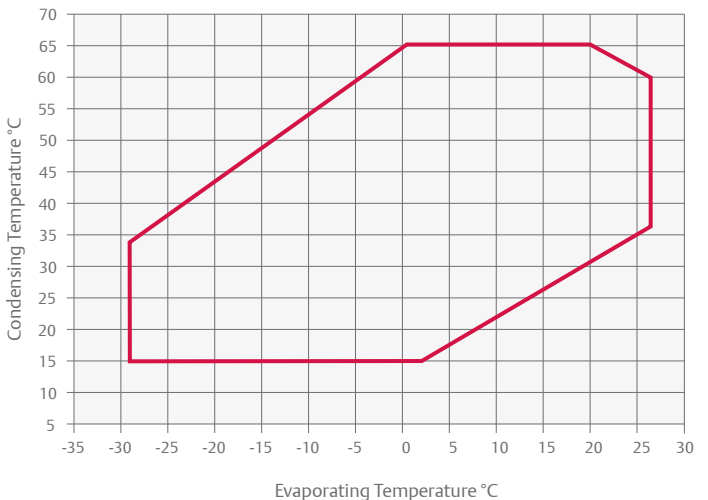
Maximum Allowable Pressure (PS)

- XPV018-025 and XPV046
Low Side PS 28 bar(g) / High Side PS 45 bar(g)
- XPV030-038
Low Side PS 29.5 bar(g) / High Side PS 43.3 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*



Note: * The operating envelope may vary depending on the compressor speed. Please refer to the Select software

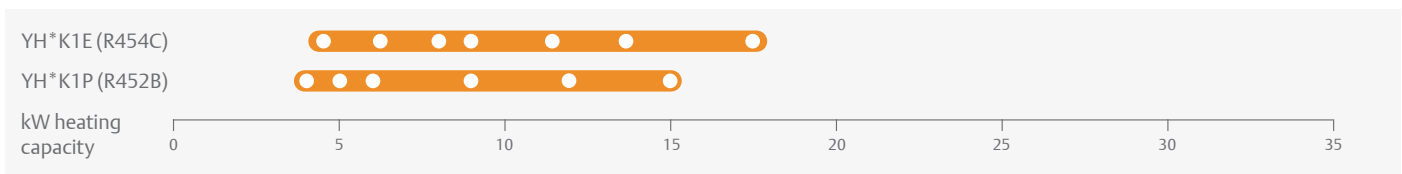
Copeland™ YH Fixed Speed Scroll Compressor Range for A2L Refrigerants R454C and R452B

Copeland YH scroll compressors are designed for multiple applications such as air-to-water and brine-to-water heat pumps, process and close control cooling, as well as air conditioning. They have a dedicated design to support the market needs of customers for medium and low-pressure refrigerants with a low GWP. They are suitable for very aggressive refrigerants containing HFO molecule. YH compressors comply with the PED class requirements related to A2L refrigerants.



YH scroll compressor

YH Scroll Compressor Line-Up R454C and R452B



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

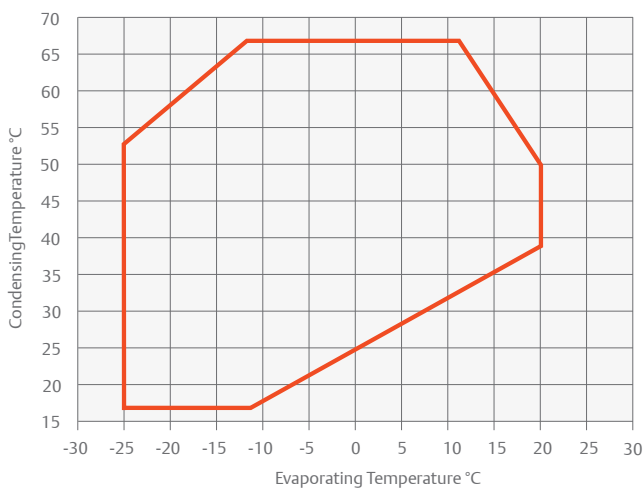
Features and Benefits

- Multi-refrigerant compressor: optimized for operation with A2L refrigerants with a low GWP R454C (148) and R452B (698) compared to R407C (1774)
- PED class II certified
- Fully hermetic compressor design
- Wide operating envelope for heat pump applications
- Low super heat
- Tandem-ready version available for all sizes
- F-gas compliant

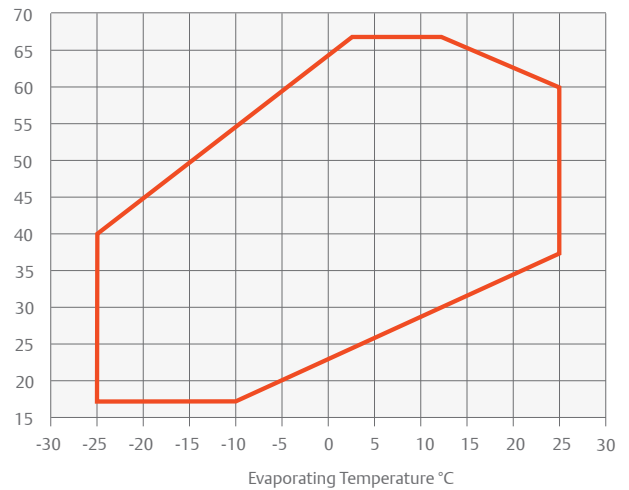
Maximum Allowable Pressure (PS)

- R454C models
Low side PS 28 bar(g) / High Side PS 49 bar(g)
- R452B models
Low side PS 28 bar(g) / High Side PS 46 bar(g)

YH*K1E Operating Envelope R454C



YH*K1P Operating Envelope R452B



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

Copeland ZH 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 compressor

Copeland 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

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

ZHI 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

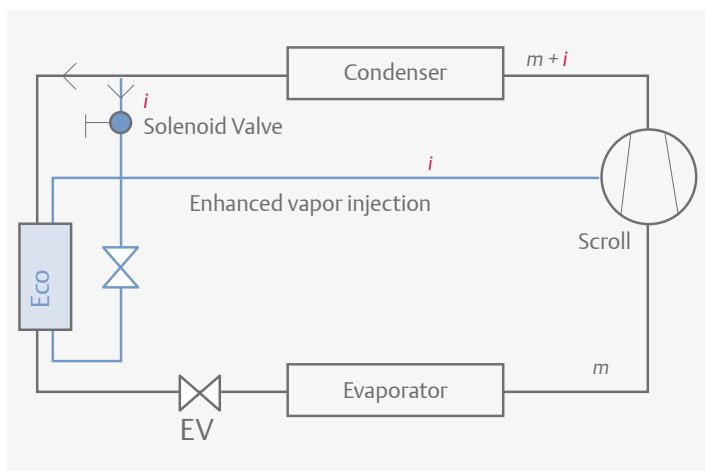
ZH**KVE
Qualified for R407C only
enhanced vapor injection - ** capacity in kW

ZH**KRE
Qualified for R513A
without enhanced vapour injection ** capacity in kW

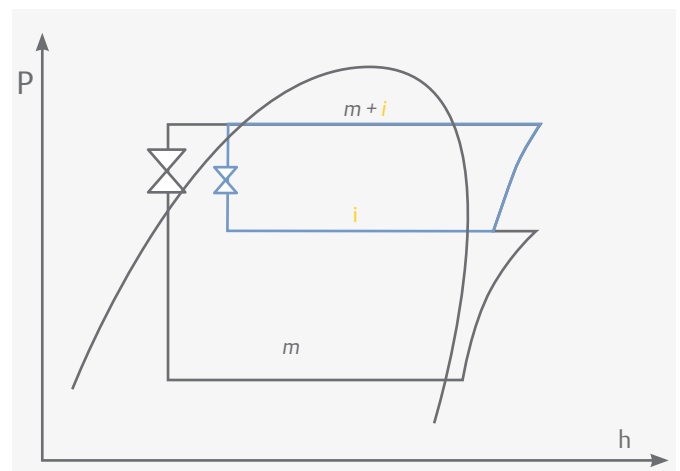
ZH**K1P
Qualified for R410A only
without enhanced vapor injection - ** capacity in kW

ZHI**K1P
Qualified for R410A only
enhanced vapor injection - ** capacity in kW

Enhanced Vapor Injection: System Design



Enhanced Vapor Injection: Enthalpy Diagram



Copeland™ YHV Variable Speed Scroll Compressor Range for A2L Refrigerants R452B/R454B with Inverter Drive

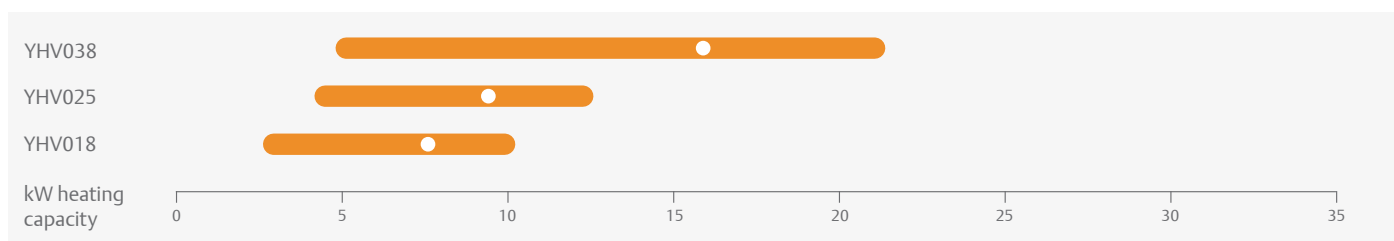
Copeland YHV*2P compressor range is designed to support system manufacturers build brine-to-water or air-to-water heat pumps that meet the requirements of the F-gas phasedown. These scrolls are qualified to reach a wide operating envelope without the need of enhanced vapor injection (EVI).

The matched inverter drives are qualified per EN60335-1 and available for 1ph and 3ph power supply. YHV*2P compressors and their matched drives belong to PED category II and therefore comply with stringent quality requirements: they are hermetically sealed and electrical connections are not source of ignition. This solution is offered to system manufacturers as a CE certified package for faster time to market and for the highest level of compressor protection.



YHV*2P scroll variable speed compressor and drive

YHV Variable Speed Scroll Compressor Line-Up



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

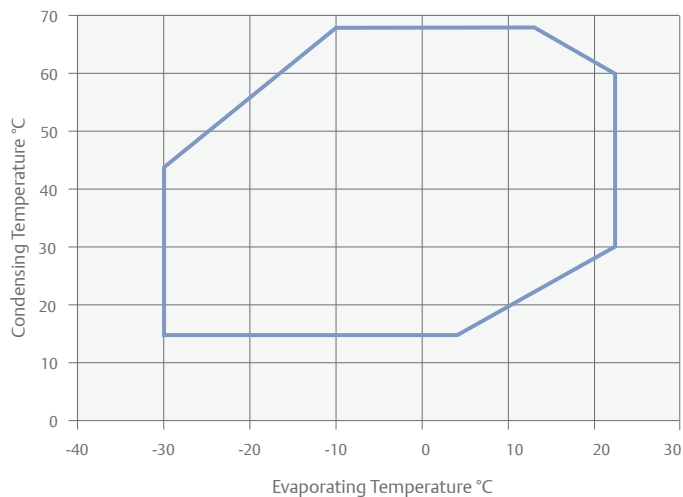
Features and Benefits

- Speed range from 15 to 120 Hz
- Drive available in air-cooled and flat plate version
- Axial and radial compliance for reliability
- Compressor model with 3-feet for compact units
- Pre-compliant solution to relevant application standards (EN378, EN60335), to facilitate system development
- F-gas compliant

Maximum Allowable Pressure (PS)

- Low side PS 28 bar(g) / High Side PS 49 bar(g)

Operating Envelope R454B



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

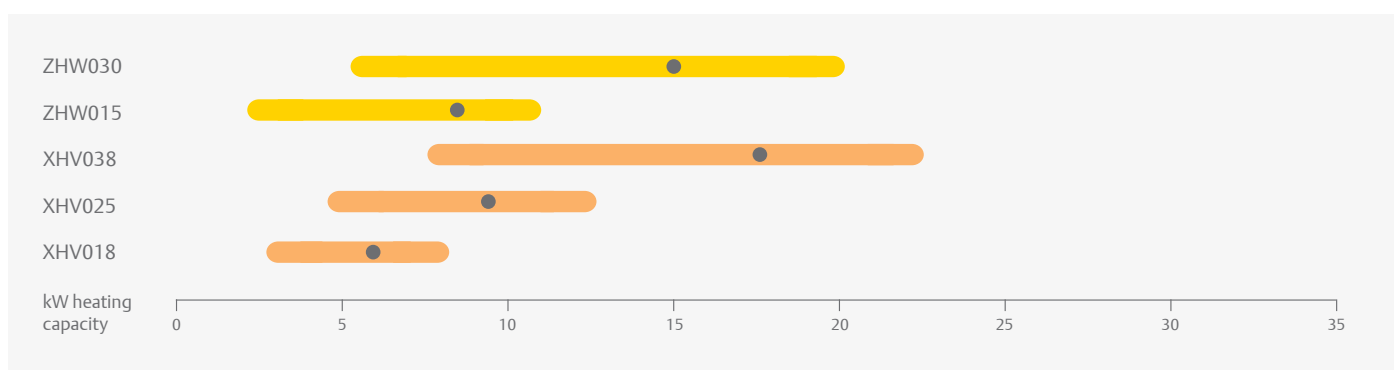
XHV and ZHW variable speed scroll compressors for R410A, for outstanding performance for cooling and heating applications.

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 scroll variable speed compressor and drive

XHV & ZHW Variable Speed Scroll Compressor Line-Up

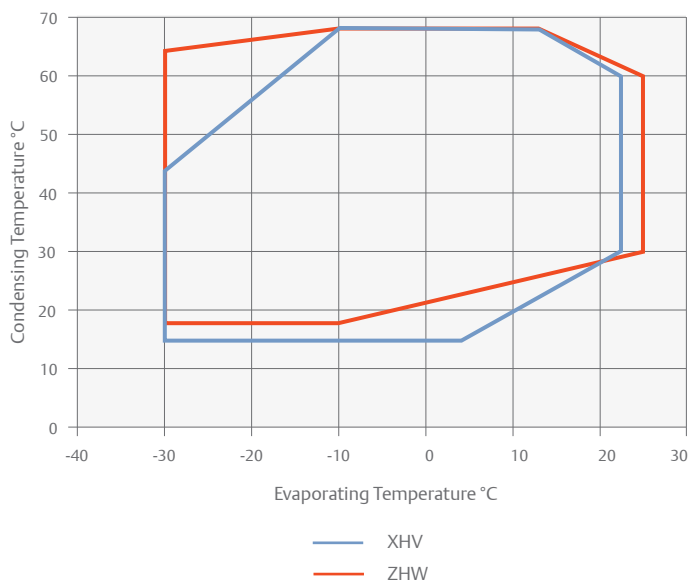


Conditions: Cooling kW Evaporating 5°C, Condensing 50°C, Superheat 10K, Subcooling 0K
Heating kW Evaporating -7°C, Condensing 50°C, 5K Superheat, 4K Subcooling

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)

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

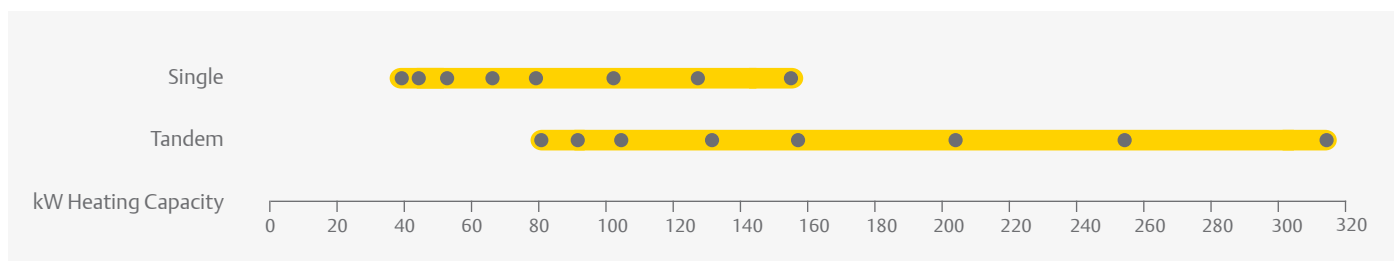
ZH*KCE R134a Copeland scroll compressors were developed for the recovery and reuse of available heat. For example, the heat generated by processes or machining cooling equipment can be recovered and not wasted. This contributes to reducing the total energy cost of installations. On a water-cooled chiller, 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

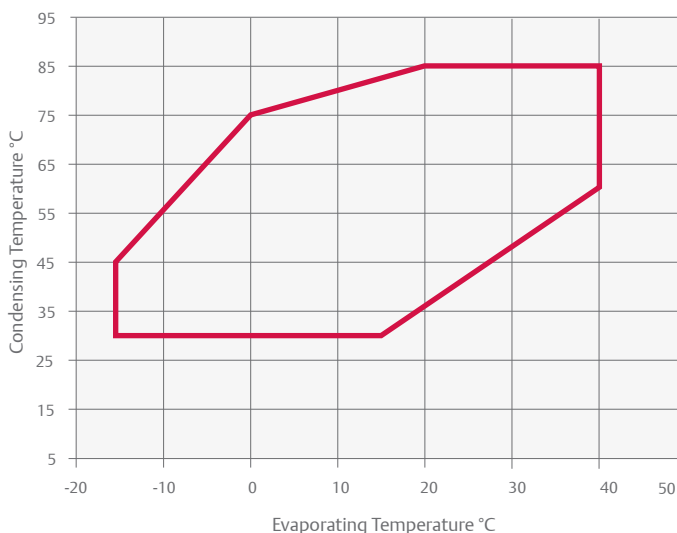
Features and Benefits

- 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)

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.

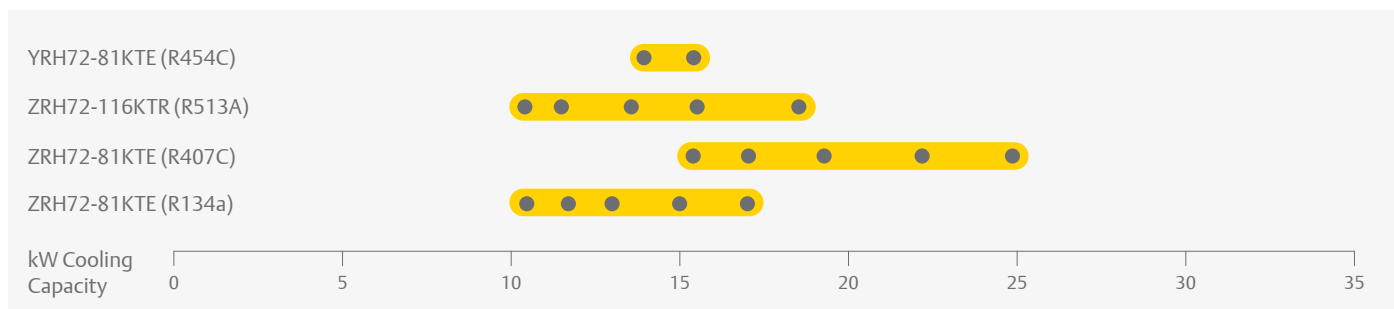
ZRH compressors are based on the unique Copeland scroll design and provide the same reliability as a standard Copeland scroll. An additional oil pump covers the specific needs of transport air conditioning and of horizontal compressor arrangement in general.

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

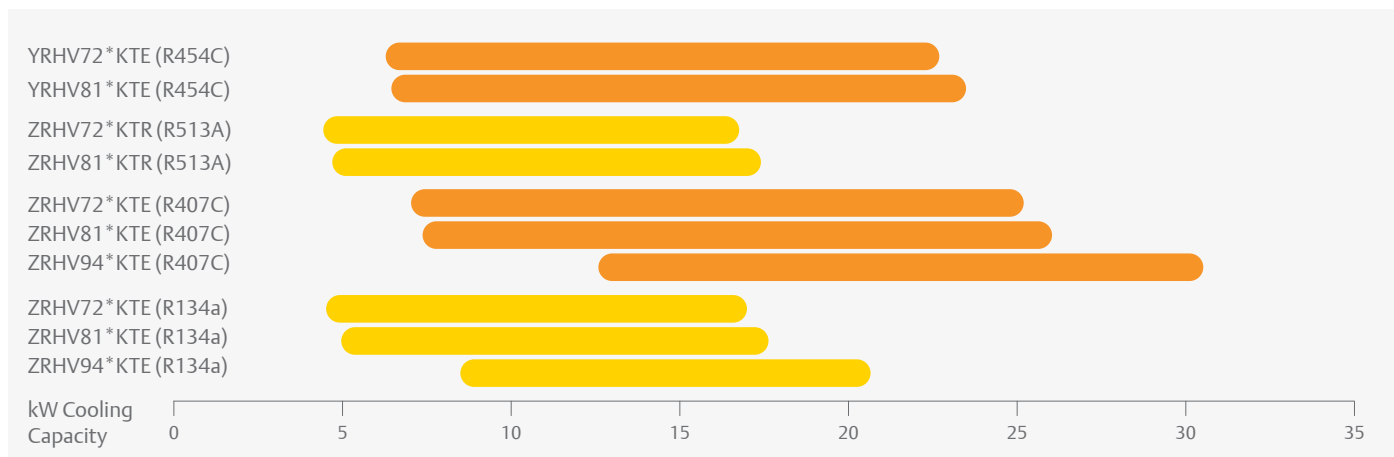


ZRH horizontal scroll compressor

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)

Copeland™ YB and YBD Scroll Compressor Ranges for Medium Temperature Refrigeration for Low GWP Refrigerants Classified as A2L

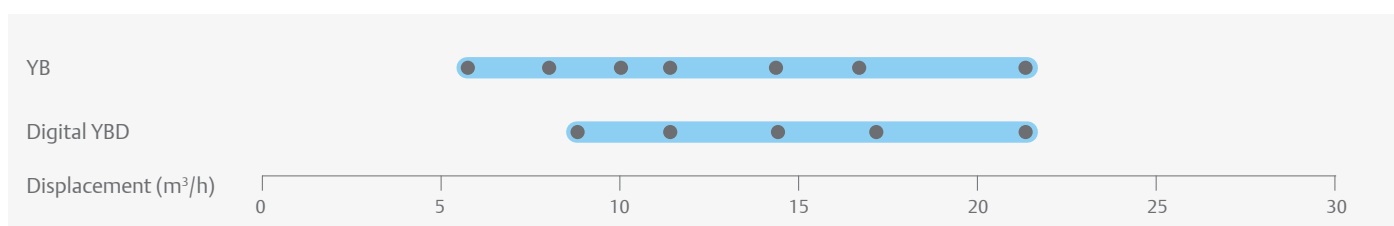
The standard and digital models from Copeland YB* K1E scroll series for medium temperature applications feature an optimized design for F-Gas compliant low GWP A2L refrigerants. The scroll compressor was optimized internally and externally to create the most reliable compressor with refrigerants with a high HFO content.

These compressors, available with displacements from 5.8 to 21.4 m³/h are 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 - 12 dBA sound reduction, which makes them best choice for refrigeration applications in urban and domestic areas.



YB scroll compressor

YB & YBD Scroll Compressors Line-up



Features and Benefits

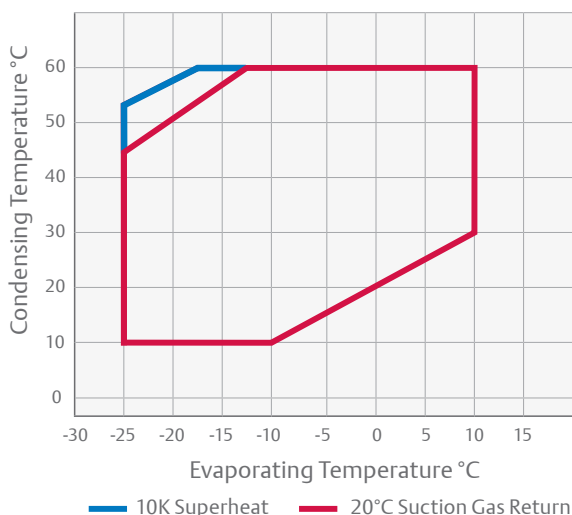
- One model for multiple A2L refrigerants: R455A, R454A, R454C, as well as R1234yf for YB models. These compressors are also designed to operate with previous A1 refrigerants: R448A/R449A, R407A/F, R450A, R513A, R134a and R404A.
- Fully hermetic design to avoid risk of refrigerant leakage
- Flexibility in terms of required capacity: multiple design options
- Extremely quiet operation, specially adapted to applications in urban and domestic areas
- Copeland scroll digital technology for simple, stepless 10 to 100% capacity modulation
- Light weight and compact design
- Wide operating envelope with 10°C low condensing limit

Maximum Allowable Pressure (PS)

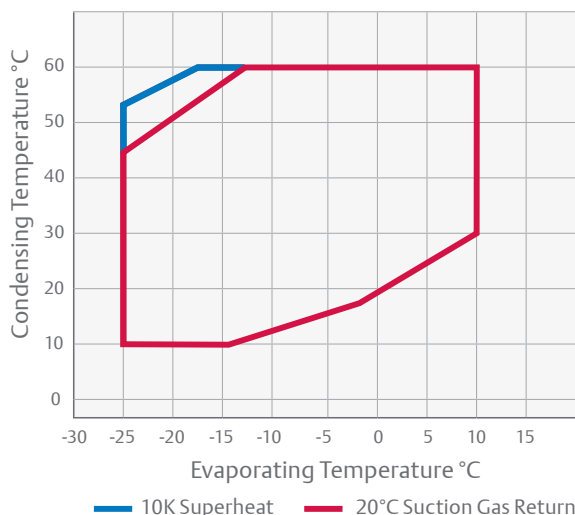
- Low Side PS 23.5 bar (g)
- High Side PS 38 bar (g)

Operating Envelopes

YB* 1E - R455A



YBD* 1E - R455A



Copeland™ ZB and ZBD 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 ZBD digital compressor models that offer 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.



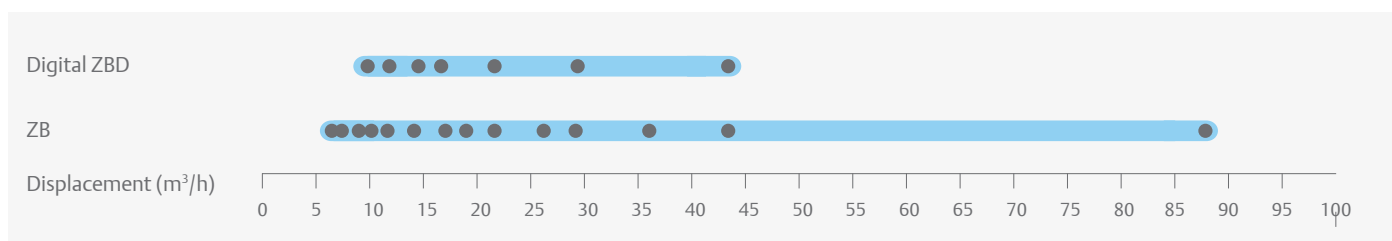
ZB compressor for medium temperature refrigeration with and without sound shell

ZBD Digital Scroll Compressors

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 and it requires no other components.

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.

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)

Copeland™ YF, YFI and YFJ Scroll Compressor Ranges for Low Temperature Refrigeration for Low GWP Refrigerants Classified as A2L

Copeland YF scroll compressors for low temperature applications feature an optimized design for F-Gas compliant low GWP A2L refrigerants. The scroll compressor was optimized internally and externally to create the most reliable compressor with refrigerants with a high HFO content.

The range consists of:

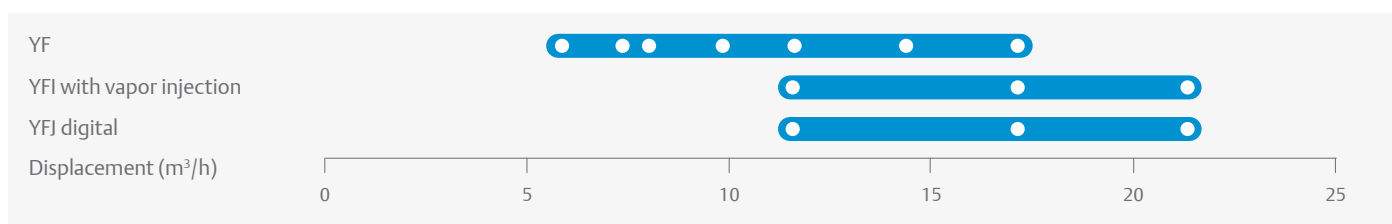
- YF*K1E models that operate with liquid injection in order to control discharge temperature and increase the operating envelope.
- YFI*K1E models that operate with vapor injection. This boosts the refrigeration system cooling capacity and efficiency.
- YFJ*K1E models that operate with digital capacity modulation and vapor injection. 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 and it requires no other components.

These compressors, available with displacements from 5.9 to 25.1 m³/h are 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 - 12 dBA sound reduction, which makes them best choice for refrigeration applications in urban and domestic areas.



YF scroll compressor

YF, YFI and YFJ Scroll Compressors Line-up



Features and Benefits

- One model for multiple refrigerants: R455A, R454A, R454C
- Fully hermetic design to avoid risk of refrigerant leakage
- Flexibility in terms of required capacity: multiple design options
- Extremely quiet operation, specially adapted to applications in urban and domestic areas
- Light weight and compact design

Maximum Allowable Pressure (PS)

- Low Side PS 23.5 bar (g)
- High Side PS 38 bar (g)

Copeland™ ZF and ZFD 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:

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



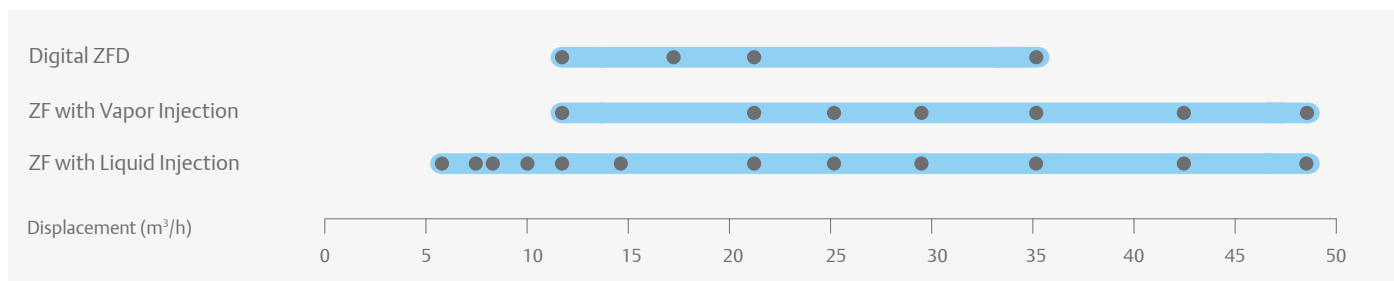
ZF compressor for low temperature refrigeration with and without sound shell

ZFD Digital Scroll Compressors

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 and it requires no other components.

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.

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)

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

As an extension to the existing ZB*KCE and ZF*K4E scroll range, Copeland ZS*KA, ZB*KA and ZF*KA scroll 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.

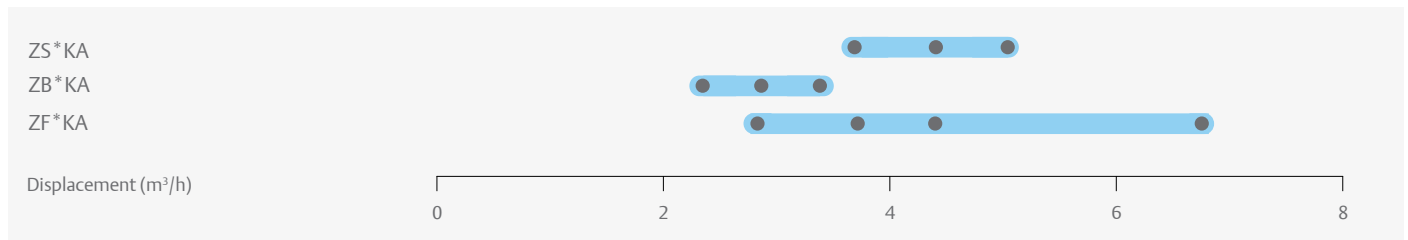
ZF*KA models are suitable for low temperature type systems such as walk-in freezers and reach-in freezers. They cover a range from 1hp to 2.5hp.

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)

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

Copeland ZO 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 range of Copeland ZO 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.

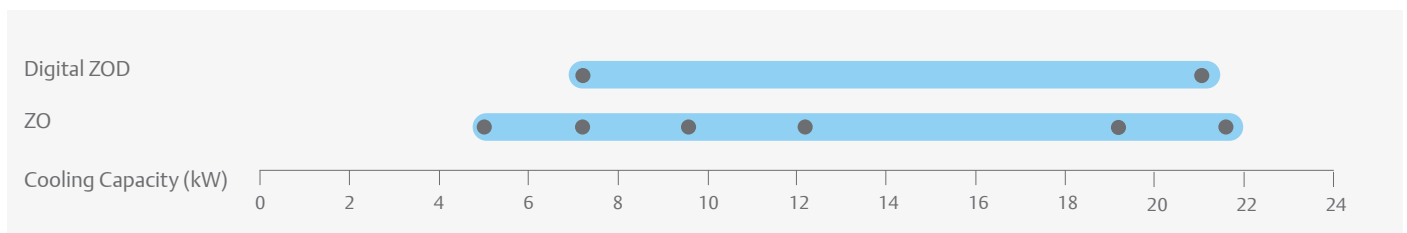
The optimized design of ZO compressors effectively address the challenges of R744 systems, i.e. high pressure levels, higher mass flow for a given displacement while securing proper lubrication.

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

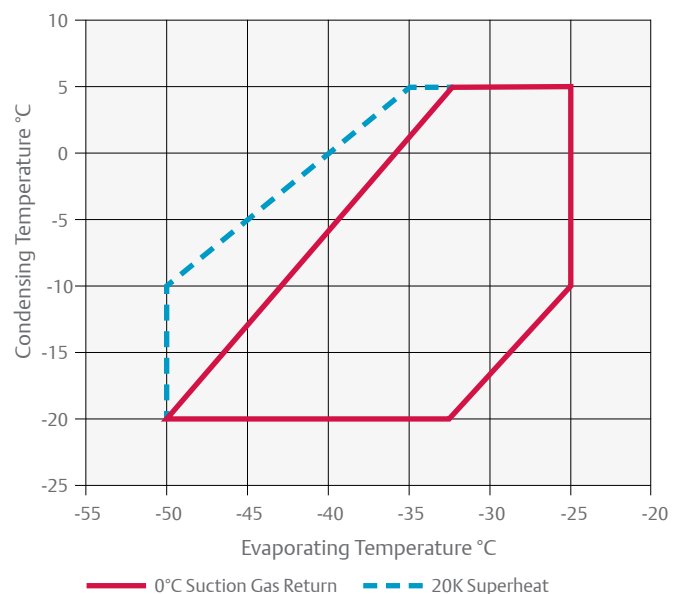
Features and Benefits

- 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.

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						



Semi-Hermetic Reciprocating Compressors

Emerson offers different ranges of semi-hermetic reciprocating compressors with distinct levels of performance and technical characteristics depending on the application requirements.

The Stream Series

Emerson has introduced Stream, a line of semi-hermetic 4 and 6 cylinder compressors. The series provides best in class performance for today's HFC-based and uprising natural and low GWP refrigerants, significantly reducing cost of operation and environmental impact compared to competing products.

The range consists of 4 and 6 cylinder models, available with both inverter and continuous capacity modulation options.

The Emerson line-up of 4 cylinder compressors for CO₂-transcritical applications is the ideal solution for R744 medium temperature cascade and booster systems. It is characterised by a design pressure of 135 bar. Refrigerant flow and heat transfer have been optimized for best performance. In combination with the CO₂-subcritical scroll for the low temperature refrigeration side, Emerson offers the most energy efficient package available on the market today.

With advanced protection and diagnostics features for system reliability, reduced service costs and increased equipment uptime, the Stream series is built to last in today's modern and changing world.



Stream 4 Cylinder



Stream 6 Cylinder



Stream 4 Cylinder for R744



Stream Digital 4 Cylinder



Stream Digital 6 Cylinder



The S-Series

Its design is based on traditional “reed” valve plates similar to what is used in reciprocating compressors offered by other manufacturers. The performance of such compressors meets basic market requirements but cannot compete with Discus compressors in terms of efficiency. The S-Series ranges from 1.5 to 70 hp and is composed of K and L presented in this catalogue.



S-Series

The Discus Range

It is broadly recognized as the most efficient compressor whatever the running condition. This range is mainly used in medium and low temperature refrigeration applications where system efficiency is a priority for the end-user. The key difference between Discus and other reciprocating compressors lies in its valve plate design. Traditional “reed” valves are replaced by ‘puck” type valves that are integrated in the valve plate. This special design eliminates the dead volume at the end of the compression and allows for the highest compressor efficiency. To date, no other reciprocating compressor is able to match Discus in terms of performance. Available from 4 to 60 hp, they are referred to as 2D, 3D and 8D in this catalogue.



Discus 2 Cylinder

K and L Reciprocating Compressor Range

Small 2-cylinder semi-hermetic reciprocating compressors for medium and low temperature refrigeration applications and transport refrigeration.

Designed on the principle of standard reed valve type technology, these compressors feature an internal oil pump that guarantees optimum reliability in all operating conditions.

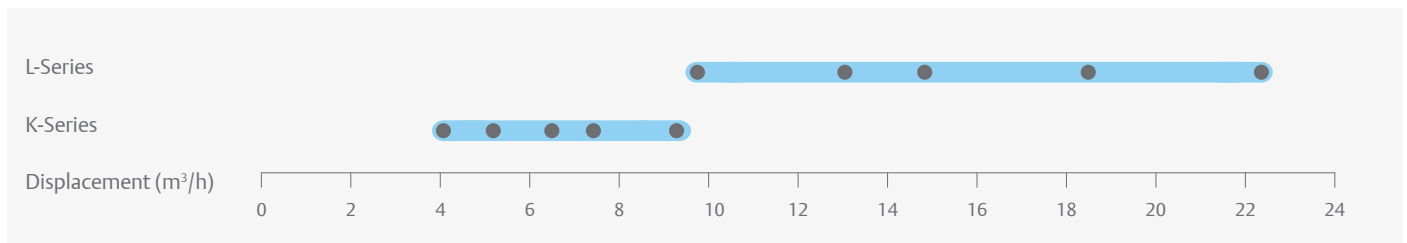
The K-series ranges from 0.5 to 2 hp and the L-series from 2 to 5 hp with a displacement of 4 to 22.5 m³/h.

These compressors are qualified for R407A/F/C, R448A/R449A, R404A and R134a.



K-Series compressor

K & L Compressor Line-Up



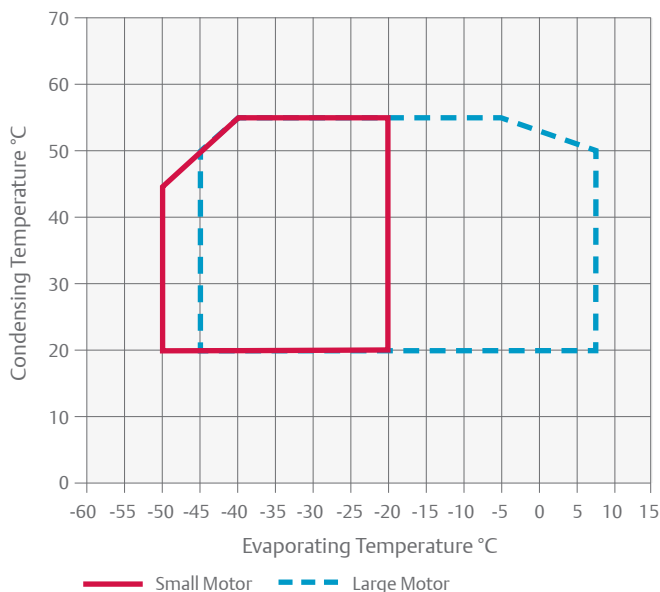
Features and Benefits

- Large operating envelope from 5°C to -45°C evaporating and up to 55°C condensing
- Two motor sizes per displacement, optimized for different applications
- Compact and light compressors
- Ideal for refrigeration unit or transport applications
- Integrated oil pump for maximum reliability

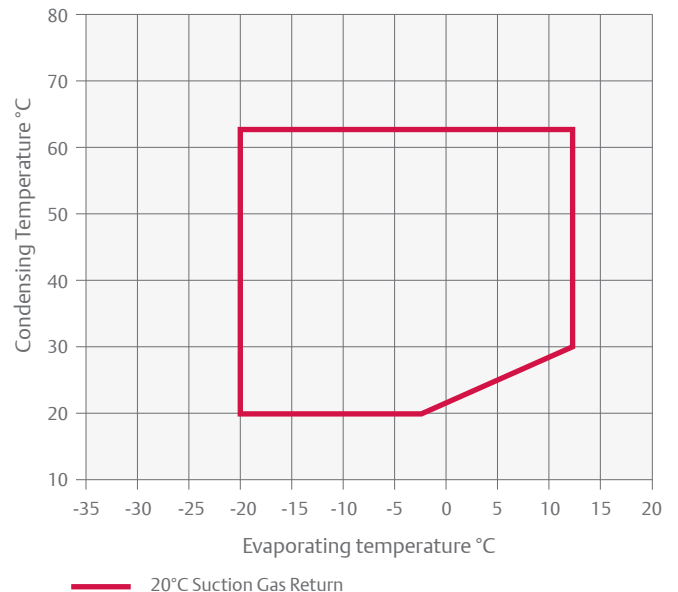
Maximum Allowable Pressure (PS)

- Low Side PS 22.5 bar (g)/ High Side PS 28 bar (g)

Operating Envelope R404A



Operating Envelope R134a



For individual model details please refer to select software.

Discus™ Reciprocating Compressor Range

From 2, 3 and 8 cylinder semi-hermetic reciprocating compressors for medium/low temperature refrigeration and high temperature applications like process cooling or air-conditioning.

The key difference between Discus and traditional reciprocating technologies lies in the valve plate design. The Discus valve plate allows gas to flow into the cylinders with a minimum heat gain, while suction cavities are designed to smoothly route the gas to minimize losses. These effects lead to:

- Superior cooling capacity due to no re-expansion volume
- Up to 10% higher efficiency compared to conventional “cost-effective” reed type compressors
- Lower operating costs for the end-user

The Discus ranges from 5 to 60 hp with a displacement of 16.8 to 181. These compressors are qualified for R407A/F/C, R448A/R449A, R404A, R134a, R450A and R513A. All Discus compressors are designed to deliver maximum performance and reliability:

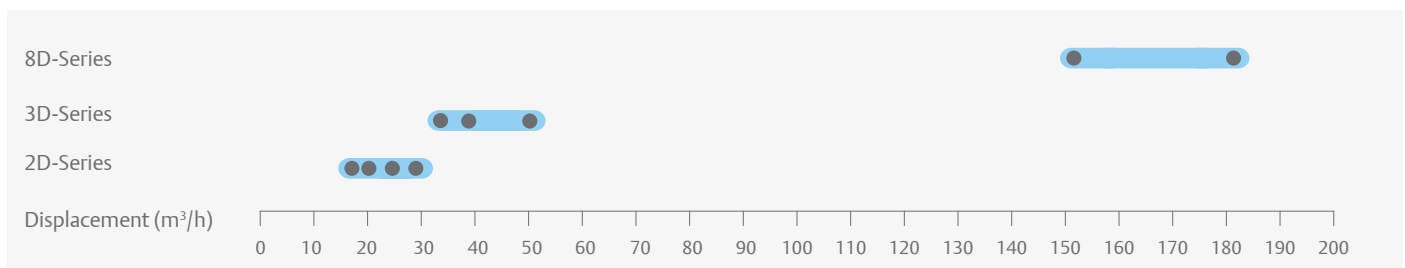
- Discus “puck” valve integrated into the valve plate for highest performance whatever the operating condition
- Positive displacement high flow oil pump guarantees high oil feeding pressure for good lubrication and bearings’ cooling



Discus compressor

- PTFE-coated bearings for especially low friction and good protection at start-up
- Electronic motor protection module
- Availability of two motor sizes per displacement. The small motor covers all refrigeration applications while the large motor can be used in comfort, process cooling or inverter applications

Discus Compressor Line-Up



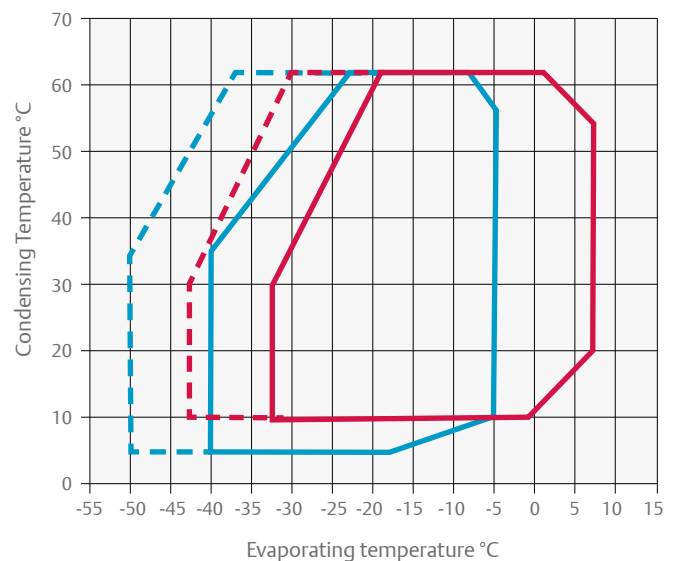
Features and Benefits

- Highest level of efficiency available on the market, whatever the refrigerant and operating condition
- Integrated oil pump and Electronic Oil Pressure Switch OPS2 for maximum reliability
- Two motor sizes per displacement, optimized for different applications
- Large operating envelope that allows medium and low temperature applications to be covered by one single model with condensing limit as low as 5°C
- Provide cooling capacity modulation either by cylinder head blocked suction or with use of frequency inverters from 25 to 60Hz
- Multi-refrigerant compressor range – one model to cover all standard refrigerants
- Option to use 2 and 3 cylinder models with additional Demand Cooling function in order to achieve extended low temperature operating envelope without any superheat restriction for new refrigerants R407A/F, R448A and R449A

Maximum Allowable Pressure (PS)

- Low Side PS 22.5 bar (g)/ High Side PS 28 bar (g)

Operating Envelope R404A



- Large Motor 20°C SGRT
- - - Large Motor 20°C SGRT + Fan
- Small Motor 20°C SGRT
- - - Small Motor 0°C SGRT + Fan

For individual model details please refer to select software.

Copeland™ Compressor Electronics for Copeland Stream Semi-hermetic Compressors

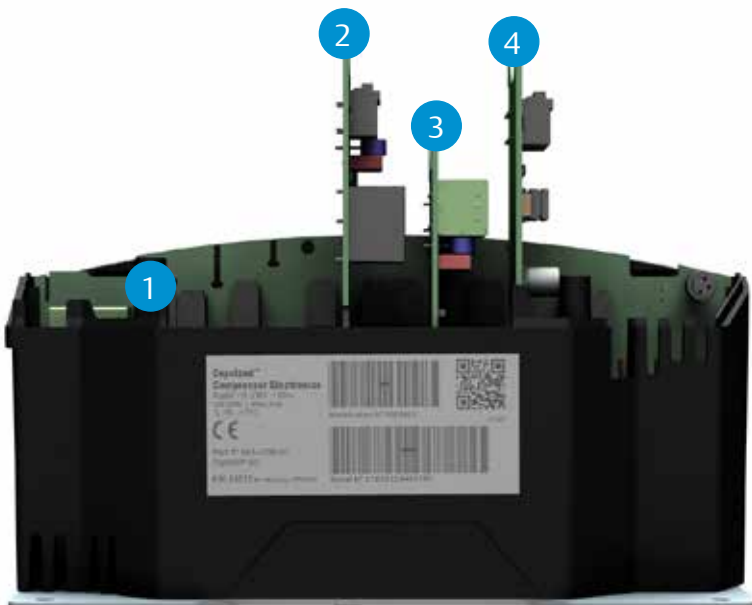
Copeland compressor electronics monitor and interpret data inside the compressor in order to enhance the reliability and operational performance of HVACR systems. Built upon the success of CoreSense Diagnostics introduced a few years ago, Emerson is now introducing the next generation electronics module for Stream compressors featuring a modular design using state-of-the-art electronics. This modular design with plug-in modules gives the customers the flexibility to choose the advanced features as per their system requirements. These features include advanced protection and diagnostics, Bluetooth and Modbus communication for remote monitoring, liquid injection control, dynamic envelope monitoring, digital and capacity control etc.

The benefits of Copeland compressor electronics go beyond compressor protection by assisting in system diagnosis and optimization. Providing service engineers with detailed information at the right time, system-related problems can be diagnosed faster or even before they occur. Optional plug-in modules with advanced control features and factory mounted sensors reduce the system complexity and applied costs for system manufacturers. Supermarket operators benefit from increased system uptime, reduction in food loss and reduced maintenance costs.

Technical Specification

- Power supply 115/230VAC
- Communication protocol (Modbus® RTU and Bluetooth®)
- Bus to system controller: RS 485
- Discharge temperature sensor
- Current sensor
- Flash memory
- Alarm reset button

Functions of modules



Copeland compressor electronic module

Benefits

- Modularity for customer flexibility
- Optional plug-in modules with different functionalities
- Advanced protection for reliable system operation
- Diagnostics for quicker troubleshooting
- Power monitoring for operational costs monitoring
- Communication options - Bluetooth and Modbus for remote monitoring
- Compressor control for reduced system applied costs

- 1 Base board
- 2 Head fan and liquid injection control
- 3 Digital modulation control and unloaded start
- 4 Modbus®



Scope of Supply



- ① Optional Plug-in Modules
- ② Discharge Temperature Sensor
- ③ Current Sensor
- ④ Oil Pressure Switch
- ⑤ Communication Port

Copeland™ Stream with Compressor Electronics, Semi-Hermetic Reciprocating Compressors for HFC / HFO Blends

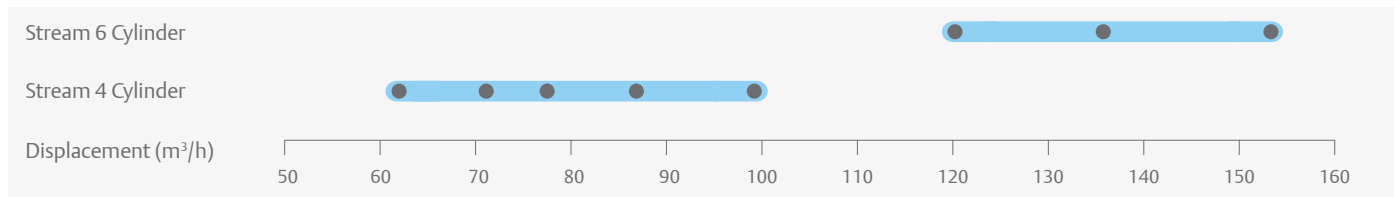
Stream series 4 and 6 cylinder compressors provide best-in-class performance, thereby significantly reducing the cost of operation and environmental impact compared to competing products. They are equipped with Copeland compressor electronics technology, featuring a modular design using state-of-the-art electronics (p.94). With advanced protection and diagnostics features for system reliability, reduced service costs and increased equipment uptime, Stream series is built to last in today's modern changing world.

Copeland Stream compressors are now qualified for low GWP refrigerants classified A2L, such as R454A, R454C and R455A.



Copeland Stream compressor

Stream Compressor Line-Up



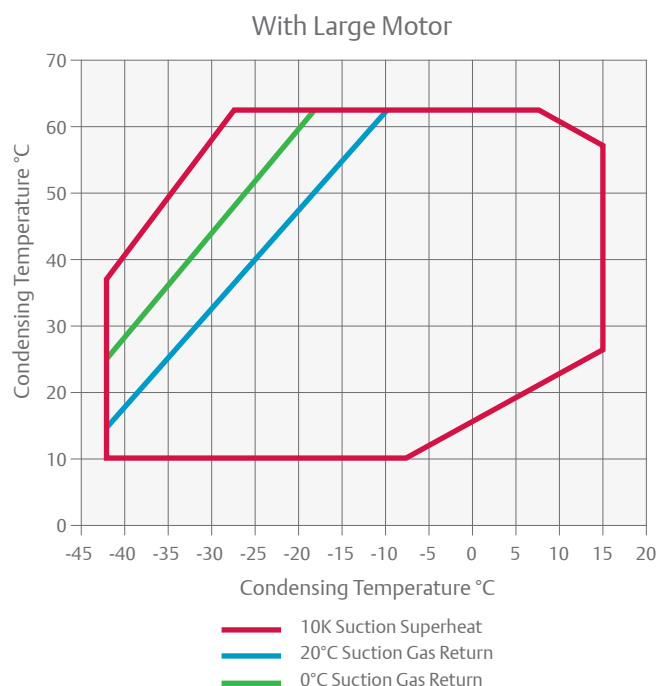
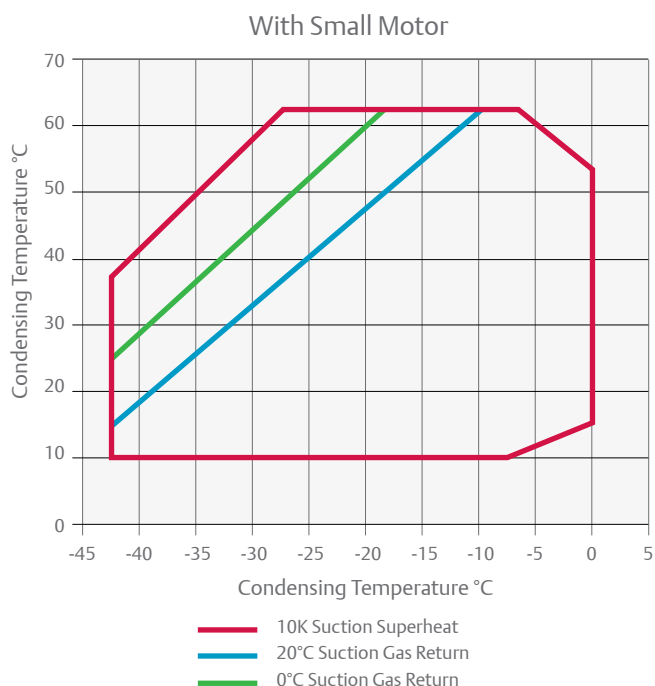
Features and Benefits

- Range of 16 models from 62 to 153m³/h
- Best-in-class seasonal efficiencies, up to 15% higher than market standard
- Multi-refrigerant compressor, compatible with R407A/F/C, R448A/ R449A, R404A, R134a, R450A, R513A, R454A, R454C and R455A.
- Stepless capacity modulation by means of inverter or digital modulation
- Wide operating envelope covering low- and medium-temperature refrigeration without cooling fan
- Reduced sound level, dimensions and weight by up to 45 kg
- Option to use compressors with additional demand cooling function in order to achieve extended low temperature operating envelope without any superheat restriction for new refrigerants R407A/F, R448A and R449A

Copeland Compressor Electronics Technology Features

- Motor and oil protection
- Storage of compressor asset and advanced runtime information
- Runtime/alarm signalling using multi-colour LED flash-codes
- Communication to system controller via Bluetooth or Modbus®
- Individual compressor power monitoring

Operating Envelope R454A



Copeland™ Stream Digital with Compressor Electronics for Continuous Capacity Modulation

Stream Digital series 4 and 6 cylinder compressors provide an alternative means of continuous modulation to inverter. Digital modulation is the most simple and precise method of capacity control and helps to contain applied costs associated with modulation.

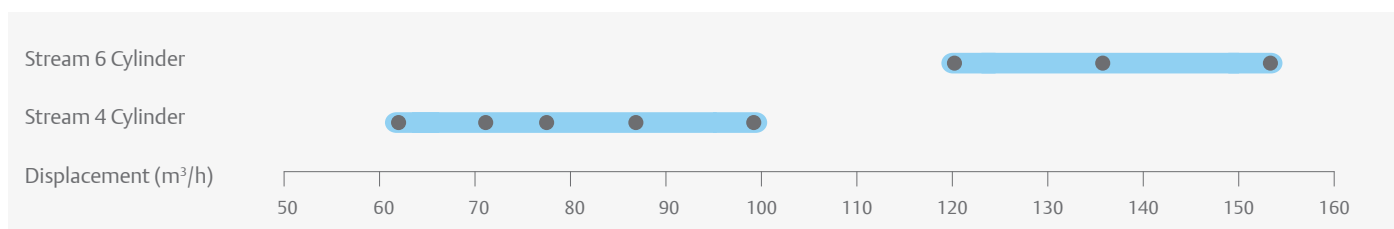
Digital technology is based on controlling a high-cycle solenoid valve fitted on one of the cylinder heads based on cycle time. The valve actuates a piston that controls the flow of gas into the suction area of the Stream valve plate. The compressor always runs at constant speed which resolves the challenges related to oil return, mechanical and electrical stress on the system.

All compressors are equipped with Copeland compressor electronics technology (p.94) and offer the possibility to diagnose system-related problems faster or even before they occur.



Copeland Stream digital compressor

Stream Digital Line-Up



Features and Benefits

- Range of 16 models from 62 to 153 m³/h
- Multi-refrigerant compressor, compatible with R407A/F/C, R448A/ R449A, R404A, R134a, R450A and R513A
- Continuous modulation from 50–100% (4-cylinder) and 33–100% (6-cylinder) ensuring a perfect match of capacity and power to refrigeration load
- Economical and reliable alternative to frequency inverters
- Precise suction pressure control with associated energy savings and stable evaporating temperatures
- Quick and easy integration into refrigeration equipment, similar to any other standard compressor
- Possibility to easily retrofit existing installations with digital cylinder head kit
- No vibrations or mechanical stress on system piping and compressor parts
- Reduced compressor cycling for longer contactor and compressor life
- Copeland compressor electronics module providing advanced protection, diagnostics and preventive maintenance

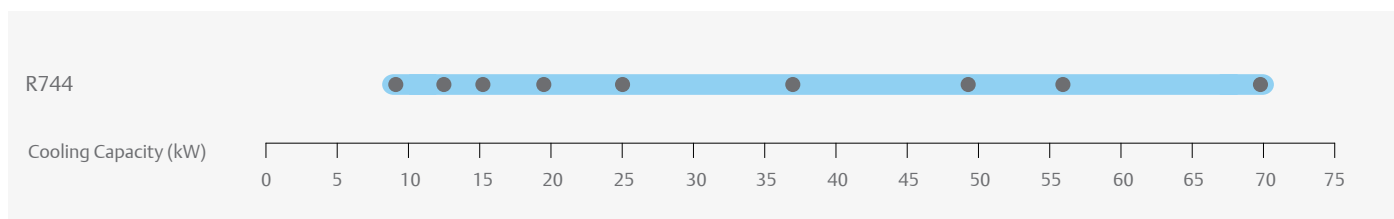
Copeland™ Stream Compressors with Compressor Electronics for R744-Transcritical Applications

Stream series of 4 cylinder CO₂ compressors is the ideal solution for R744 booster systems. It is characterized by a design pressure of 135 bar. Refrigerant flow and heat transfer have been optimized for best performance. All compressors are equipped with Copeland Compressor Electronics Module and offer the possibility to diagnose system-related problems faster or even before they occur.



Copeland Stream compressor for R744

Stream Compressor Line-up



Conditions: EN12900 R744: Evaporating -10°C, gas cooler exit: 35°C/ 90 bar, superheat: 10K

Features and Benefits

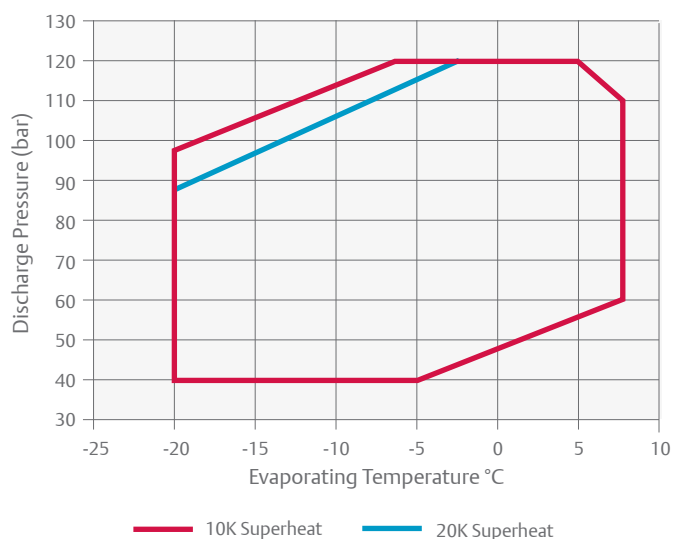
Stream provides for flexibility in pack design and operation:

- Compact dimensions
- Integrated low pressure relief valve
- Discharge temperature protection
- Service valve 360° rotation for ease of piping design
- 2 sight glasses for mounting of oil management control and visual inspection
- One oil port for oil equalization in parallel system
- Oil splasher system ensuring lubrication at constant and variable speed

Designed for durability and performance in R744 applications:

- Low sound, low vibration and large discharge chamber to eliminate pulsation
- High design pressures of 135 bar (high side) and 90 bar (low side)
- Burst pressures in excess of safety factor 3
- Cylinder head and discharge plenum design minimizing heat transfer to suction side
- Stepless capacity modulation via inverter from 25 to 70Hz
- Copeland Compressor Electronics Technology
- Individual compressor power consumption monitoring

Operating Envelope R744



Copeland™ Stream Compressors with Compressor Electronics for R744-Subcritical Applications Requiring High Standstill Pressures (90bar)

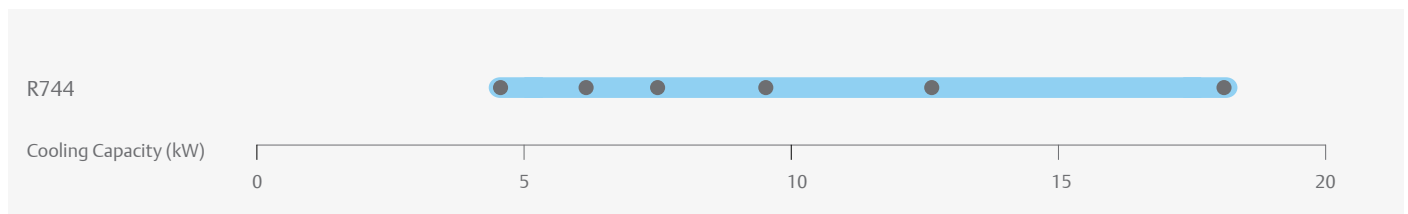
Stream series of 4 cylinder CO₂ compressors is the ideal solution for R744 low temperature cascade and booster systems requiring high standstill pressure of up to 90 bar suction. The use of transcritical compressors in medium / transcritical side as well as on the low temperature / subcritical side ensures that in case of power outage, the refrigeration system features full resilience and no operation disruption.

Stream is characterized by a design pressure of 135 bar. Refrigerant flow and heat transfer have been optimized for best performance. All compressors are equipped with a Copeland Compressor Electronics Technology and offer the possibility to diagnose system-related problems faster or even before they occur.



Copeland Stream compressor for low temperature applications with R744

Stream Compressor Line-up



Conditions: EN12900 R744: Evaporating -35°C, condensing -5°C, superheat 10K, subcooling 0K

Features and Benefits

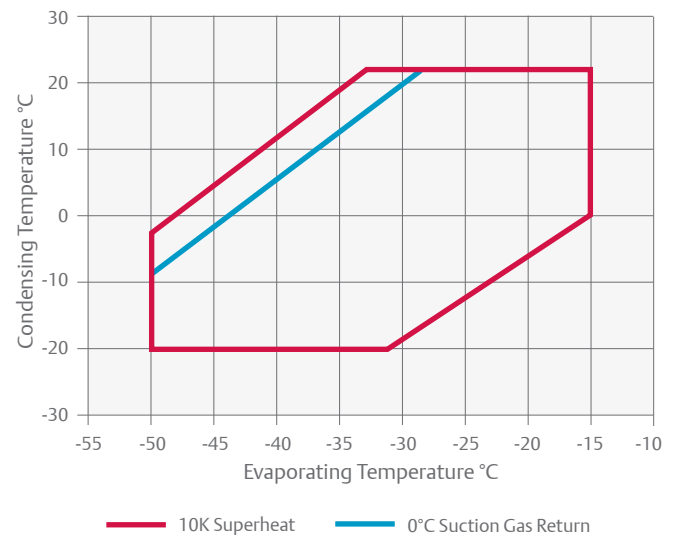
Stream provides for flexibility in pack design and operation:

- Compressor max. pressures (suction/discharge): 90 bar / 135 bar
- Compact dimensions
- Integrated low pressure relief valve
- Discharge temperature protection
- Service valve 360° rotation for ease of piping design
- 2 sight glasses for mounting of oil management control and visual inspection
- One oil port for oil equalization in parallel system
- Oil splasher system ensuring lubrication at constant and variable speed

Designed for durability and performance in R744 applications:

- Low sound, low vibration and large discharge chamber to eliminate pulsation
- Optimized motor selection for low temperature running conditions
- Burst pressures in excess of safety factor 3
- Cylinder head and discharge plenum design minimizing heat transfer to suction side
- Stepless capacity modulation via inverter from 25 to 70Hz
- Copeland compressor electronics technology for advanced protection, diagnostics, communication
- Individual compressor power consumption monitoring

Operating Envelope R744



Copeland™ Scroll Digital Receiver Unit HLR

Copeland scroll digital receiver units are the perfect choice for remote condenser systems.

These scroll digital receiver units are an innovative offering by Emerson for food service and retail businesses. Their compact design and the power of digital scroll continuous capacity modulation allow for optimized environmental integration at highest system efficiency.

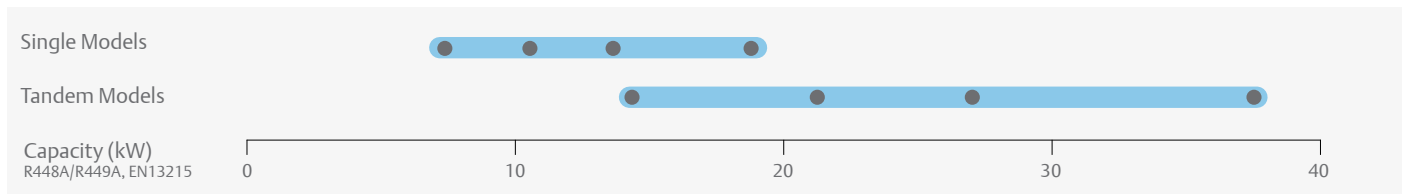
Eight models with single or tandem compressors cover the need of medium temperature refrigeration capacities in various applications. The continuous capacity modulation always provides the right performance, especially for systems with multiple evaporators and variable loads. The remote condenser concept allows for optimal building integration.



Digital receiver unit HLR



Digital Receiver Unit HLR Line-up



Features and Benefits

- Standard equipment: digital scroll compressor, liquid receiver, liquid line with filter drier and sight glass, HP/LP switch, complete electrical box including controller with overload protection and communication interface
- Continuous capacity modulation 10-100 % (Single) or 5-100 % (Tandem)
- Precise suction pressure control
- Maximum system flexibility by free choice of third party condensers
- Excellent energy efficiency
- High reliability
- Easy and quick installation
- Suitable for multiple refrigerants: R407A/F, R448A/R449A, R404A, R134a, R450A and R513A

Maximum Allowable Pressures (PS)

- Low Side PS 22.5 bar (g)
- High Side PS = 28/32 bar (g)

Semi-Hermetic Refrigeration Units K/L Compressors

Copeland™ air-cooled indoor refrigeration units for medium temperature and low temperature applications.

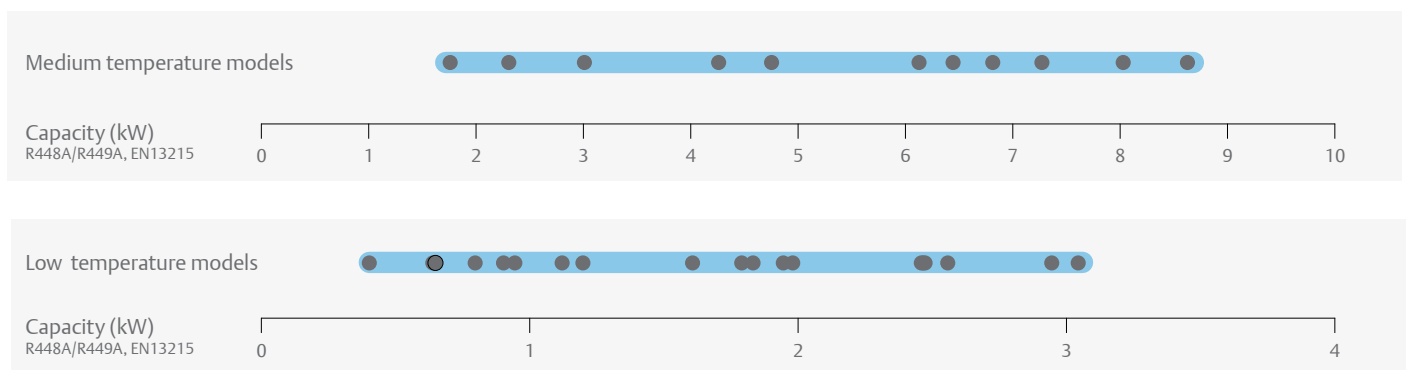
Long-term engineering and manufacturing experience has led to these refrigeration units with reed valve technology compressors. Their excellent quality and reliability is traditionally well known in the refrigeration industry.

This series of refrigeration units is equipped with single fan or twin fans which allows for very compact dimensions. The wide range of models offers solutions for most applications including operation in extreme conditions like high evaporation temperatures and high ambient temperatures.



Semi-hermetic refrigeration unit K/L compressors

Semi-Hermetic K & L Refrigeration Units Line-up



Features and Benefits

- Standard equipment: compressor, condenser with thermally protected fan(s), discharge line with flexible pipe loop or vibration absorber, liquid receiver with shut-off-valve, HP/LP switch with automatic reset
- Suitable for a broad range of refrigerants: R407A/F, R404A and R134a
- Wide range of quality accessories
- Proven reliability

Maximum Allowable Pressures (PS)

- Low Side PS 22.5 bar (g)
- High Side PS = 28 bar (g)

Refrigeration Units With Semi-Hermetic Discus™ Compressors

Copeland™ air-cooled indoor refrigeration units for medium temperature and low temperature applications.

In a further approach to improve compressor performance and reduce compression losses, Emerson engineers developed the Discus valve technology.

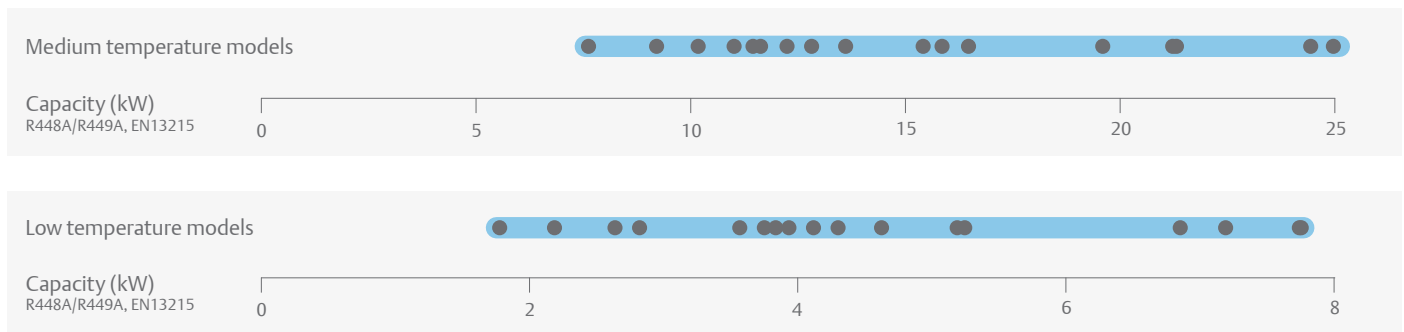
This series of refrigeration units is equipped with 2 or 3 cylinder semi-hermetic compressors with Discus valve technology. The models are specifically suitable for those applications where high efficiency and low energy consumption is required.

The wide range of compressor models combined with 2 or 4 fan high capacity condensers covers most application needs of low temperature and medium temperature applications.



Refrigeration units with semi-hermetic Discus compressors

Discus Refrigeration Units Line-up



Features and Benefits

- Standard equipment: Discus compressor, condenser with thermally protected fan(s), discharge line with flexible pipe loop or vibration absorber, liquid receiver with shut-off-valve, HP/LP switch with automatic reset, oil pressure safety control OPS2
- Suitable for multiple refrigerants: R407A/F, R448A/R449A, R404A, R134a, R450A and R513A
- Wide range of quality accessories
- Excellent efficiency
- Proven reliability

Maximum Allowable Pressures (PS)

- Low Side PS 22.5 bar (g)
- High Side PS = 28 bar (g)

Refrigeration Units With Semi-Hermetic Stream Compressors

Copeland™ air-cooled indoor refrigeration units for low, medium and high temperature applications.

This series of refrigeration units is equipped with 4 or 6 cylinder high performance semi-hermetic Stream compressors. These models are specifically suitable for those applications where high efficiency and reliability is required to achieve low lifecycle costs.

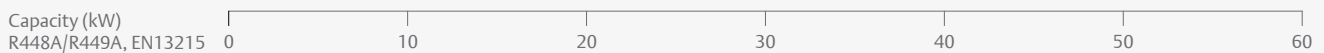
Multiple refrigerant approvals and wide range of accessories improve flexibility in system design.



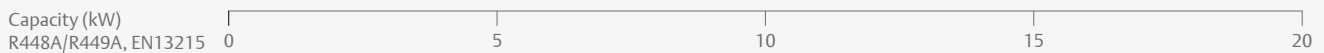
Refrigeration units with semi-hermetic Stream compressors

Refrigeration Units with Stream Compressor Line-up

Medium temperature models



Low temperature models



Features and Benefits

- Standard equipment: Stream compressor, condenser with thermally protected fan(s), discharge line with flexible pipe loop or vibration absorber, liquid receiver with shut-off-valve, HP/LP switch with automatic reset.
- Suitable for multiple refrigerants: R407A/F, R448A/R449A, R404A, R134a, R450A and R513A
- Wide range of quality accessories
- Excellent efficiency
- Proven reliability

Maximum Allowable Pressures (PS)

- Low pressure side = 22.5 bar
- High pressure side = 28 bar