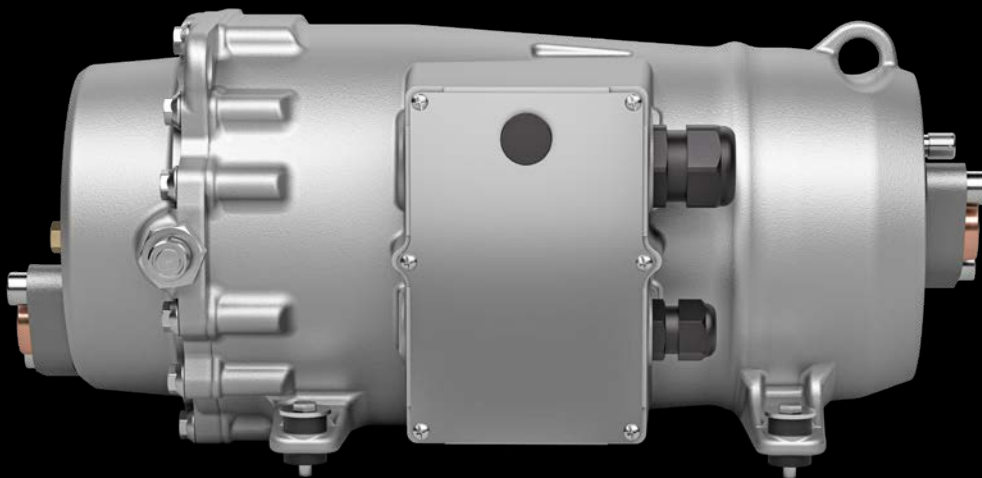




DAS HERZ DER FRISCHE

HORIZONTAL SCROLL COMPRESSOR  
**SPEEDLITE ELV52**

ESP-320-1 EN



AIR  
CONDITIONING



HEAT  
PUMPS



PROPANE

# BITZER. EXPERTISE AND INNOVATION.



AIR CONDITIONING



HEAT PUMPS



REFRIGERATION



PROCESS COOLING



TRANSPORT

We at BITZER are always striving for the highest possible energy efficiency and quality. As the world's leading independent company active in the field of refrigeration, air conditioning and process cooling as well as transport, we use our collective genius to provide the market with innovative products and intelligent solutions, with the aim of generating value for our partners and the environment worldwide.



INNOVATION DRIVER SINCE

1934

EMPLOYEES

> 4000

SITES

75

COUNTRIES

37

Learn more at [bitzer.de](http://bitzer.de)

# SPEEDLITE ELV52

## COMPACT SOLUTION FOR BUS AND RAIL

Light, efficient, adjustable and eco-friendly, the new SPEEDLITE ELV52 is the ideal total package for mobile air conditioning and heat pump systems. BITZER developed the scroll compressor specifically for mobile applications such as electric buses and rail vehicles as well as for other compact systems.



### COMPREHENSIVE PRODUCT PACKAGE

- // 50 per cent lighter than comparable compressors
- // Best capacity-to-weight ratio
- // Highly efficient suction gas cooled permanent magnet motor
- // Speed control for flexible adjustment in line with changing operating conditions
- // Maximum convenience, high performance and silent operation
- // Expanded application range thanks to optional economiser technology
- // Future-proof with Low-GWP and natural refrigerants
- // Reliable and powerful in low ambient temperatures
- // Ideal compressor for heat pumps with high efficiency and low operating costs

### AHEAD OF ITS TIME

The future of mobility is electric, which is exactly why the SPEEDLITE ELV52 was developed. The optional economiser technology ensures reliability and efficiency even in applications in which traditional scroll compressors often reach their limits – for example when ambient temperatures are low. With SPEEDLITE ELV52, end users can effortlessly fulfil all of the environmental regulations such as the F-Gas Regulation, as they can choose from many different refrigerants, including numerous Low-GWP substances and the natural refrigerant propane (R290).

### » LIGHTWEIGHT AND ROBUST

The SPEEDLITE ELV52 is specially designed for changing conditions in bus and rail applications. Thanks to speed control, you can adjust the scroll compressor to specific regional and seasonal cooling and heating capacities with high precision. Regardless of the conditions outside, passengers will always enjoy maximum comfort inside. With its robust aluminium design, the BITZER scroll compressor is 50 per cent lighter than comparable products, which noticeably increases the range of electric buses.

## HEAT PUMPS



With high efficiency, a wide application range and eco-friendly refrigerant, the SPEEDLITE ELV52 makes heat pumps more economical and sustainable than electric heating.

## AIR CONDITIONING



With precise speed control, silent operation and future-proof technology, the SPEEDLITE ELV52 offers stepless adjustment to accommodate all operating conditions. The technology is ready for use with Low-GWP and natural refrigerants, ensuring suitability well into the future.

## PERFECT PERFORMANCE FOR MOBILE APPLICATIONS

## BUSES



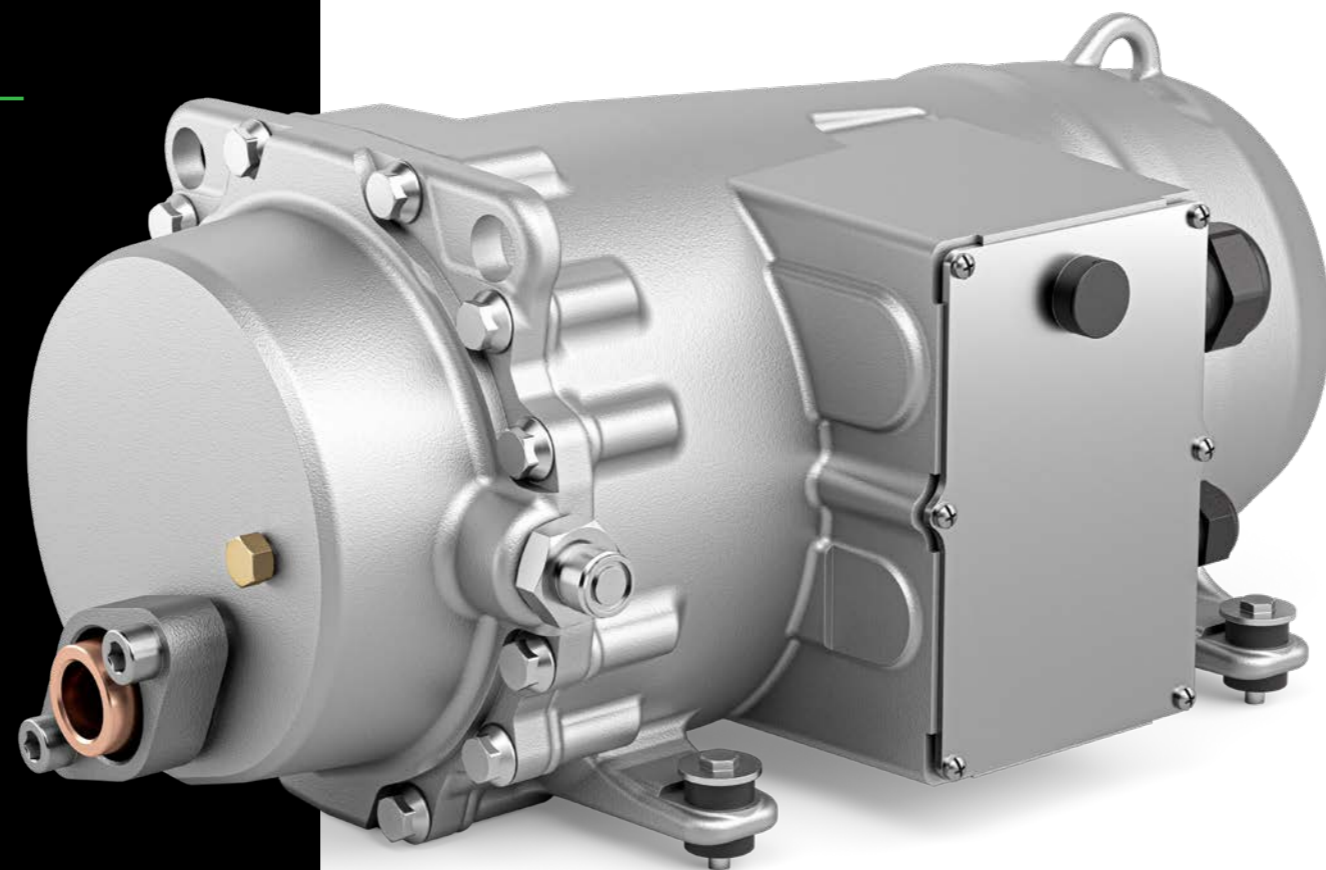
With low weight, a compact design and high efficiency, the SPEEDLITE ELV52 is specially designed for mobile applications and increases the range of electric buses.

## RAILWAYS



With its robust design, reliable operation and greater efficiency, the SPEEDLITE ELV52 permanently reduces the investment and operating costs of air conditioning and heating systems on railways.

# SPEEDLITE ELV52: OPTIMAL TEMPERATURES IN BUS AND RAIL



**+ COMPACT AND LIGHTWEIGHT**  
OPTIMAL WEIGHT-TO-CAPACITY RATIO

**+ ULTRA-SMOOTH OPERATION**  
VERY LOW SOUND AND VIBRATION LEVELS

**+ GREATER COOLING AND HEATING CAPACITY**  
ECONOMISER EXPANDS APPLICATION LIMITS

**+ GREATER RANGE**  
HIGH CAPACITY AND LOW WEIGHT INCREASE RANGE

A whole new level of mobile air conditioning. The durable, lightweight SPEEDLITE ELV52 reduces costs and offers signature BITZER quality. With its stepless speed control and suction gas cooled permanent magnet motor, the scroll compressor is superior, powerful and efficient regardless of the operating conditions. The large selection of Low-GWP and natural refrigerants makes the SPEEDLITE ELV52 both flexible and future-proof.

**» The durable SPEEDLITE ELV52 is perfect for mobile applications, thanks to the compact, lightweight and robust design as well as operation with minimal vibration and sound.**

#### MOTOR

Much higher power density and efficiency than asynchronous motors. The SPEEDLITE ELV52's suction gas cooled permanent magnet motor offers outstanding power density and enables the scroll compressor's compact, lightweight design and energy-saving operation.

#### ECONOMISER

More power. One of the highlights of the SPEEDLITE ELV52 is the economiser, which expands the scroll compressor's application range, increases efficiency and improves cooling and heating capacity. Ideal for use on buses and railways. The SPEEDLITE ELV52 is always reliable, even when ambient temperatures are low or fluctuate.

#### SPEED CONTROL

Wide speed range and stepless adjustment. With up to 7500 revolutions per minute, the SPEEDLITE ELV52 can be optimally adjusted to accommodate all regional and seasonal operating conditions. The result is perfect cooling and heating capacity for maximum travel comfort with silent operation.

#### FUTURE-PROOF

The ideal solution for mobile applications. The SPEEDLITE ELV52 boasts a corrosion-resistant aluminium design that is both lightweight and compact. The scroll compressor is durable and designed for use with Low-GWP and natural refrigerants, making it a future-proof investment for end users.

# SPEEDLITE ELV52: THE IDEAL PACKAGE FOR BUS AND RAIL

## FUTURE-PROOF

The use of a wide range of refrigerants ensures the longevity of the SPEEDLITE ELV52: R290, R134a, R407C, R1234yf, R513A

## LIGHTWEIGHT ALUMINIUM DESIGN

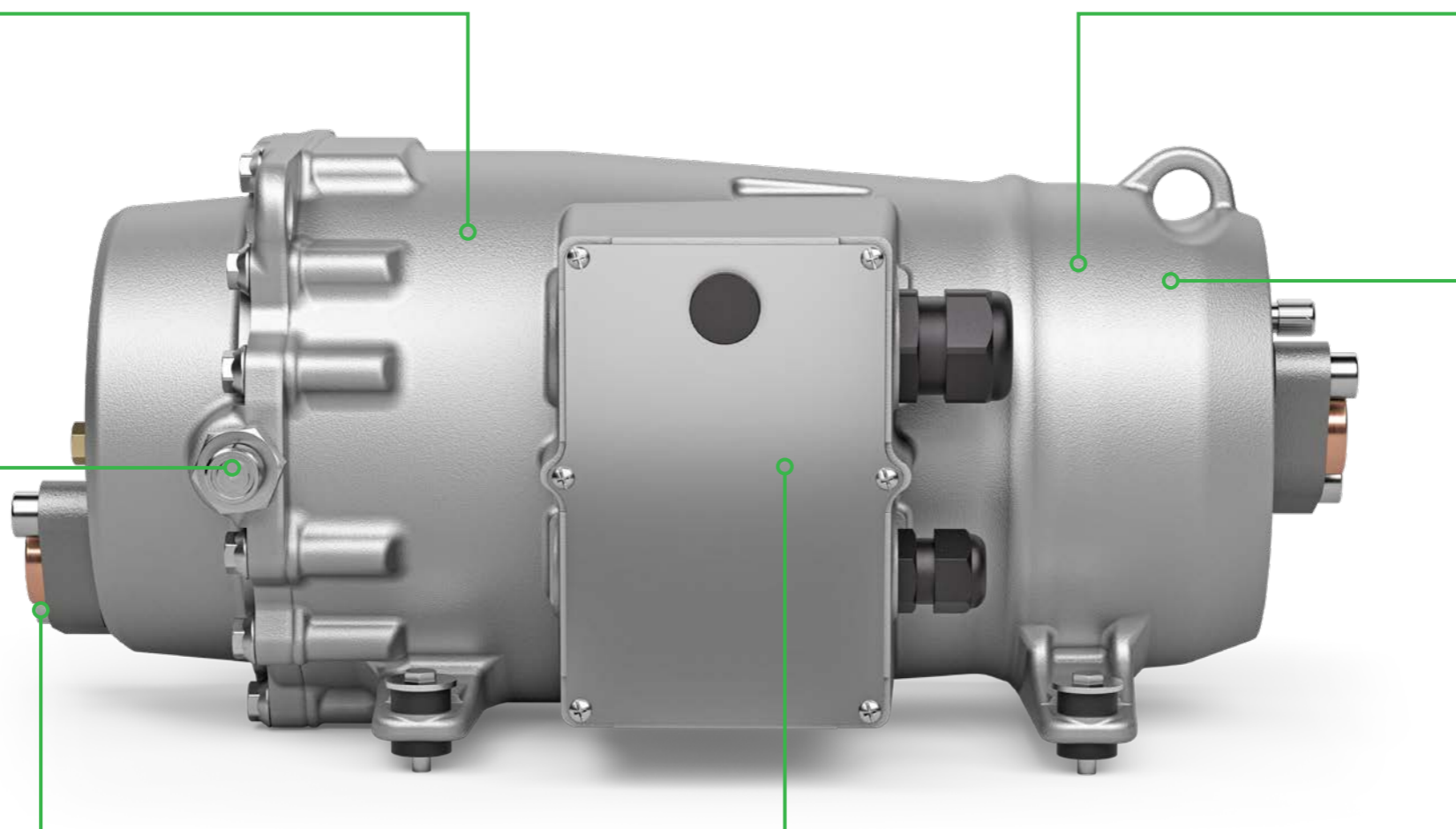
- // Compressor weighs only 35 kg thanks to aluminium body and components
- // Excellent corrosion resistance extends lifetime and leads to reduced life-cycle costs
- // Low weight contributes to the highest capacity-to-weight ratio on the market

## ECONOMISER

- // Economised vapour injection technology
- // Increased capacity of up to +23% and efficiency of up to +15% under typical AC and heat pump operating conditions
- // Enlarged application envelopes allow use in applications like heat pumps under demanding conditions

## USER-FRIENDLY CONNECTIONS AND POSITIONS

- // Optimised positions of suction, discharge and economiser ports as well as electrical connections
- // Allows for a space-saving design of the AC or heat pump unit



## ROBUST COMPRESSOR DESIGN FOR A LONG SERVICE LIFE

- // Oil mist lubrication principle
- // Maintenance-free
- // No oil heater necessary
- // Superior bearings and spiral design
- // IP67-certified

## LOW HEIGHT

- // Horizontal compressor design
- // Elevated position of the mounting feet ensures reduced overall height
- // Highly efficient motor leading to reduced overall compressor size

## HIGHLY EFFICIENT PERMANENT MAGNET MOTOR

- // Increased compressor efficiency
- // High power density of the suction gas cooled PM motor leads to a compact and lightweight design
- // Maximum energy efficiency lowers operating costs and CO<sub>2</sub> emissions and extends the range of electric buses

## VARIABLE SPEED OPERATION

- // Operation with frequency inverter
- // Broad speed range of 2500 to 7500 rpm
- // Cooling and heating capacity can be perfectly adapted to increase passenger comfort
- // Adaptation of cooling or heating capacity leads to increased efficiency of the system
- // Optional integrated motor protection device
- // Low sound emissions and vibrations

## TECHNICAL DATA

ELV(E)5243Y-40M	
Motor type	IPM
Rated voltage	3 phase 0–390 VAC
Control	Sensorless (open-loop)
Max. operating current	32 A
Max. power input	20 kW
Compressor type	Semi-hermetic scroll compressor
Displacement @ 7500 min <sup>-1</sup>	43 m <sup>3</sup> /h
Refrigerants	R134a, R407C (R290, R1234yf and R513A starting from 2024)
Oil type	BSE55 (R134a, R407C), B-PAG 100 (R290)
Oil charge	600 ml (additional oil charge can be required, individual system evaluation necessary)
Compressor speed	2500–7500 min <sup>-1</sup>
Weight	35 kg
Max. pressure LP/HP	19/30 bar
Protection class	IP67
Max. ambient temperature	–30°C .. 70°C
Inclination angle	+/-10° in axial and radial direction (larger inclination angle on request)
Displacement	94.8 cm <sup>3</sup> /rev
Rotation direction	Right
Vibration damper	BITZER can offer a standard damper* with a hardness of 40 Shore A
Economiser function	Optional (further information on request)
Functional earthing	Proper earthing required, please see operation manual

\* The system designer must confirm whether the standard dampers can fulfil the specific application requirements.

## MOTOR PROTECTION DEVICE

SE-B3	SE-B2	SE-B2
110–240 V, 50/60 Hz	24 V, 50/60 Hz	24 V DC

The standard configuration consists of the SE-B2 with 24V DC. Supply without motor protection device on request. Approved ambient temperature –30 .. 60°C.

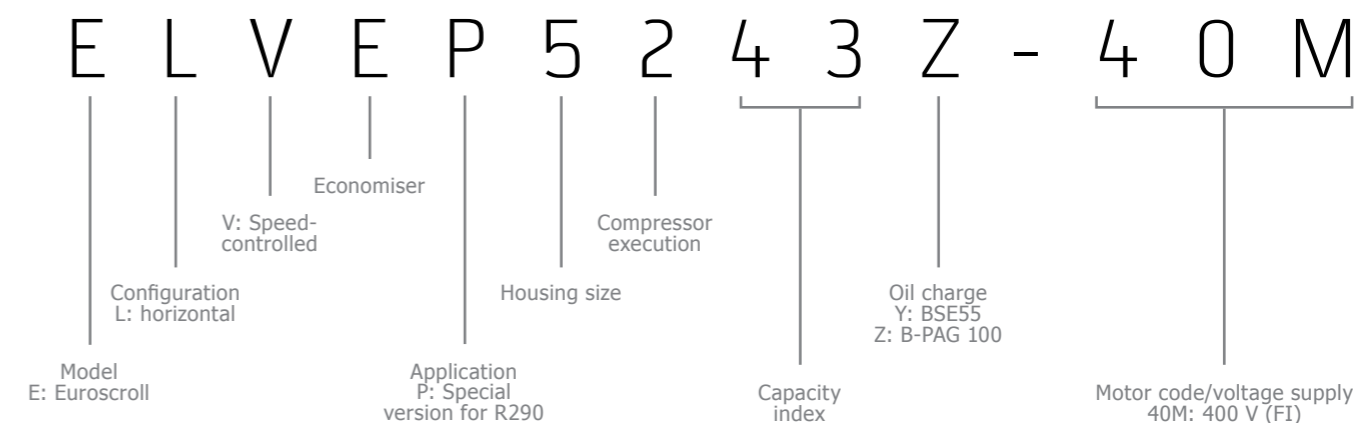
## SOUND PRESSURE LEVEL

ELV(E)5243Y-40M					
Refrigerant: R407C; inverter operation					
t <sub>o</sub> [°C]	t <sub>c</sub> [°C]	Δt <sub>oh</sub> [K]	Speed [min <sup>-1</sup> ]	Sound pressure level [dB(A)]*	Sound power level [dB(A)]
5	50	10	5000	62,9	70,9
5	50	10	7500	67,3	75,3

Tolerance +/- 2 dB(A)

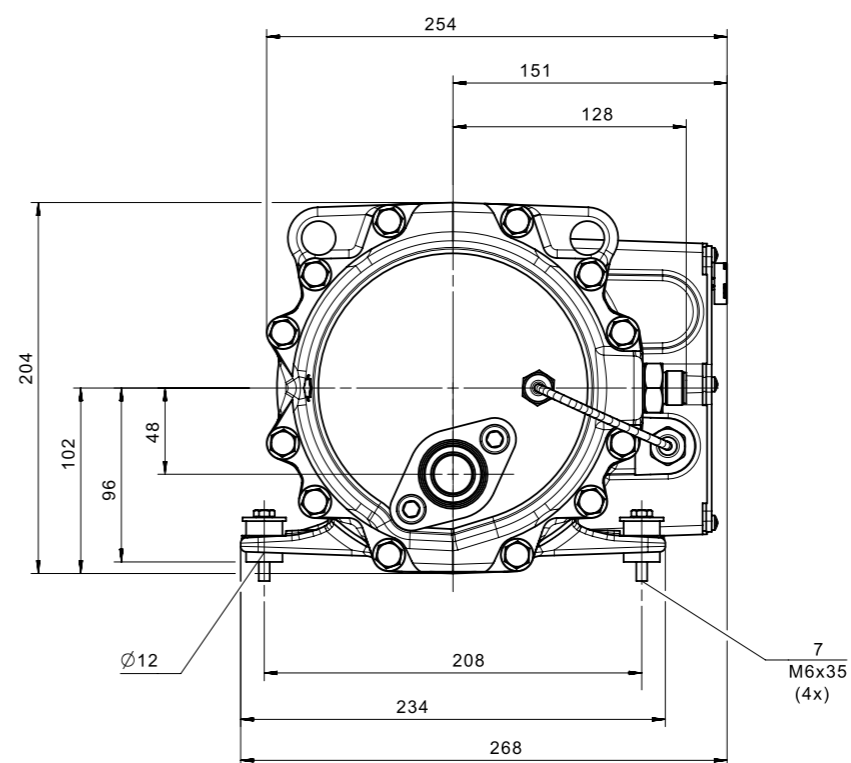
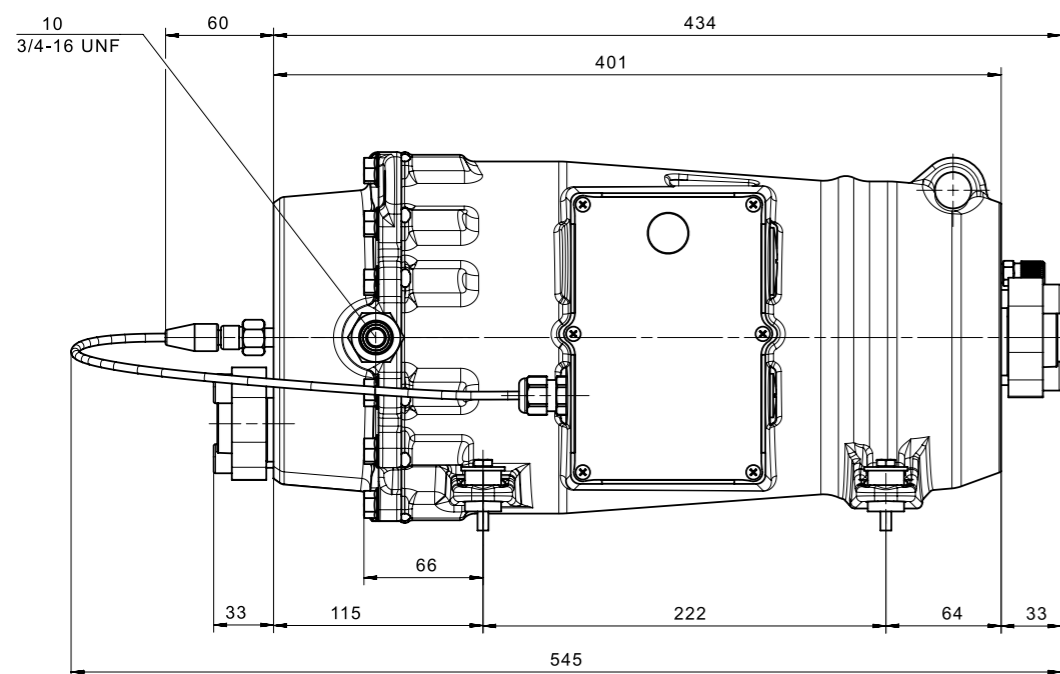
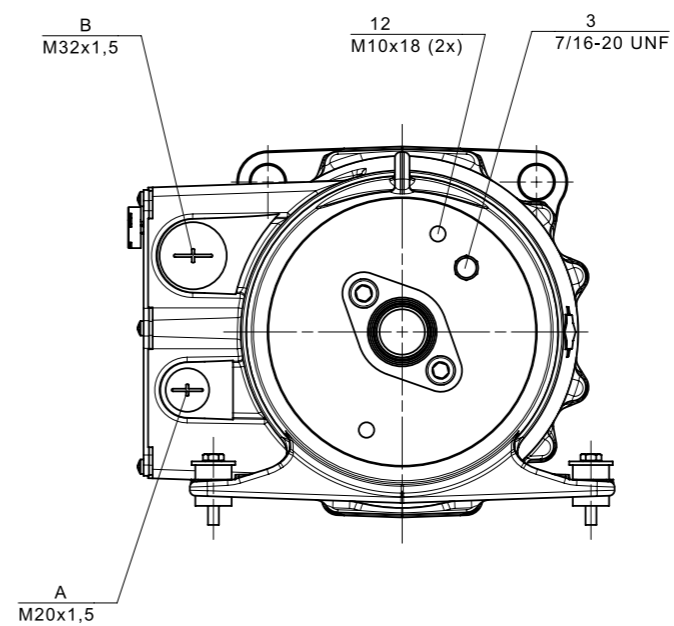
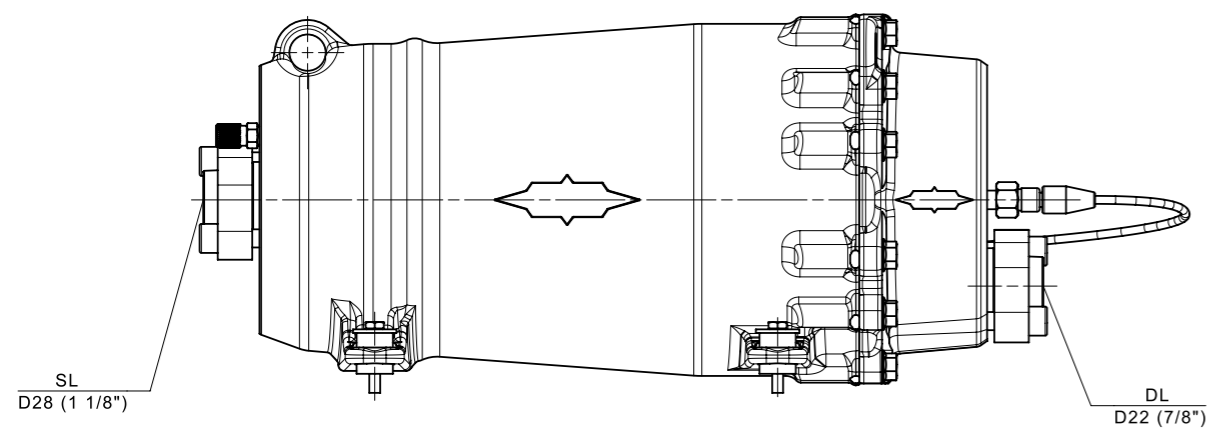
\* Based on free-field area with hemispherical sound emission in 1 m distance

## EXPLANATION OF TYPE DESIGNATION



# DIMENSIONS

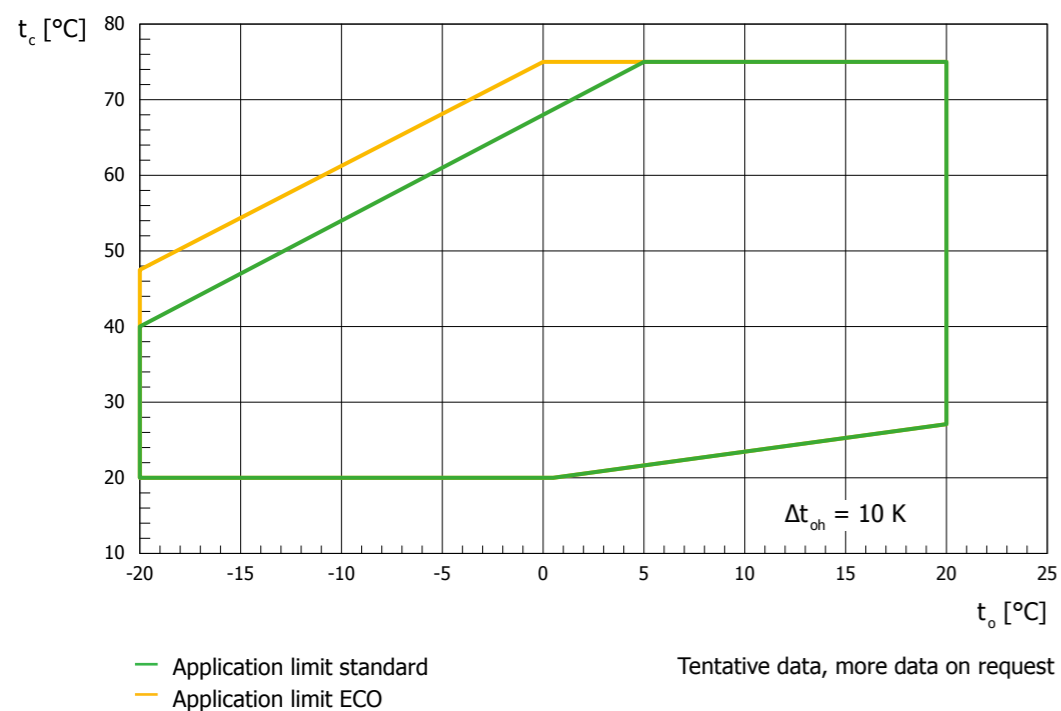
ELV(E)5243Y-40M



	Suction SL	Discharge DL	Eco port 10
ELV5243Y-40M	28 mm (1 1/8")	22 mm (7/8")	-
ELVE5243Y-40M	28 mm (1 1/8")	22 mm (7/8")	Rotalock 3/4"-16UNF

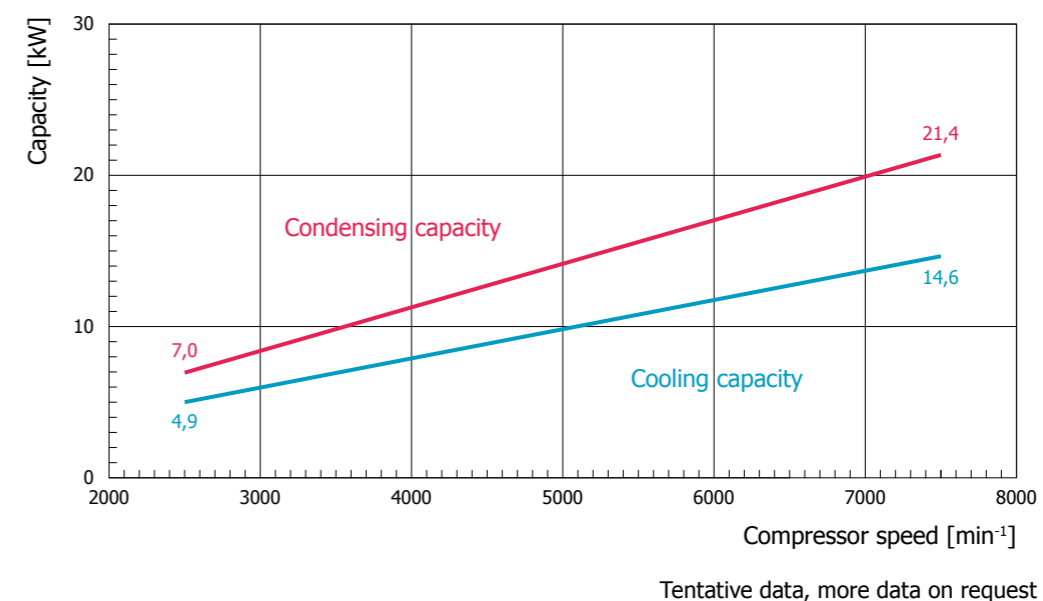
## APPLICATION LIMITS

### R134a

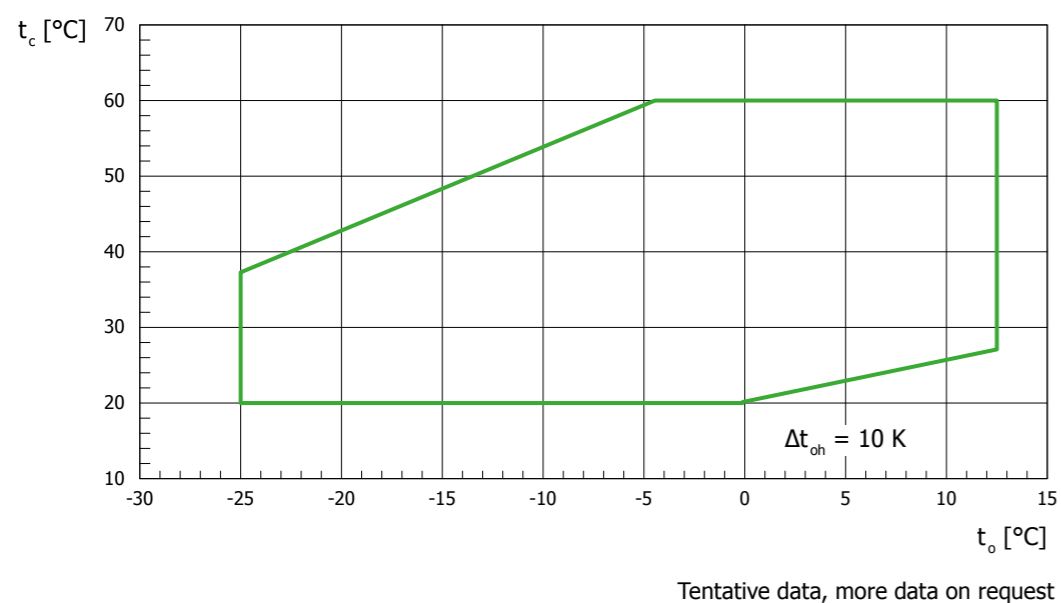


## PERFORMANCE DATA

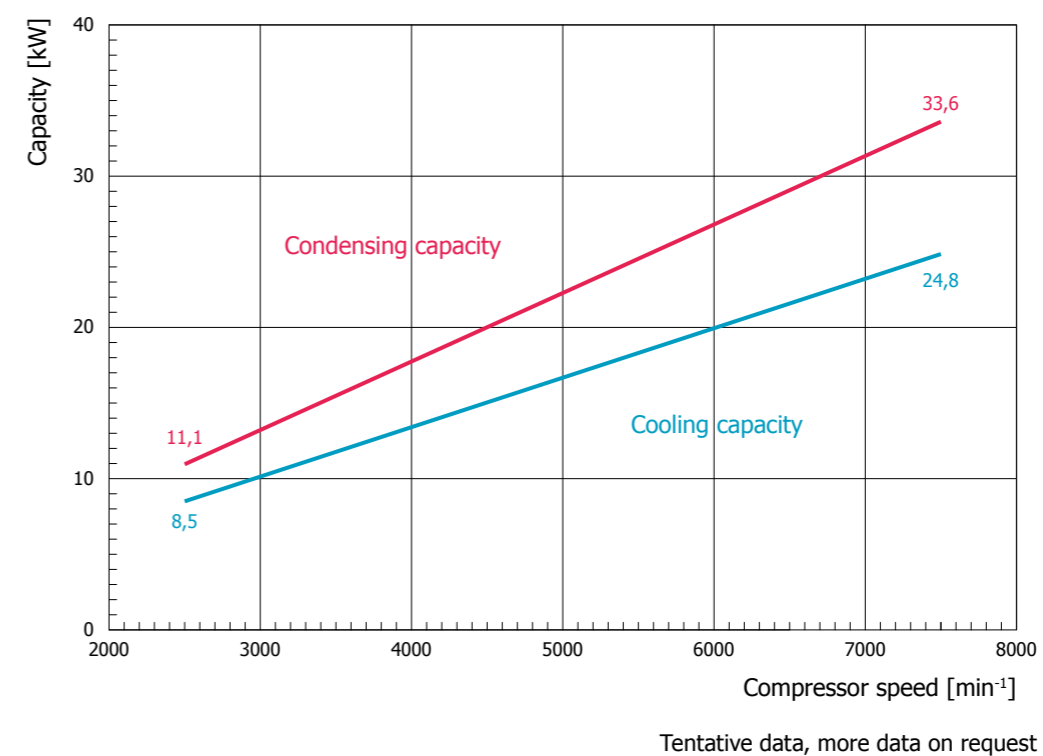
### Capacity range: R134a -10°C/40°C/10 K



### R407C



### Capacity range: R134a 5°C/50°C/10 K





# BITZER DIGITAL NETWORK

## CONNECTED TO YOUR BITZER PRODUCTS

BITZER Digital Network (BDN) offers you easy access to valuable digital services relating to BITZER products for refrigeration and air conditioning. This provides you with important product and application-related information on all the BITZER products you're using, including, among others, data analyses and compressor operation reports. And with it, usable findings with which you can optimise the most important aspects of the cooling systems.



- // 360° product information
- // Tracking of service activities
- // Operation report
- // Real-time data
- // Notification
- // Flexible access rights



# BITZER ON-SITE SERVICES

## WE OFFER SOLUTIONS BEYOND THE ORDINARY



- // Warranty extension for up to five years
- // Free one-year warranty extension for BITZER IQ products
- // Commissioning assistance for excellent results



- // Assessment services for extended lifetimes
- // Retrofitting solutions for secure investments
- // Refrigerant compliance and strategy consulting

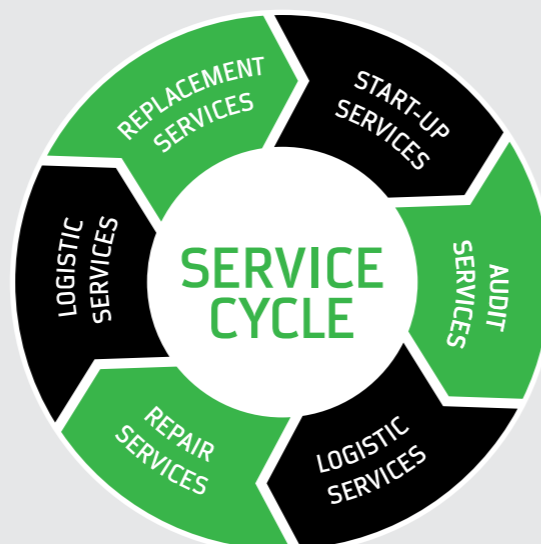


A SERVICE BY BITZER GROUP

## ALWAYS THERE FOR YOU

The global service network comprises more than 50 locations. Everywhere, our specialists maintain, overhaul and repair BITZER compressors, replace wear and safety-relevant parts and stock BITZER ORIGINAL SPARE PARTS AND OIL. Highly committed engineers ensure that the service cycle is always precisely and perfectly executed.

[bitzergreenpoint.com](http://bitzergreenpoint.com)



# THE SCHAUFLENER ACADEMY

## PRACTICABLE SOLUTIONS FOR A CHALLENGING INDUSTRY

At the SCHAUFLENER Academy, the international seminar and training centre of BITZER, you will find German and English seminars and training courses regarding the handling of refrigeration and air conditioning components and alternative refrigerants. Not only service and installation specialists can rely on our training courses but also project engineers, planners and technical engineers.



The SCHAUFLENER Academy offers you training courses in small groups with theoretical contents and practical exercises on real training systems. Motivated and experienced teaching staff are available to answer questions and respond to your needs. This and the pleasant and professional environment lead to fast learning success. We are looking forward to your visit.



Standing for education and knowledge transfer, we consider it as our responsibility to provide information about our products, applications, tools and basics. In cases where in-person training is not possible, we can still provide you with some content to learn from home or in the office with our e-learning seminars.



## VISIT US ONLINE AND BOOK YOUR TRAINING COURSE

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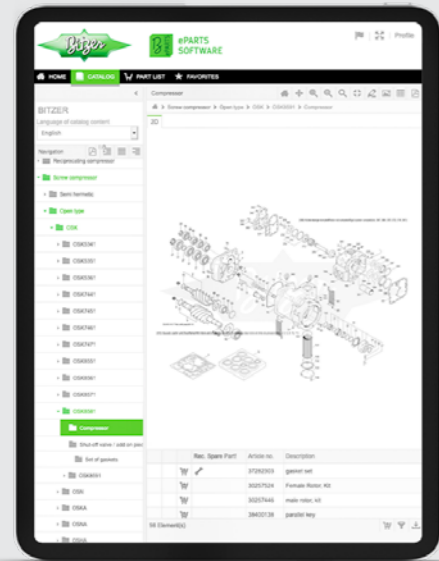
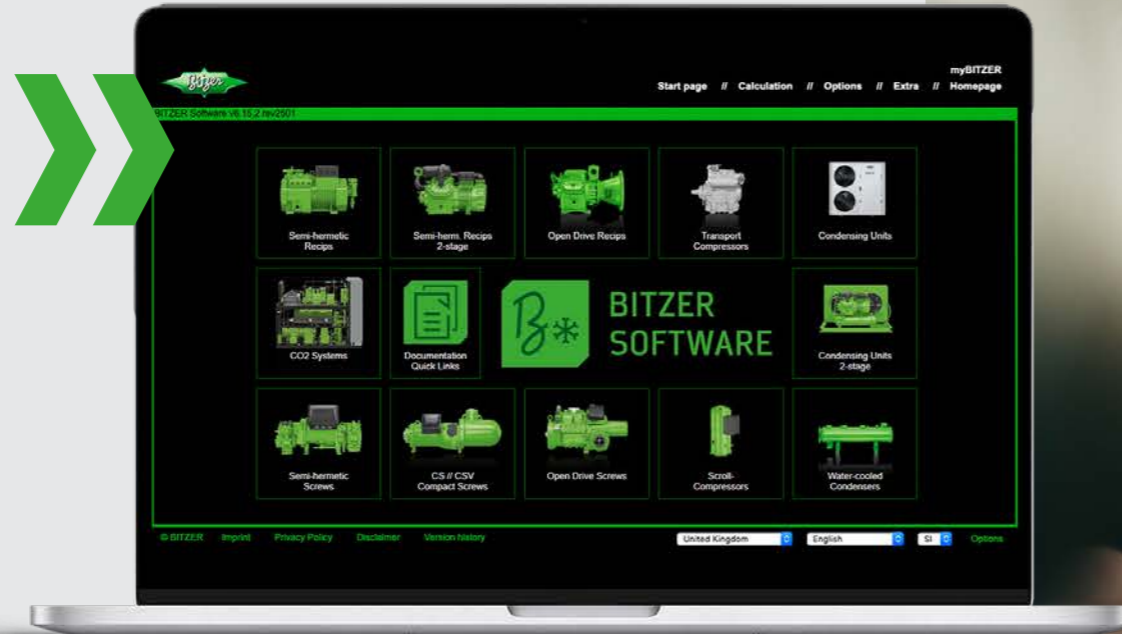
# A PLUS FOR YOU



## BITZER SOFTWARE

CHOOSE THE RIGHT PRODUCTS AND FIND MORE DETAILED TECHNICAL DATA

Available online and as a downloadable version, BITZER SOFTWARE will help you select the appropriate BITZER product from our extensive and flexible product range.



## EPARTS SOFTWARE

FIND SUITABLE SPARE PARTS EASILY

Our free-of-charge tool makes finding the appropriate spare parts for our products fast and easy. The parts are listed according to the type range and appear as a simple zoomable exploded-view drawing.



## BEST APP AND BEST SOFTWARE

OPERATE YOUR BITZER IQ PRODUCTS WITH ONLY ONE SOFTWARE TOOL

BEST provides comprehensive access to all operating data and parameters. The intuitive user interface provides a complete overview of the operating status and a data log for easy maintenance and service.

## FIND YOUR PLUS:



BEST APP



BEST SOFTWARE



BITZER SPOT APP



BITZER SOFTWARE



REFRIGERANT RULER APP



ePARTS SOFTWARE



BITZER Software



BITZER Apps

## LOCALLY ANCHORED. GLOBALLY PRESENT.



FIND YOUR NEAREST BITZER LOCATION AND GET IN TOUCH WITH US

BITZER is represented in more than 90 countries with 72 locations and over 3900 employees. You can find your personal contact representative and nearest location by scanning the QR code on the right, clicking on the map on our website or using the search function there. You can also get in touch with the global contact representative at all times.



CLOSER TO YOU.  
BITZER WORLDWIDE.



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