



Cool boxes and accessories



TM Company – New marketing concept



TM – Specialist

Known as a refrigeration and small-scale assembly specialist, **TM** perfectly serves its niche markets in particular. Product solutions are designed and implemented in-house and independently or manufactured according to the customer's detailed specifications.

Our products are used in mobile as well as static installations. Speed, flexibility and many years of experience in manufacturing and development make the company a strong and reliable partner in the industry.

TM – Company

The owner-run family business **TM Technischer Gerätebau GmbH** was originally developed from an electrical wholesalers which still exists to this day. The company, which was officially launched by Hermann Fixl in 1991, started off by constructing cool boxes for the automotive industry and developed into what it is today. **TM** has its headquarters in Neu-Ulm and is now run by the fourth generation of the founding family.

TM – Products

Since its founding, **TM** has been producing components for mobile passenger services, mainly used in buses as well as in trucks and rail vehicles. **TM** has developed product solutions for a wide range of applications over the years and has firmly established itself in a wide range of industries such as, for example, in the field of fully automatic coffee machines.

The wide-ranging product portfolio includes the classic dashboard cool box, board kitchens and toilets for the bus industry as well as milk coolers for coffee machines, and many more.



TM – International

In 2007, **TM** established a subsidiary company near Istanbul to respond to increasing globalisation and the integration of markets. **TM-Turkey** mainly operates in the expanding bus and truck sector in its home market, as well as in neighbouring Arab countries.

In the same year, Jincen-**TM** was established as a joint venture company in China's Anhui Province to serve the Chinese market and to create more synergies. The Chinese company is mainly focused on producing injection moulded parts for the automotive, electrical and household industries as well as assembling on-board kitchens and cool boxes.

Being close to our customers and quick response times are of paramount importance for **TM** so our customers can rely on a Europe-wide network of service partners. **TM** can guarantee a seamless and fast on-site service through the continuous expansion of our partners.



TM – Philosophy

TM Technischer Gerätebau GmbH is a family-run business, distinguished by our short and direct lines of communication, as well as continuity.

From product design, through quality assurance of the materials used, right up to the final product test, we place the highest value on the perfect processing and precision of our products. Naturally, our products are certified according to relevant EU directives as well as our quality management system being certified according to ISO guidelines.



TM – Customer satisfaction

Innovative concepts to a high technical standard, together with excellent materials and processing quality, create outstanding products. Our product solutions are constantly setting new standards due to their functionality, compact dimensions and attractive design.

Experience, reliability, quality and long-term success are the building blocks of the current product range and the foundation for satisfied customers throughout the world.





On the way home



Cool boxes by TM

We have a wide variety of cool boxes for you to choose from.
We are happy to advise you – ask our specialists!

Bus and truck cool box available over-the-counter

Universal and mobile cool box for bus and truck
KBU series: For the installation in e.g. mini and midibuses

Type KBU 15 horizontal

		order no.:	01.1515.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	15,5 kg
		volume:	15 l

Type KBU 15 vertical rear

		order no.:	01.1516.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	15,5 kg
		volume:	15 l

Type KBU 15 vertical below

		order no.:	01.1517.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	15 kg
		volume:	15 l

Type KBU 40

		order no.:	01.1570.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	22 kg
		volume:	40 l

Bus and truck cool box available over-the-counter

Type KBU 40 with handle

		order no.:	01.1577.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	22 kg
		volume:	40 l

Type KBU 40 installation

		order no.:	01.1572.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	22 kg
		volume:	40 l

Type KBU 40 refrigeration unit at the rear

		order no.:	01.1578.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	22 kg
		volume:	40 l

Type KBU 40 horizontal

		order no.:	01.1579.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	22 kg
		volume:	40 l

Bus and truck cool box available over-the-counter

Universal and mobile cool box for bus und truck
KBU series: For the installation in e.g. mini and midibuses

Type KBU standard

		order no.:	01.1559.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	25 kg
		volume:	58 l

Type KBU 60

		order no.:	01.1560.00.00
		voltage:	12/24 V DC
		power:	35 W
		current consumption:	3,0/1,5 A
		weight:	26 kg
		volume:	58 l

Bus and truck cool box available over-the-counter

Universal and mobile cool box for bus und truck
CoolFix series: For the installation in e.g. caravans, boats, mini and midibuses

Type ACTROS – MB Megaspaces driver's cab

		order no.:	01.1400.00.00
		voltage:	12/24 V DC
		undervoltage protection:	10,4/22,8 V
		power:	35 W
		current consumption:	3,0/1,5 A
		thermostat:	infinitely variable
		weight:	12 kg
		volume:	15 l

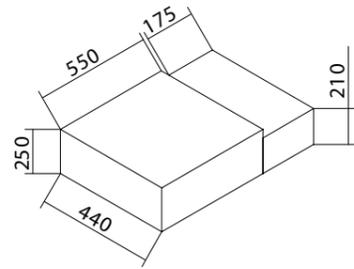
Type CoolFix Mini

		order no.:	01.0210.00.00
		voltage:	12/24 V DC
		undervoltage protection:	11,3 / 24,6 V
		power:	54 W
		current consumption:	4,6 / 2,3 A
		thermostat:	infinitely variable
		weight:	17 kg
		volume:	20 l

Type CoolFix 30

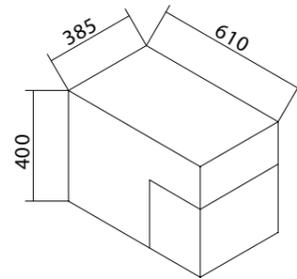
		order no.:	01.0225.00.00
			01.0226.00.00 with separating grid
		voltage:	12/24 V DC
		undervoltage protection:	10,4/22,8 V
		power:	35 W
		current consumption:	3,0/1,5 A
		thermostat:	infinitely variable
		weight:	18 kg
		volume:	30 l
		mounting kit order no.:	01.0225.00.01 universal
			50.0225.00.02 ACTROS not for Megaspaces

**Type CoolFix 35 –
DAF/VOLVO/RENAULT**



order no.:	01.0035.00.00
voltage:	12 / 24 V DC
undervoltage protection:	10,4/22,8 V
power:	60 W
current consumption:	2,6 / 1,3 A
thermostat:	infinitely variable
weight:	16 kg
volume:	35,5 l

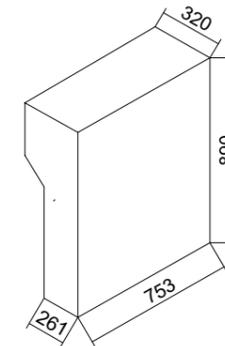
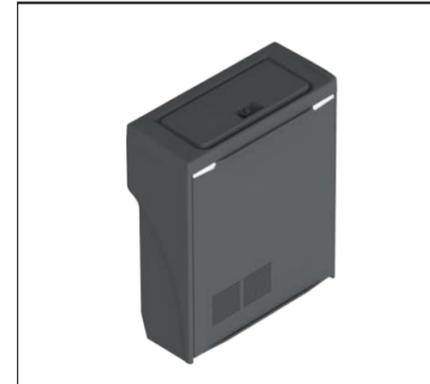
Type CoolFix 41



order no.:	01.0235.00.00
voltage:	12 / 24 V DC
undervoltage protection:	10,4/22,8 V
power:	43 W
current consumption:	2,3 A
thermostat:	electronical
weight:	17 kg
volume:	41 l

**Universal and mobile cool box for bus und truck
KT series: For the installation in e.g. mini and midibuses**

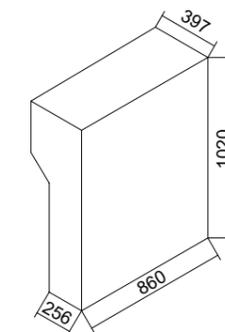
Type KT 80



order no.:	01.4037.00.00
voltage:	12 / 24 V DC
power:	60 W
current consumption:	5,0 / 2,5 A
weight:	42 kg
volume:	80 l

No head crash test, rear passengers must be secured with a three-point seatbelt.

Type KT 100



order no.:	01.3040.00.00
voltage:	12 / 24 V DC
power:	60 W
current consumption:	4,6 / 2,3 A
weight:	56 kg
volume:	100 l

No head crash test, rear passengers must be secured with a three-point seatbelt.

Bus and truck cool box available over-the-counter

Universal and mobile cool box for bus und truck
 Built in cool box: For installation in transporters, trucks and touring coaches e.g. in the dashboard area

Type KT-Outdoor

order no.:	01.2700.00.00
voltage:	12/24/230 V DC
power:	35 W
current consumption:	3,0/1,5/0,5 A
weight:	17 kg
volume:	35 l

Type Transporter cool box

order no.:	01.1451.00.00 01.1452.00.00 RHD
voltage:	12/24 V DC
power:	48 W
current consumption:	3,0/1,5 A
weight:	17 kg
volume:	40 l

Ideal for installation in the dashboard area of transporters and mini/midibuses

Type A-KT TM

order no.:	01.2000.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	60 l

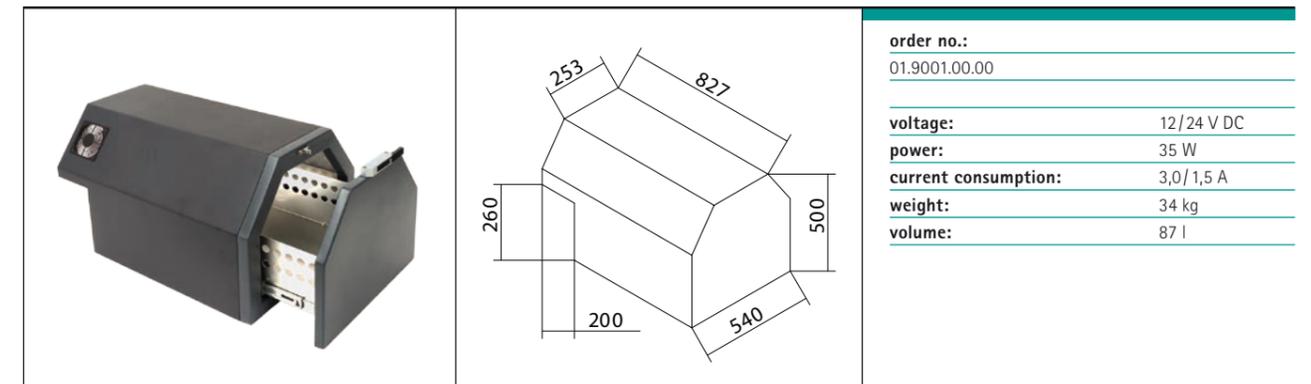
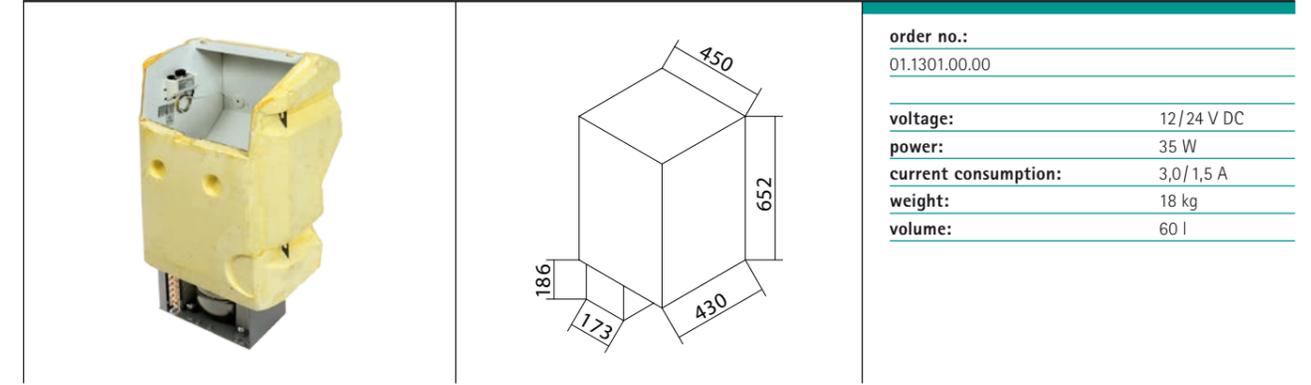
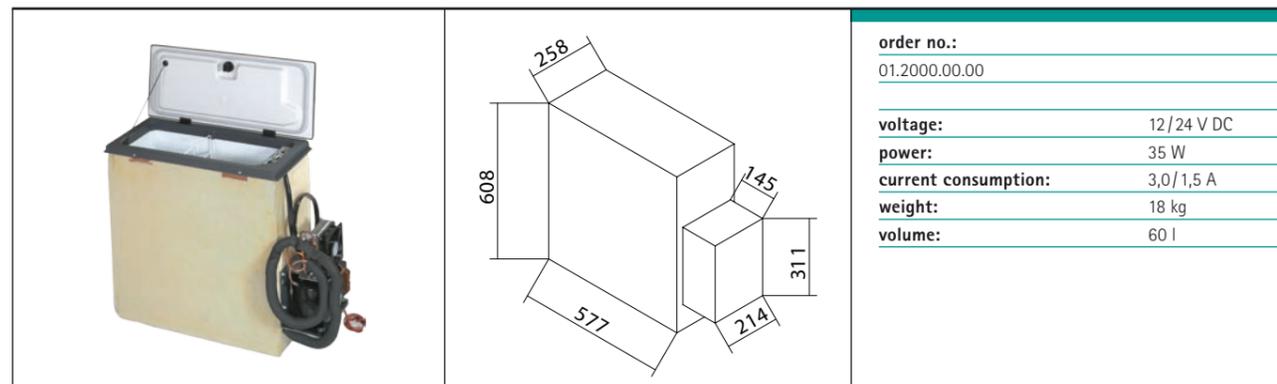
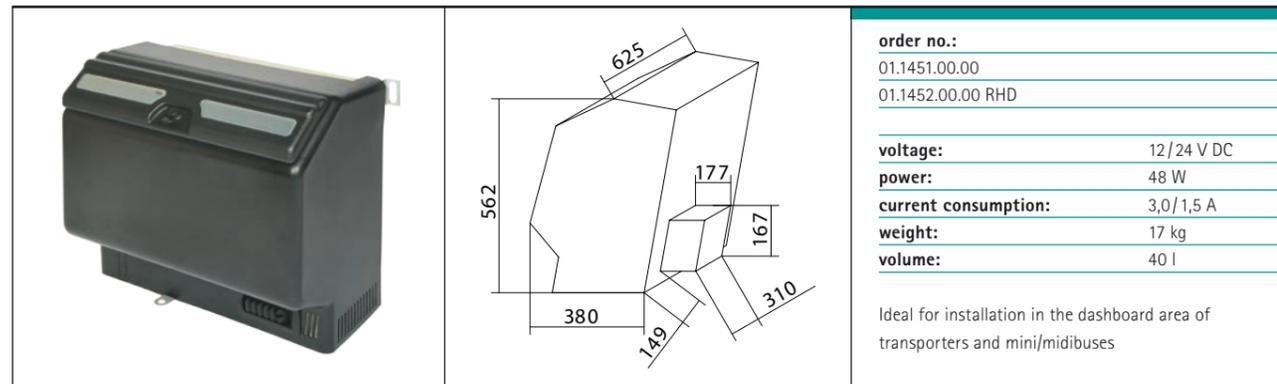
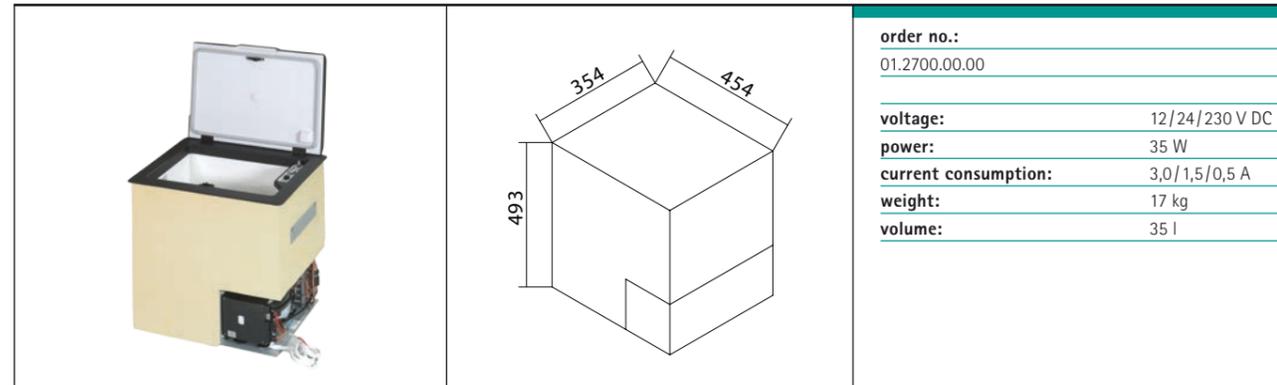
Bus and truck cool box available over-the-counter

Type A-KT Volvo

order no.:	01.1301.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	60 l

Type Trapezoid refrigerator

order no.:	01.9001.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	34 kg
volume:	87 l



Bus and truck cool box available over-the-counter

Refrigerators for bus and truck
KS series: For the installation in e.g. caravans, boats, mini and midibuses

Type KS 49*

order no.:	01.0490.00.00
voltage:	12/24 V DC
undervoltage protection:	10,4/22,8 V
power:	60 W
current consumption:	5,0/2,5 A
weight:	17 kg
volume:	49 l

* not tested in accordance with ECE-R118 regulation

Type KS 100*

order no.:	01.0100.00.00
voltage:	12/24 V DC
undervoltage protection:	10,4/22,8 V
power:	60 W
current consumption:	5,0/2,5 A
weight:	22 kg
volume:	100 l

* not tested in accordance with ECE-R118 regulation

Type KS 130*

order no.:	01.0130.00.00
voltage:	12/24 V DC
undervoltage protection:	10,4/22,8 V
power:	60 W
current consumption:	5,0/2,5 A
weight:	25 kg
volume:	130 l

* not tested in accordance with ECE-R118 regulation

Type TKS 131 Freezer*

order no.:	01.0131.00.00
voltage:	12/24 V DC
undervoltage protection:	10,4/22,8 V
power:	60 W
temperature:	-25°C
current consumption:	5,0/2,5 A
weight:	25 kg
volume:	90 l
insulation:	100 mm

* not tested in accordance with ECE-R118 regulation

Bus and truck cool box available over-the-counter

Mobile cool box for medicine transport
Ambulance series: For the installation in e.g. the side-panel of rescue vehicles

Type Ambulance

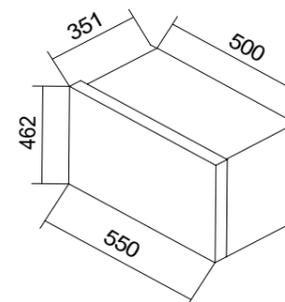
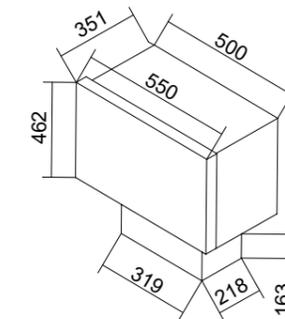
order no.:	01.1210.00.00	normal cooling
voltage:	12/24 V DC	
power:	35 W	
current consumption:	3,0/1,5 A	
weight:	19 kg	
volume:	34 l	
temperature range:	+11,0 to -4,5°C	

order no.:	01.1211.00.00	freezer
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voltage:	12/24 V DC
power:	90 W
current consumption:	7,5/3,8 A
weight:	19 kg
volume:	34 l
temperature range:	+7,5 to -22,0°C

Type Ambulance temperate

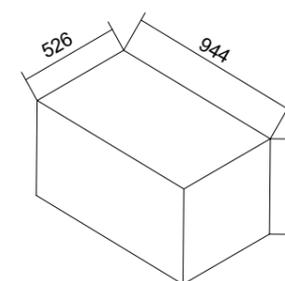
order no.:	S01.1210.00.00	hot cabinet, controllable by thermostat
voltage:	12/24 V DC	
power:	25 W	
current consumption:	2,0 A	
weight:	12 kg	
volume:	34 l	
temperature range:	+30,0 to +35°C	



Mobile cool box for blood and medicine transport
BTK series: For the transportation of e.g. blood samples or other sensitive medicines which need to be cooled from +4°C to +8°C

Type BTK

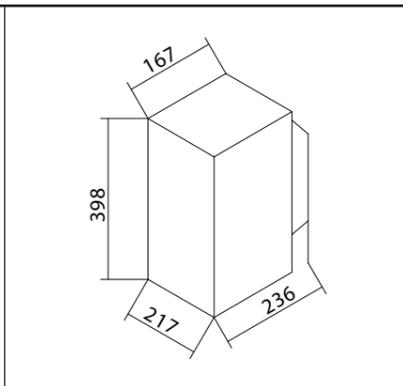
order no.:	01.1215.00.00
voltage:	12/24 V DC
undervoltage protection:	10,4/22,8 V
power:	93 W
current consumption:	7,8/3,9 A
weight:	40 kg
volume:	105 l
temperature range:	+4,0 to +8°C



Bus and truck cool box available over-the-counter

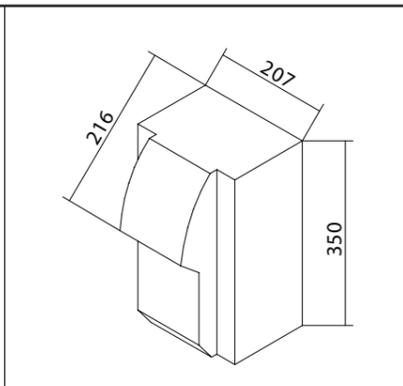
Cool boxes with thermoelectric cooling technology – Peltier
 Summertime series: Abrasion and maintenance free technology, high cooling capacity by a peltier element. Efficiency up to 22° C to ambient temperature.

Type Summertime 2



order no.:	01.0022.00.00 (12 V)
	01.0024.00.00 (24 V)
voltage:	12/24 V DC
power:	36 W
current consumption:	1,5/3,0 A
weight:	2,9 kg
volume:	4,1 l

Type Summertime E

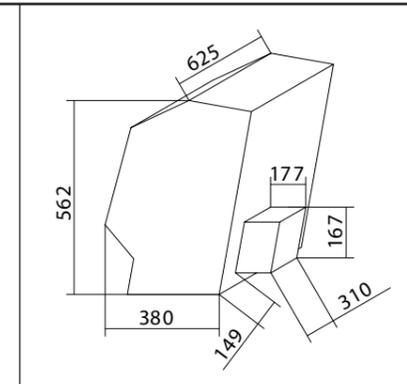


order no.:	01.0016.00.00
voltage:	24 V DC
power:	36 W
current consumption:	1,5 A
weight:	4,5 kg
volume:	4,1 l

Bus and truck cool box customer-specific

Top quality cool box with high-performance, professional cooling technology for every type of bus
 Cool boxes for D'AURIA

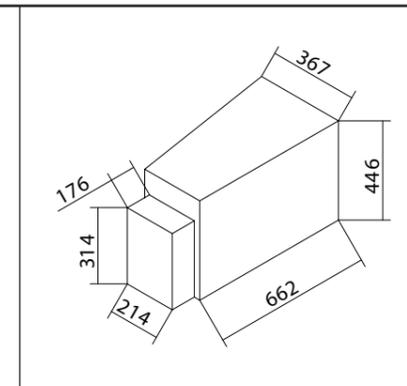
Type Sprinter cool box D'AURIA



order no.:	01.1450.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	17 kg
volume:	40 l

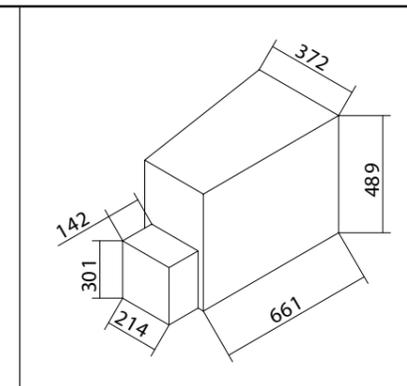
Cool boxes for EVOBUS – MERCEDES BENZ Series 400

Type KTD 583/57 Liter TRAVEGO from 11/2008



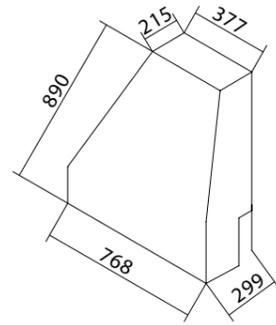
order no.:	01.0583.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5/2,5 A
weight:	16 kg
volume:	57 l

Type KTD 580 TRAVEGO HD/HDH



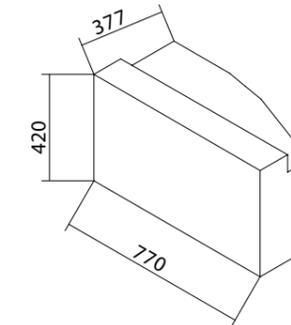
order no.:	01.0580.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	18 kg
volume:	65 l

Type KTS 590 Toilet annex TRAVEGO



order no.:	01.0590.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	23 kg
volume:	60 l

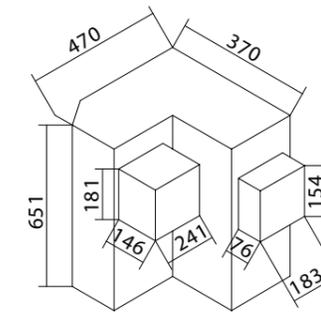
Type KTS 327 SETRA S 315 UL/H



order no.:	01.0327.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	43 l

1 separating grid

Type KTS 364 SETRA S 328 DT

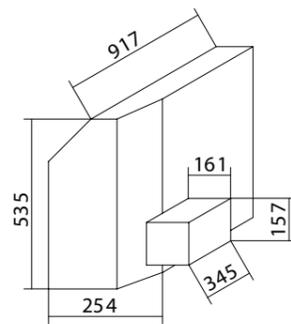


order no.:	01.3640.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	26 kg
volume:	60 l

Assembled on removable floor panel;
digital temperature indicator

Cool boxes for EVOBUS – SETRA Series 300

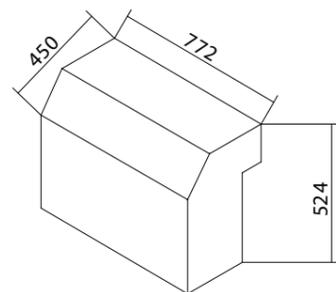
Type KTS 361 SETRA 309/312/315 HD/315 HDH



order no.:	01.3610.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	23 kg
volume:	50 l

2 separating grids; digital temperature indicator

Type KTS 329 SETRA 315 GT/315 GT HD/319 GT HD

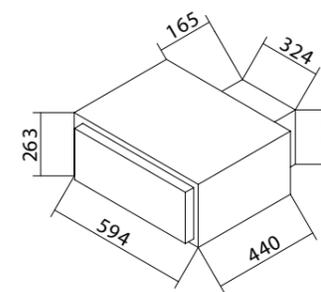


order no.:	01.0329.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	20 kg
volume:	60 l

1 separating grid; handles optional

Cool boxes for EVOBUS – SETRA Series 400

Type KTS 420 SETRA 411/415 HD/415 HDH



order no.:	01.4200.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	20 kg
volume:	43 l

stainless steel inside

Type KTS 410
SETRA 411/415 HD/415 HDH

order no.:	01.4100.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	19 kg
volume:	56 l

2 separating grids

Type KTS 590 toilet annex
SETRA series 300 + 400

order no.:	01.0590.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	23 kg
volume:	60 l

stainless steel inside

Type KTS 440
SETRA 415/417 HDH – three-axle

order no.:	01.4400.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	25 kg
volume:	65 l

Adjustable internal floor; stainless steel inside

Type KTS 450
SETRA 415/417 HDH – three-axle

order no.:	01.4500.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	27 kg
volume:	110 l

Adjustable internal floor; stainless steel inside

Type KTS 460
SETRA 415 GT/415 GT-HD/
416 GT-HD/417 GT-HD

order no.:	01.4600.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	26 kg
volume:	67 l

Type KTS 470
SETRA 412 UL/415 UL/417 UL/419 UL

order no.:	01.4700.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	19 kg
volume:	50 l

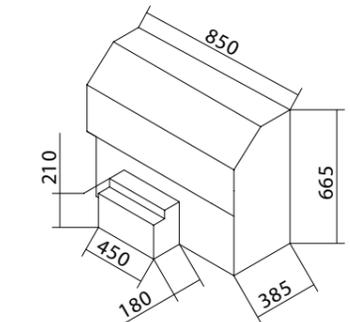
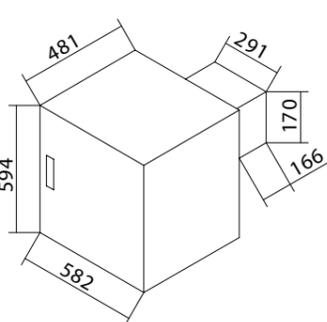
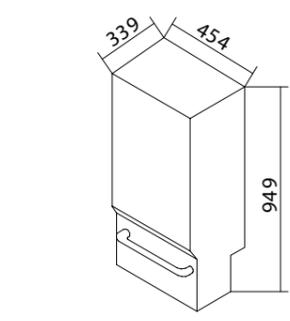
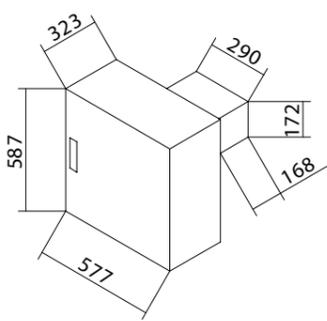
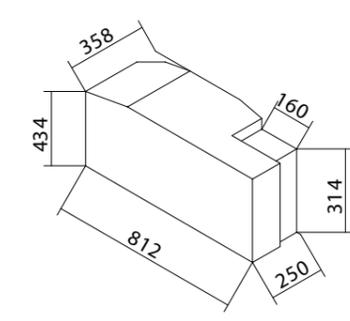
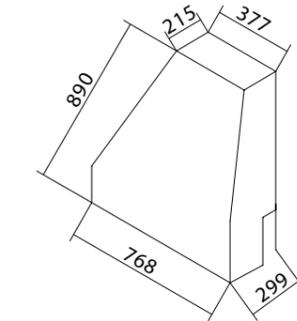
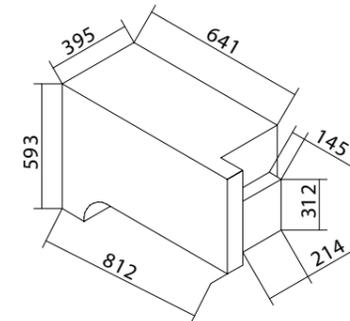
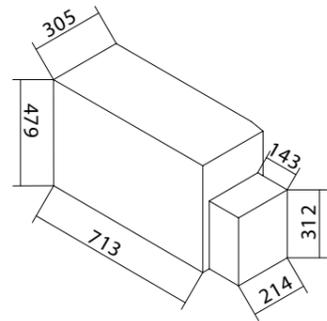
Type KTS 471
SETRA/Mercedes

order no.:	01.4710.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	27 kg
volume:	60 l

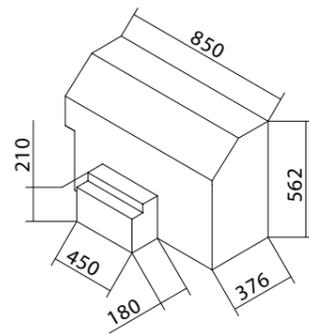
Tour guide refrigeration cabinet

Type KTS 483
SETRA 431 DT 3 stars

order no.:	01.4830.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	25 kg
volume:	110 l

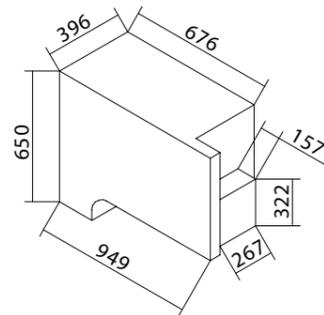


Type KTS 484
SETRA 431 DT 4 Stars



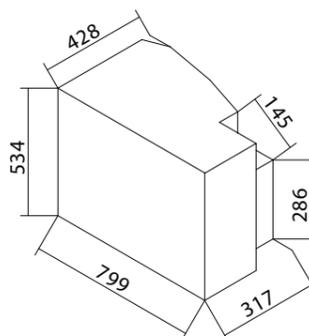
order no.:	01.4840.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	24 kg
volume:	85 l

Type A-KT TC4



order no.:	01.4800.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	26 kg
volume:	67 l

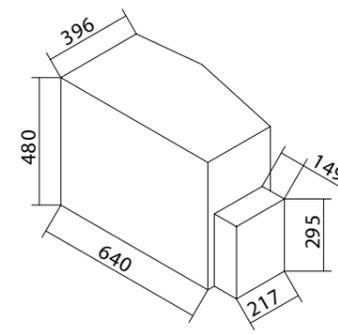
Cool boxes for EVOBUS – SETRA
Series 500



Type KT NCR MD and RHD
SETRA ComfortClass S 515 and S 516
MD for Interurban-Cockpit

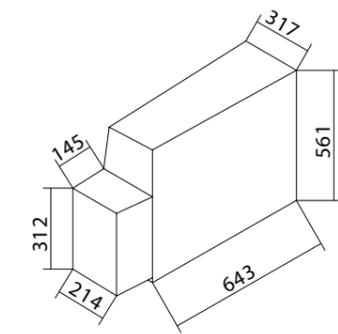
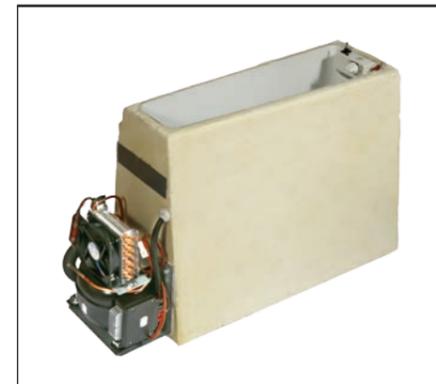
order no.:	01.5100.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	22 kg
volume:	55 l

Type A-KT NCR
SETRA CC500 and TC500



order no.:	01.5000.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	19 kg
volume:	67 l

Cool boxes for GHABBOUR



Type GHABBOUR

order no.:	01.1250.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	50 l

Cool boxes for MCV

Type MCV 500

order no.:	01.1201.00.00 cooling unit right side 01.1203.00.00 cooling unit left side
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	23 kg
volume:	40 l

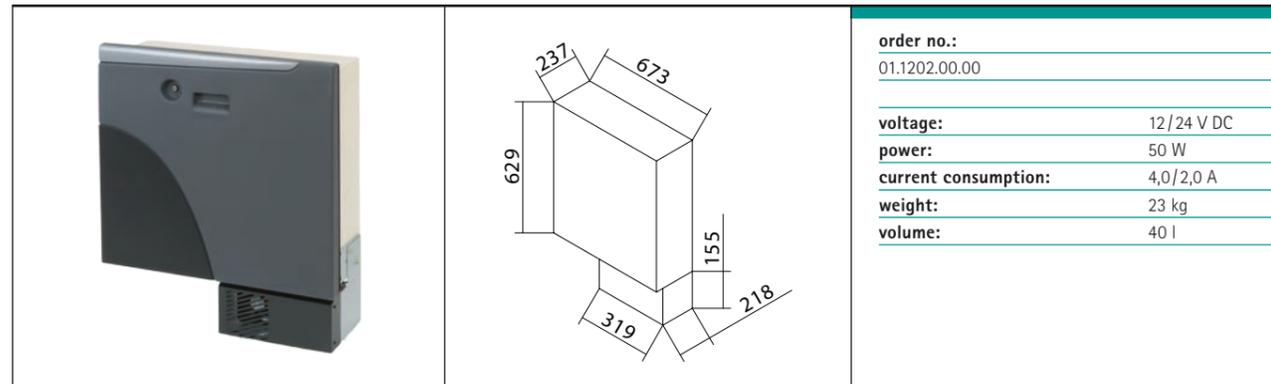
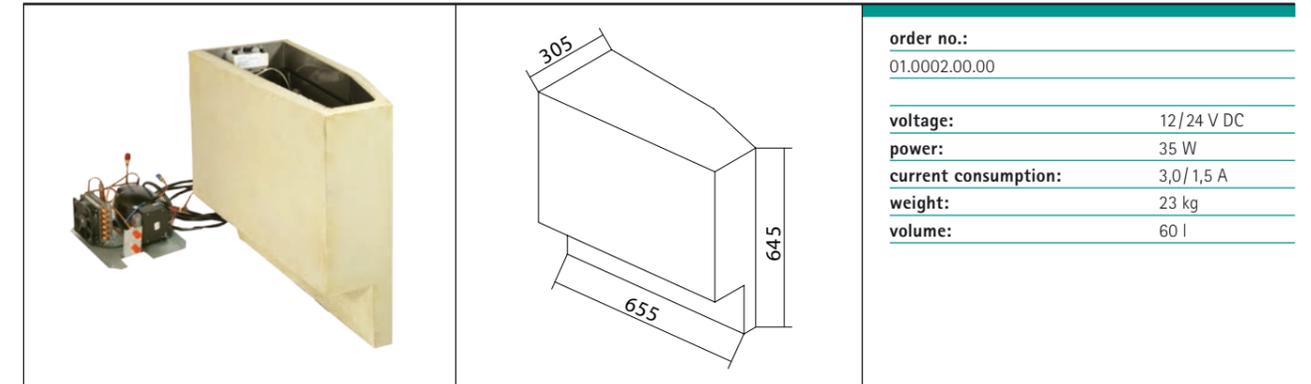
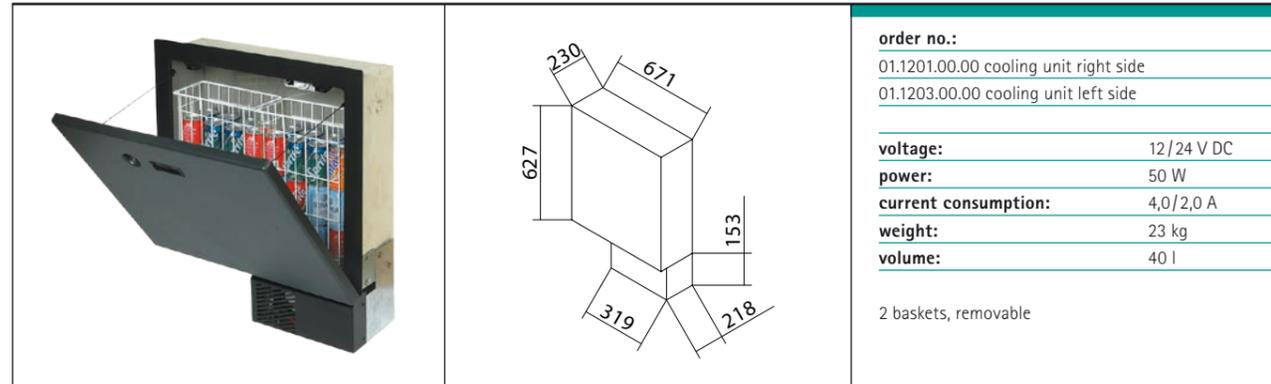
2 baskets, removable

Type MCV 600

order no.:	01.1202.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	23 kg
volume:	40 l

Type MERKAVIM/Apollo

order no.:	01.0002.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	23 kg
volume:	60 l



Cool boxes for NEOMAN – NEOPLAN

Type KBN-Starliner 2

order no.:	01.1115.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	20 kg
volume:	56 l

Cool boxes for MERKAVIM

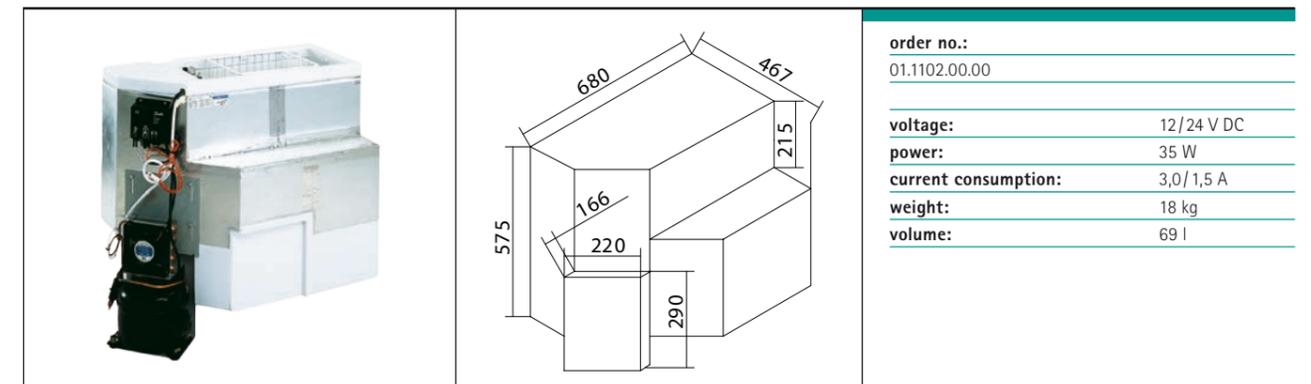
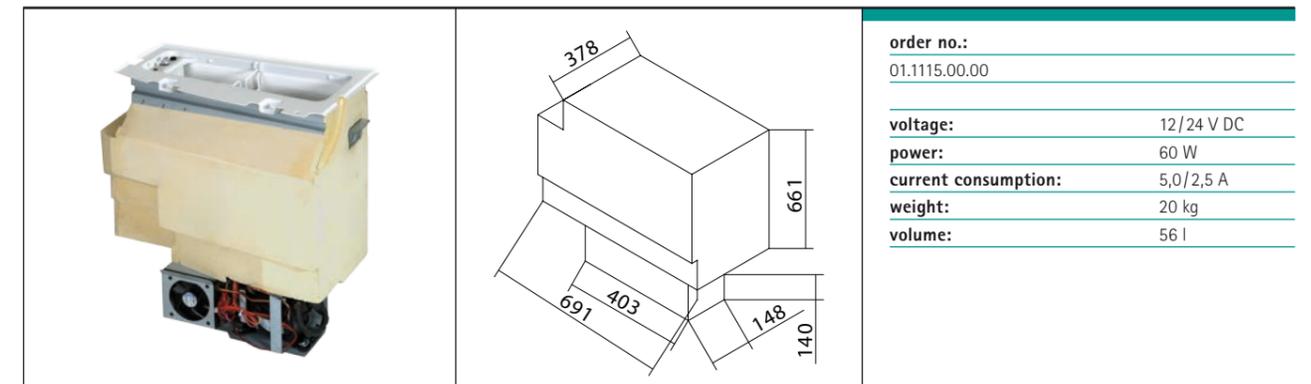
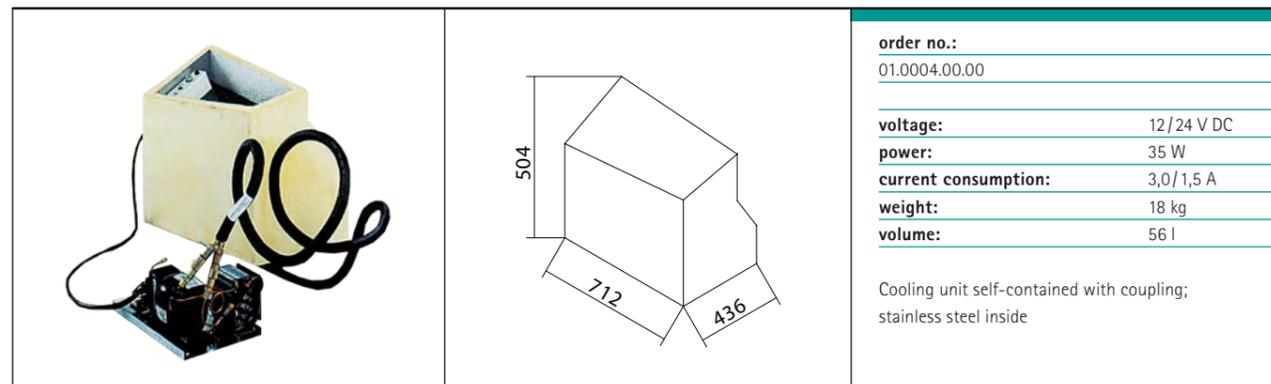
Type MERKAVIM/VOLVO

order no.:	01.0004.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	56 l

Cooling unit self-contained with coupling;
stainless steel inside

Type KBN-G double-deck

order no.:	01.1102.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	69 l



Cool boxes for TEMSA

Type Aventurin

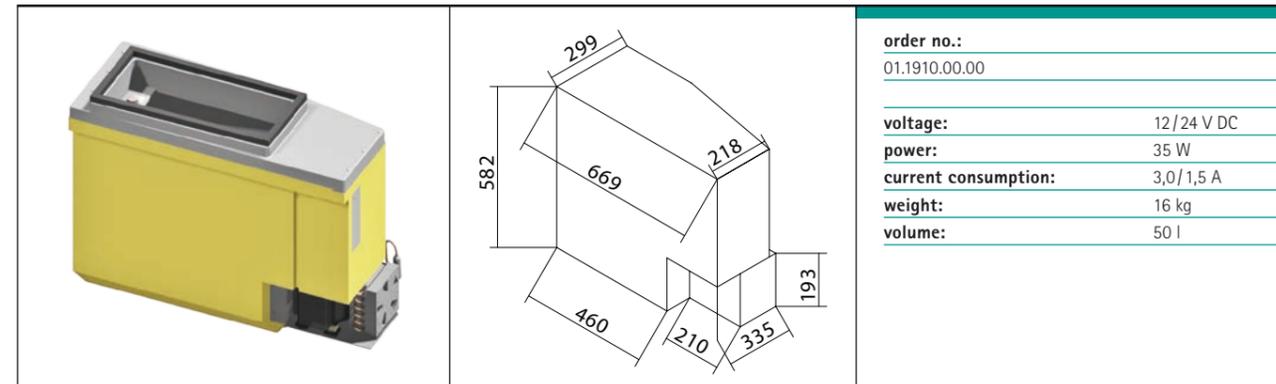
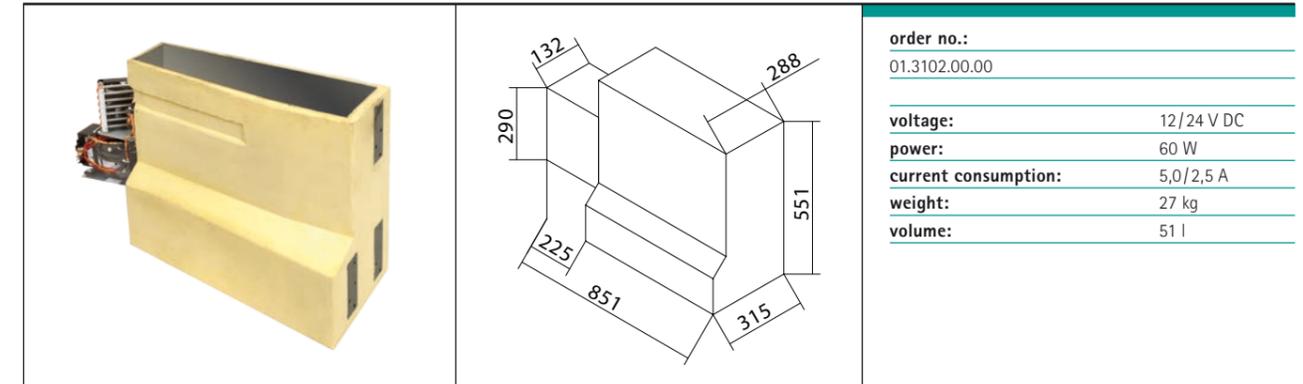
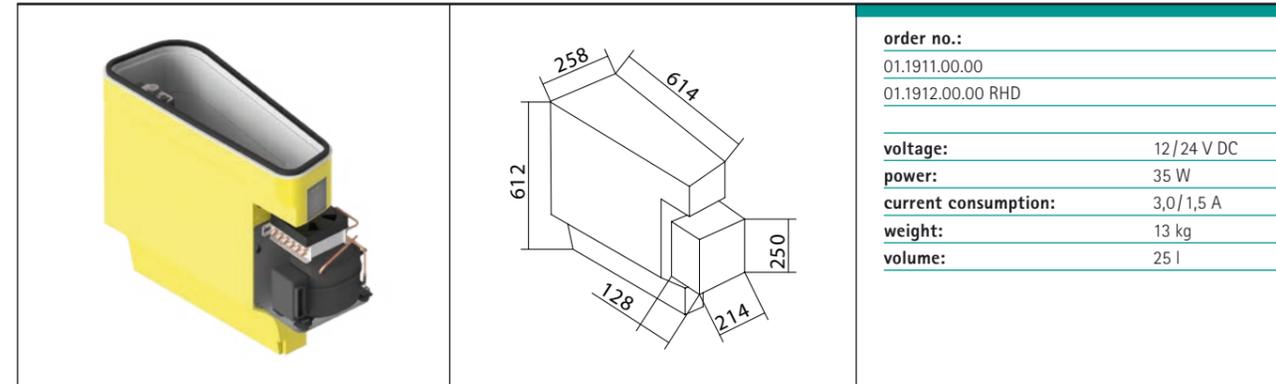
order no.:	01.1911.00.00
	01.1912.00.00 RHD
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	13 kg
volume:	25 l

Type Safari/Safir

order no.:	01.1910.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	16 kg
volume:	50 l

Type A-KT EX

order no.:	01.3102.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	27 kg
volume:	51 l



Cool boxes for VDL

Type KS Toplader

order no.:	01.6000.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	24 kg
volume:	50 l

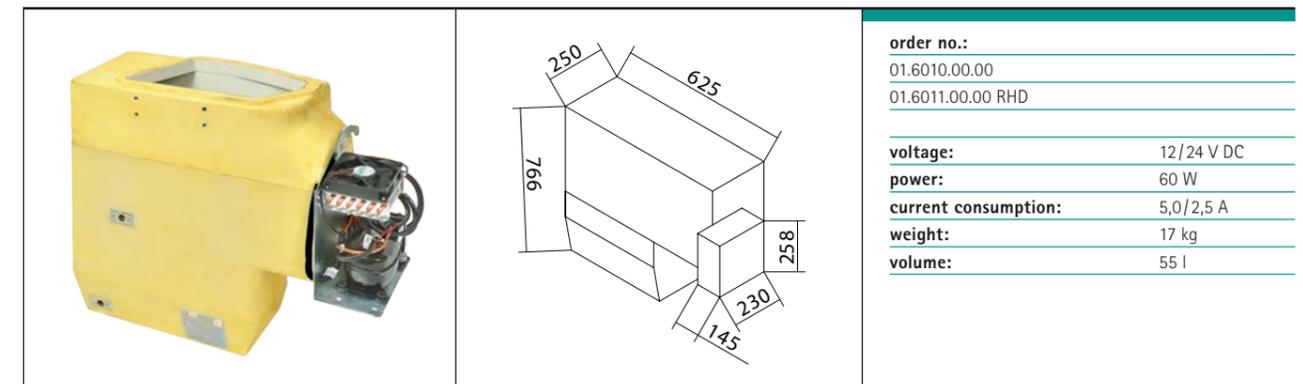
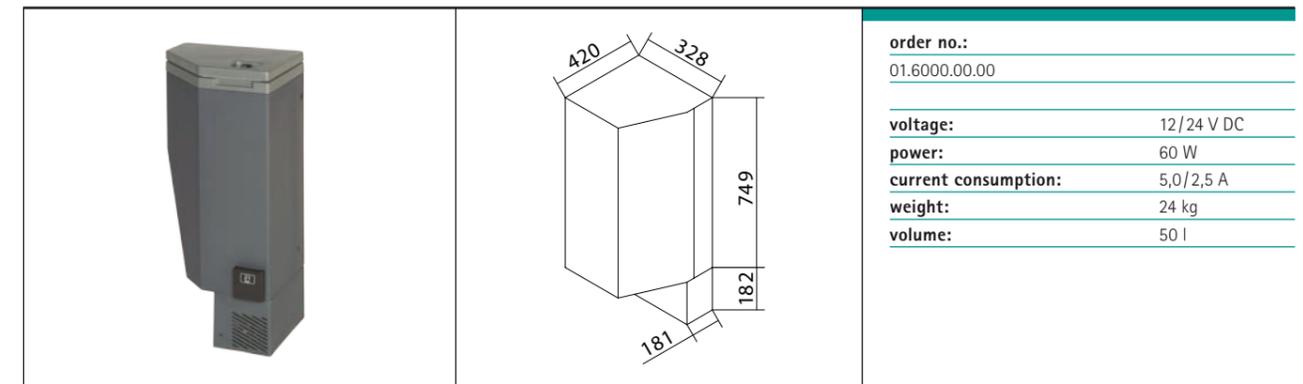
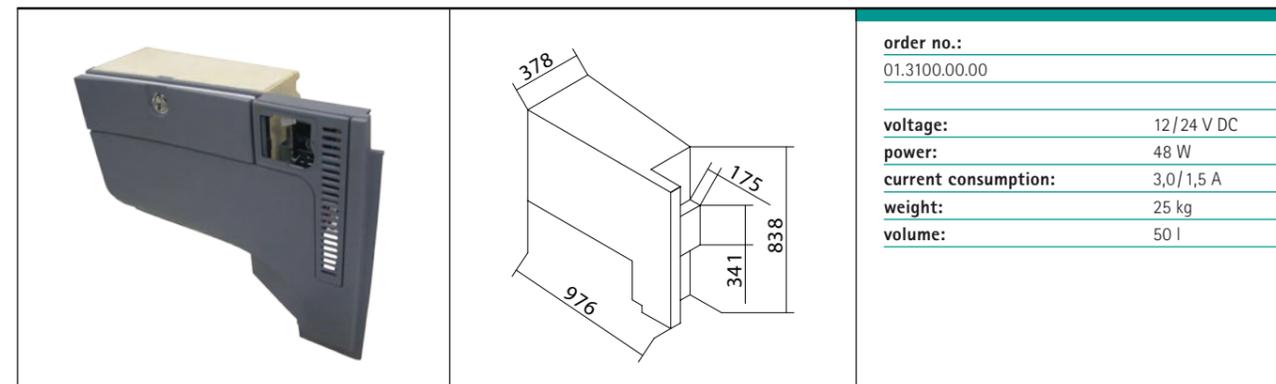
Cool boxes for VAN HOOL

Type A-KT TX

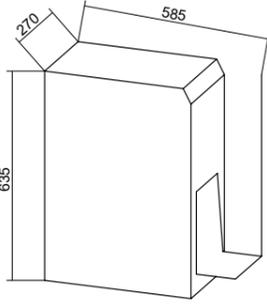
order no.:	01.3100.00.00
voltage:	12/24 V DC
power:	48 W
current consumption:	3,0/1,5 A
weight:	25 kg
volume:	50 l

Type VDL

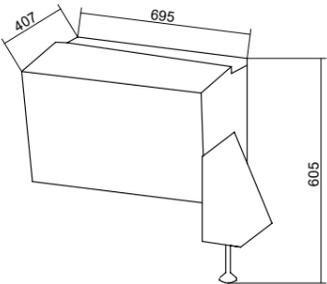
order no.:	01.6010.00.00
	01.6011.00.00 RHD
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	17 kg
volume:	55 l



TK behind the toilet

		<table border="1"> <tr> <td colspan="2">order no.:</td> </tr> <tr> <td colspan="2">01.6015.00.00</td> </tr> <tr> <td>voltage:</td> <td>12 / 24 V DC</td> </tr> <tr> <td>power:</td> <td>48 W</td> </tr> <tr> <td>current consumption:</td> <td>4,0 / 2,0 A</td> </tr> <tr> <td>weight:</td> <td>12 kg</td> </tr> <tr> <td>volume:</td> <td>50 l</td> </tr> </table>	order no.:		01.6015.00.00		voltage:	12 / 24 V DC	power:	48 W	current consumption:	4,0 / 2,0 A	weight:	12 kg	volume:	50 l
order no.:																
01.6015.00.00																
voltage:	12 / 24 V DC															
power:	48 W															
current consumption:	4,0 / 2,0 A															
weight:	12 kg															
volume:	50 l															

Kühlboxen for Volvo

		<p>A-KT P9420</p> <table border="1"> <tr> <td colspan="2">order no.:</td> </tr> <tr> <td colspan="2">01.1305.00.00 LHD</td> </tr> <tr> <td colspan="2">01.1306.00.00 RHD</td> </tr> <tr> <td>voltage:</td> <td>12 / 24 V DC</td> </tr> <tr> <td>power:</td> <td>48 W</td> </tr> <tr> <td>current consumption:</td> <td>4,0 / 2,0 A</td> </tr> <tr> <td>weight:</td> <td>15 kg</td> </tr> <tr> <td>volume:</td> <td>50 l</td> </tr> </table>	order no.:		01.1305.00.00 LHD		01.1306.00.00 RHD		voltage:	12 / 24 V DC	power:	48 W	current consumption:	4,0 / 2,0 A	weight:	15 kg	volume:	50 l
order no.:																		
01.1305.00.00 LHD																		
01.1306.00.00 RHD																		
voltage:	12 / 24 V DC																	
power:	48 W																	
current consumption:	4,0 / 2,0 A																	
weight:	15 kg																	
volume:	50 l																	

On the
way home



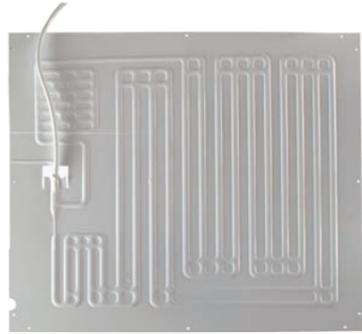
Accessories by TM

We have a wide variety of accessories for you to choose from.
We are happy to advise you – ask our specialists!

Aluminium plate evaporator ROLLBOND



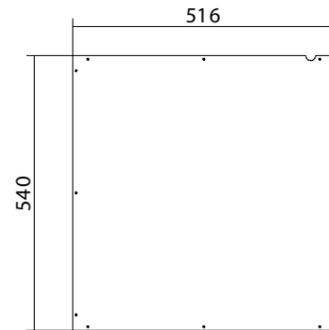
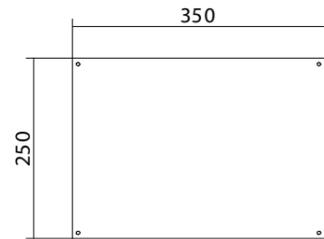
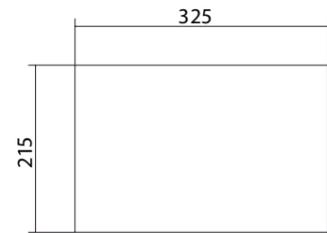
Other individual model versions available upon request
white, powder-coated



order no.:
27.0000.00.00

order no.:
27.0544.31.01

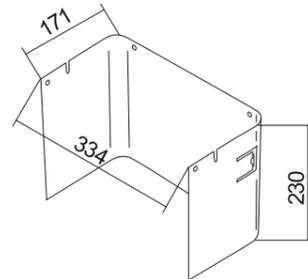
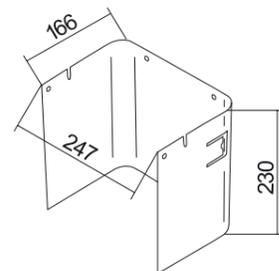
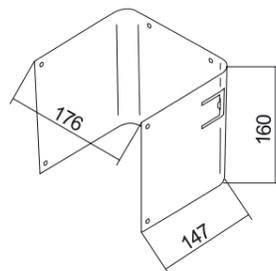
order no.:
27.4500.10.20



order no.:
27.1400.00.01

order no.:
27.0220.00.01

order no.:
27.0225.00.01



Aluminium plate evaporator ROLLBOND



		order no.: 27.0731.42.00
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		order no.: 27.6037.11.01
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Coupling

		order no.: 50.6060.01.01 Vent sleeve 50.6060.01.02 Vent coupling
Coupling self-sealing; several evaporators deliverable with soldered coupling		

SECOB BD 35 F/50 F/80 F
Direct current compressor R 134 a 12 – 24 V



General

SECOB refrigeration compressor type BD 35 F/50 F/80 F is designed for connection to 12V and 24V batteries and for refrigerant R 134 a. The compressor is intended especially for the use in mobile applications, e.g. pleasure craft, commercial shipping, caravans, trucks, busses etc. The compressor can be used in refrigerators and freezers and is designed for capillary tube as the throttling device. The compressor is used together with an electronic unit containing overload protection and protection against destructive battery discharge. The electronic unit has internal voltage recording and calibration to the applied voltage. It will operate under continual heating of 30° such as it occurs on yachts.

Electrical connection

The BD compressor is fitted with a brushless direct current motor which through an electronic unit becomes electronically commutated. The electronic unit must always be connected directly to the battery poles. For the protection of the installation an external fuse (max. 15 A, blue) must be installed close to the battery (or power supply) in the power supply cable. The cables to the battery must be connected with screws. Avoid extra cable connections. If the wrong polarity is used, the electronic unit will not work. If the chassis is used as a conductor a good connection at the lead end must be established. The electronic unit will calibrate to the applied voltage. This means that if the battery voltage is less than 17V, the system assumes that it is working in a 12V system. If the voltage is higher than 17V, the electronic unit assumes that it is working in a 24V system. Consequently, the compressor does not run at power supply voltages between about 17V and the desired battery protection cut-out voltage for 24V systems.

Protection system

The BD compressor protection system protects the compressor from overload and start failure. It also prevents destructive battery discharge.

Overload protection

The start and overload protection cuts off power to the compressor when the compressor speed drops below approximately 1900 r/min. At start this can be caused by lack of pressure equalizing or too high a pressure during operation.

Battery protection

To ensure sufficient battery power for the engine re-start, or to avoid permanent damage to the battery, because of heavy discharge, the BD electronic unit is fitted with a protection device. The compressor is stopped and re-started again according to the decided voltage limits measured on the + and - terminals of the electronic unit.

Troubleshooting

It is recommended to install a LED between terminals + and D to see, why the compressor comes to an unintentional stop. The LED shows the reason for an interrupted compressor operation, provided that the electronic unit is correctly connected to the power supply and that the thermostat is switched on. The compressor windings can be checked for defects by measuring the resistance on the current lead-in pins. If the measured values between all 3 pins are approximately the same, the compressor motor is ok. The electronic unit cannot be repaired and should not be opened.

Thermostat connection

The BD compressor can operate with normal mechanical type thermostats used in refrigeration appliances or with electronic thermostats. Always use new thermostats. The thermostat is normally connected across terminals C and T of the electronic unit. Compressor current does not flow through the thermostat contacts. When the thermostat is switched off there will still be power on the electronic unit.

Fan connection

If a fan is to be used, it must be connected to the electronic unit terminals + and F. Always use a 12 V fan, also in 24 V systems, as the electronic unit will automatically reduce the applied voltage to 12 V for the fan. If the fan becomes overloaded, both fan and compressor will be cut out by the overload protection.

LED connection

A 10 mA light emitting diode (LED) can be connected between the terminals + and D to observe the compressor operation. In case the electronic unit records an operational error, the diode will flash a number of times. The number of flashes depends on what kind of operational error was recorded. Each flash will last 1/4 second.



Wire dimensions

To guarantee a correct operation you have to pay attention to the following wire dimensions:

cable diameter	max. lenght*	24 V
	12 V	5,0 m
2,5 mm ²	2,5 m	8,0 m
4,0 mm ²	4,0 m	12,0 m
6,0 mm ²	6,0 m	20,0 m
10,0 mm ²	10,0 m	

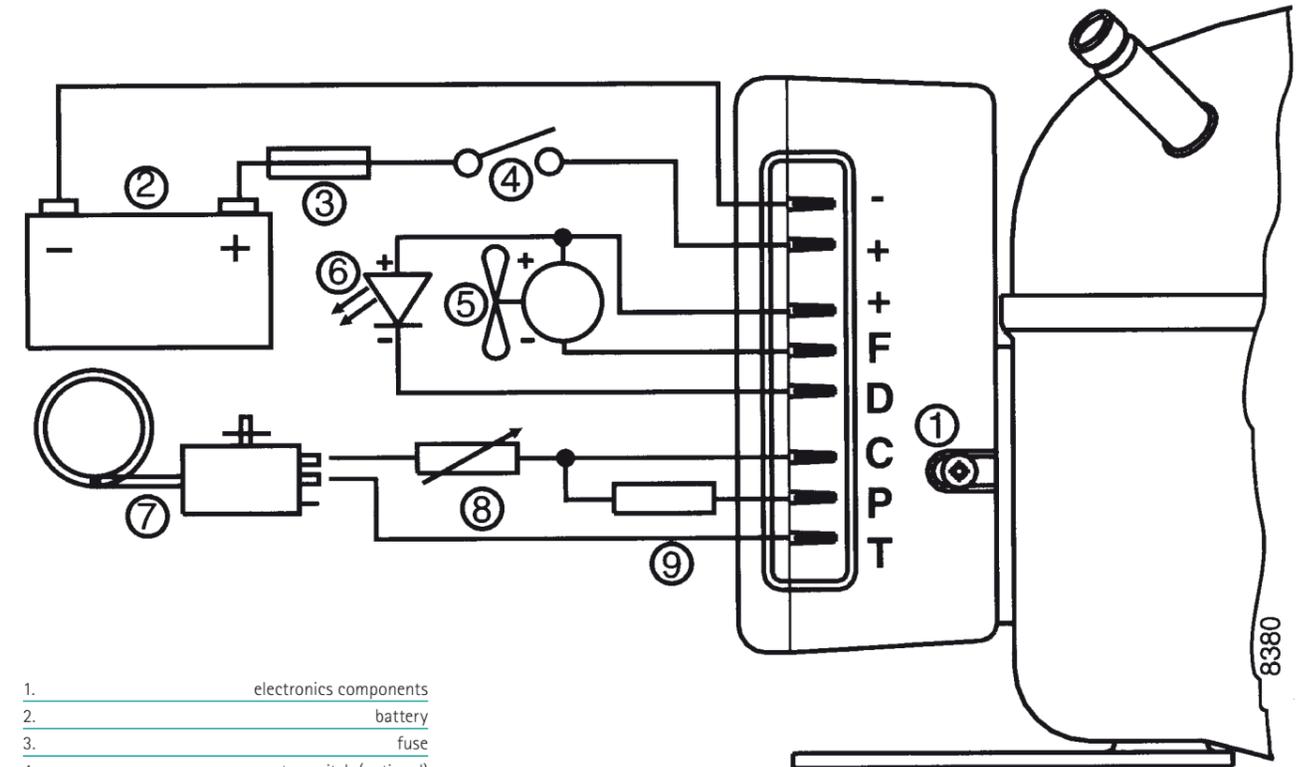
* Wire lenght between battery and electronic control unit.

Number of flashes

Number of flashes	Error type
1 x	battery protection cut out
2 x	fan over-current cut out
3 x	motor start error
4 x	minimum motor speed error
5 x	thermal cut out of electronic unit

Standard battery protection settings

standard battery protection settings	
12 V AUS bei 10,4 V	12 V EIN bei 11,7 V
24 V AUS bei 22,8 V	24 V EIN bei 24,2 V



1. electronics components
2. battery
3. fuse
4. master switch (optional)
5. fan (optional)
6. light-emitting diode (optional)
7. thermostat
8. resistance to speed preset (optional)
resistance to battery protection voltage
9. preset (optional)

DC Cooling Units

DC Cooling Units 12/24 V
With the reliable SECOP full hermetic compressors BD 35 F und BD 50 F

		<p>order no.: 03.0580.00.00 (BD 35 F) 03.0580.50.00 (BD 50 F)</p> <table border="1"> <thead> <tr> <th></th> <th>BD 35 F</th> <th>BD 50 F</th> </tr> </thead> <tbody> <tr> <td>voltage:</td> <td>12/24 V</td> <td>12/24 V</td> </tr> <tr> <td>current consumption:</td> <td colspan="2">depending on technical product design</td> </tr> <tr> <td>refrigerant:</td> <td>R 134 A</td> <td>R 134 A</td> </tr> <tr> <td>operating noise:</td> <td>25 db (A)</td> <td>25 db (A)</td> </tr> <tr> <td>weight:</td> <td>4,7 kg</td> <td>6,7 kg</td> </tr> </tbody> </table>		BD 35 F	BD 50 F	voltage:	12/24 V	12/24 V	current consumption:	depending on technical product design		refrigerant:	R 134 A	R 134 A	operating noise:	25 db (A)	25 db (A)	weight:	4,7 kg	6,7 kg
	BD 35 F	BD 50 F																		
voltage:	12/24 V	12/24 V																		
current consumption:	depending on technical product design																			
refrigerant:	R 134 A	R 134 A																		
operating noise:	25 db (A)	25 db (A)																		
weight:	4,7 kg	6,7 kg																		
		<p>order no.: 03.2524.02.00 (BD 35 F) 03.2524.50.00 (BD 50 F)</p> <table border="1"> <thead> <tr> <th></th> <th>BD 35 F</th> <th>BD 50 F</th> </tr> </thead> <tbody> <tr> <td>voltage:</td> <td>12/24 V</td> <td>12/24 V</td> </tr> <tr> <td>current consumption:</td> <td colspan="2">depending on technical product design</td> </tr> <tr> <td>refrigerant:</td> <td>R 134 A</td> <td>R 134 A</td> </tr> <tr> <td>operating noise:</td> <td>25 db (A)</td> <td>25 db (A)</td> </tr> <tr> <td>weight:</td> <td>7,5 kg</td> <td>7,5 kg</td> </tr> </tbody> </table>		BD 35 F	BD 50 F	voltage:	12/24 V	12/24 V	current consumption:	depending on technical product design		refrigerant:	R 134 A	R 134 A	operating noise:	25 db (A)	25 db (A)	weight:	7,5 kg	7,5 kg
	BD 35 F	BD 50 F																		
voltage:	12/24 V	12/24 V																		
current consumption:	depending on technical product design																			
refrigerant:	R 134 A	R 134 A																		
operating noise:	25 db (A)	25 db (A)																		
weight:	7,5 kg	7,5 kg																		
		<p>order no.: 03.0220.00.00 (BD 35 F) 03.0220.50.00 (BD 50 F)</p> <table border="1"> <thead> <tr> <th></th> <th>BD 35 F</th> <th>BD 50 F</th> </tr> </thead> <tbody> <tr> <td>voltage:</td> <td>12/24 V</td> <td>12/24 V</td> </tr> <tr> <td>current consumption:</td> <td colspan="2">depending on technical product design</td> </tr> <tr> <td>refrigerant:</td> <td>R 134 A</td> <td>R 134 A</td> </tr> <tr> <td>operating noise:</td> <td>25 db (A)</td> <td>25 db (A)</td> </tr> <tr> <td>weight:</td> <td>5,7 kg</td> <td>5,7 kg</td> </tr> </tbody> </table>		BD 35 F	BD 50 F	voltage:	12/24 V	12/24 V	current consumption:	depending on technical product design		refrigerant:	R 134 A	R 134 A	operating noise:	25 db (A)	25 db (A)	weight:	5,7 kg	5,7 kg
	BD 35 F	BD 50 F																		
voltage:	12/24 V	12/24 V																		
current consumption:	depending on technical product design																			
refrigerant:	R 134 A	R 134 A																		
operating noise:	25 db (A)	25 db (A)																		
weight:	5,7 kg	5,7 kg																		
		<p>order no.: 03.1300.10.00 (BD 35 F) 03.1300.50.00 (BD 50 F)</p> <table border="1"> <thead> <tr> <th></th> <th>BD 35 F</th> <th>BD 50 F</th> </tr> </thead> <tbody> <tr> <td>voltage:</td> <td>12/24 V</td> <td>12/24 V</td> </tr> <tr> <td>current consumption:</td> <td colspan="2">depending on technical product design</td> </tr> <tr> <td>refrigerant:</td> <td>R 134 A</td> <td>R 134 A</td> </tr> <tr> <td>operating noise:</td> <td>25 db (A)</td> <td>25 db (A)</td> </tr> <tr> <td>weight:</td> <td>7 kg</td> <td>7 kg</td> </tr> </tbody> </table>		BD 35 F	BD 50 F	voltage:	12/24 V	12/24 V	current consumption:	depending on technical product design		refrigerant:	R 134 A	R 134 A	operating noise:	25 db (A)	25 db (A)	weight:	7 kg	7 kg
	BD 35 F	BD 50 F																		
voltage:	12/24 V	12/24 V																		
current consumption:	depending on technical product design																			
refrigerant:	R 134 A	R 134 A																		
operating noise:	25 db (A)	25 db (A)																		
weight:	7 kg	7 kg																		

Direct current compressor



operation panel



aluminium rollbond evaporator



insulation

TM is one of the first users of Secop full hermetic compressors. From the beginning till today TM developed a huge know-how in the use of Secop full hermetic compressors. This explains TM's top class position in the field of bus cooling. Therefore TM only uses Secop compressors. Since the beginning TM has been convinced of the advantages of the constant voltage full hermetic compressors with the high quality of the cast iron series production.

The Secop compressor types BD 35 F and BD 50 F are developed for 12 V and 24 V direct current supply connection and for the refrigerant R 134 A. The compressor comprises an electronic device with an overload protection and protection against battery discharge. The compressor is almost noiseless, has a low energy consumption and works under an angle of inclination of 30°, as it occurs on boats.

Our quality standard provides every cooling box with a clear operation panel. This panel allows an easy and clear operation. The operation panel contains:

- Thermostat with knob for continuous adjustment
- Indoor lighting
- Fuse for the electronic
- Function indicator

Another TM quality characteristic is that most of the cooling boxes are equipped with foamed aluminum rollbond evaporators. Due to this method we reach optimal efficiency. This processing makes it impossible to develop condensed moisture between the evaporator and the insulation, thus the PU insulation cannot be affected. The layout of the evaporator tubes will be designed for each cooling casing according to the request, so that the best cooling performance can be reached. The aluminum rollbond evaporator is powder coated and easy to handle.

An important contribution for a good cooling performance is the insulation, naturally CFC-free. TM foams the cooling casings with a high pressure procedure via computer controlled, modern foaming machines. TM also foams the cover frame, cover lid and all hollow spaces with PU foam. Before starting series production the cooling boxes will be tested in various long term check programs, for example in our climatic chamber under different ambient temperatures and operating conditions. The cooling boxes will also be checked on the shaking table. All materials of the casing, like outside casing, foam, evaporator or other plastic casing parts, are certified by the German authorities for vehicle registration.

Direct current compressor



Interior compressor

- BD 35 F
- BD 50 F
- BD 80 F
- BD 1.4F MICRO

Wire dimensions

To guarantee a correct operation you have to pay attention to the following wire dimensions:

cable diameter	max. length*	
	12 V	24 V
2,5 mm ²	2,5 mm ²	5,0 m
4,0 mm ²	4,0 mm ²	6,0 m
6,0 mm ²	6,0 mm ²	12,0 m
10,0 mm ²	10,0 mm ²	20,0 m

* wire length between battery and electronic control unit.

Standard battery protection settings

12 V OFF bei 10,4 V	12 V ON bei 11,7 V
24 V OFF bei 22,8 V	24 V ON bei 24,2 V

Type BD 35 F

order no.:	
compressor/electronic unit 25.2412.10.00	
compressor separate 25.2412.10.01	
electronic unit separate 24.2412.10.02	
voltage: 12 / 24 V DC	
undervoltage protection: 10,4 / 22,8 V	
power: 35 W	
current consumption: depending on technical product design	
weight: 4,5 kg	
revolutions: 2.000 min*	
refrigerant: R134a	
operating noise: 25 db (A)	

* higher compressor capacity can be reached by increasing revolutions up to max. 3.500.

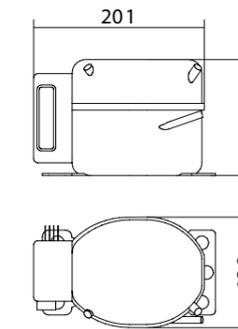
Type BD 50 F

order no.:	
compressor/electronic unit 25.0050.24.02	
compressor separate 25.0050.24.01	
electronic unit separate 25.2412.10.02	
voltage: 12 / 24 V DC	
undervoltage protection: 10,4 / 22,8 V	
current consumption: depending on technical product design	
weight: 4,5 kg	
revolutions: 2.000 min*	
refrigerant: R134a	
operating noise: 25 db (A)	

* higher compressor capacity can be reached by increasing revolutions up to max. 3.500.

Direct current compressor

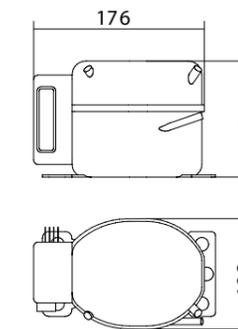
Type BD 80 F



order no.:	
compressor/electronic unit 25.0080.24.03	
compressor separate 25.0080.24.01	
electronic unit separate 24.0080.24.02	
voltage: 12 / 24 V DC	
undervoltage protection: 10,4 / 22,8 V	
current consumption: depending on technical product design	
weight: 4,5 kg	
revolutions: 2.500 min*	
refrigerant: R134a	
operating noise: 25 db (A)	

* higher compressor capacity can be reached by increasing revolutions up to max. 4.400.

Type BD 1.4 F MICRO



order no.:	
compressor/electronic unit 25.2501.00.00 VSD	
voltage: 12 / 24 V DC	
undervoltage protection: 19-27 V	
current consumption: depending on technical product design	
weight: 2,3 kg	
refrigerant: R134a	
operating noise: k.A.	

* higher compressor capacity can be reached by increasing revolutions up to max. 4.400.

TM Product landscape



1. 5 L milk cooler
2. Summertime 2
3. Kitchen
4. 1 L milk cooler
5. Dashboard integrated cool box
6. Toilet
7. Cup warmer cooling combination

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TM Teknik Otomotiv

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Our company is ISO 9001 certified.

Our products are tested according to the following standards:
Burning behavior according to ECE R118.
Electromagnetic compatibility according to ECE R10.
Energy absorption test according to ECE R21.
Bus comfort according to RAL-GZ 791.