



Cool boxes and accessories



TM Company



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 – 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 – 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



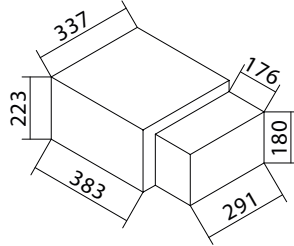
Cool boxes by TM

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

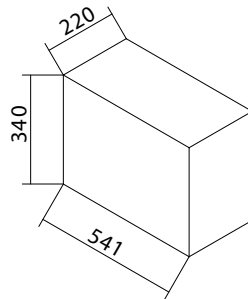
Universal and mobile cool box for bus und truck
KBU series: For the installation in e.g. mini and midibuses

Type KBU 15 horizontal



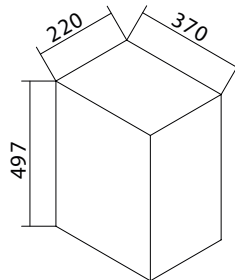
order no.:	01.1515.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	15,5 kg
volume:	15 l

Type KBU 15 vertical rear



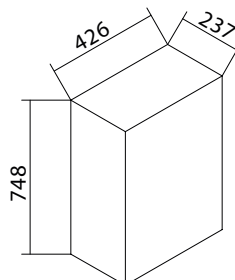
order no.:	01.1516.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	15,5 kg
volume:	15 l

Type KBU 15 vertical below



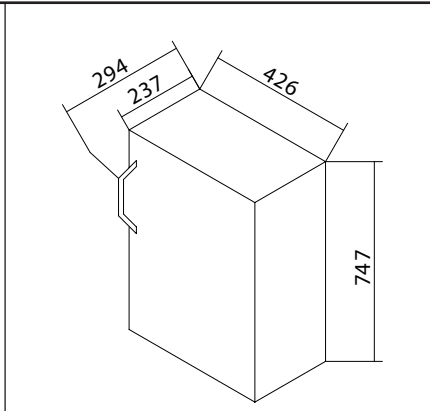
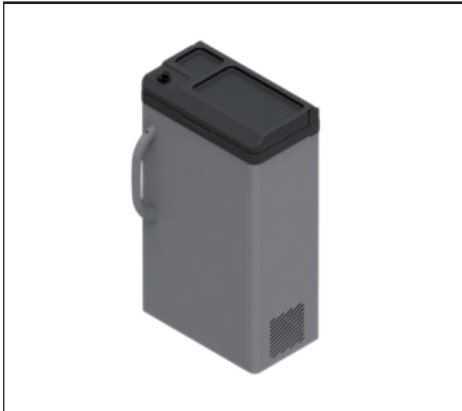
order no.:	01.1517.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	15 kg
volume:	15 l

Type KBU 40



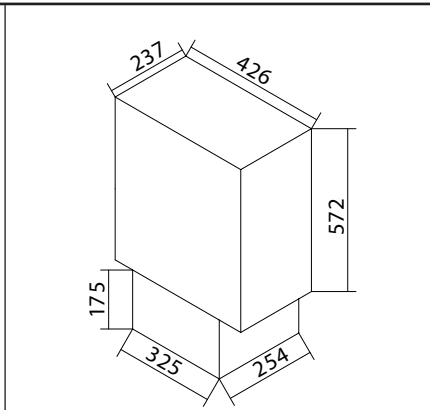
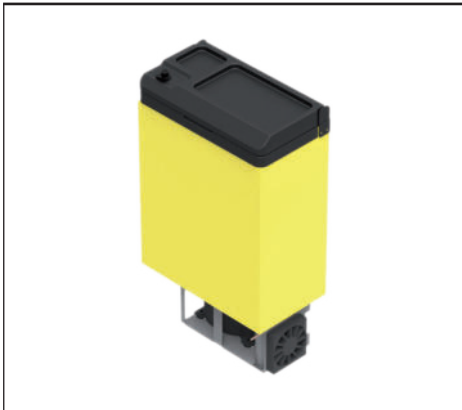
order no.:	01.1570.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	22 kg
volume:	40 l

Type KBU 40 with handle



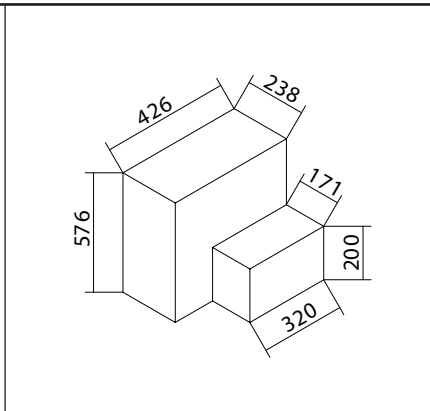
order no.:	01.1577.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	22 kg
volume:	40 l

Type KBU 40 installation



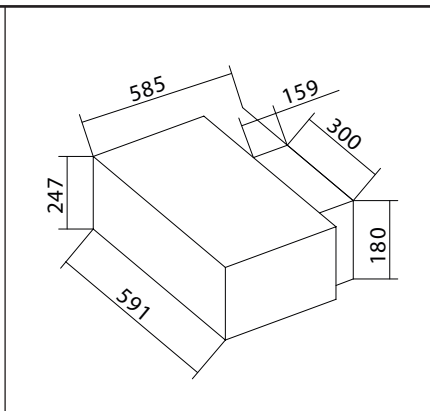
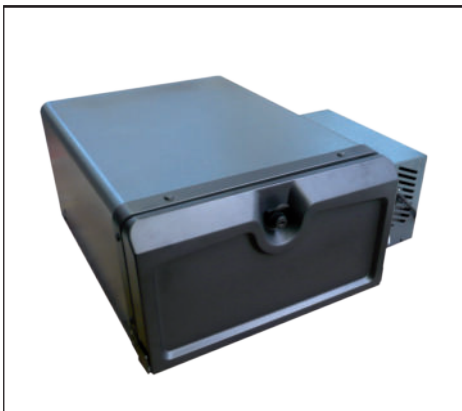
order no.:	01.1572.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	22 kg
volume:	40 l

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

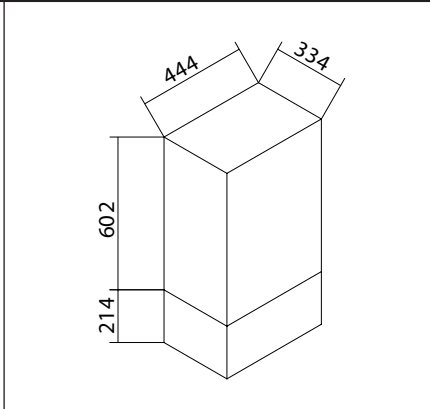


order no.:	01.1579.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	22 kg
volume:	40 l

Bus and truck cool box available over-the-counter

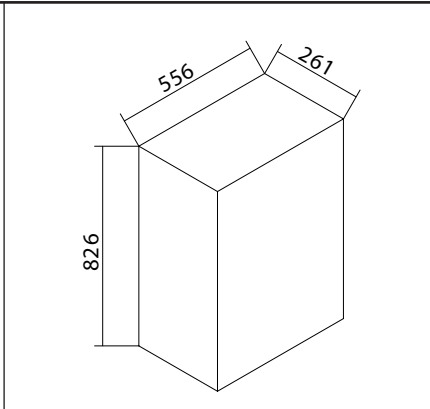
Universal and mobile cool box for bus und truck
KBU series: For the installation in e.g. mini and midibuses

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

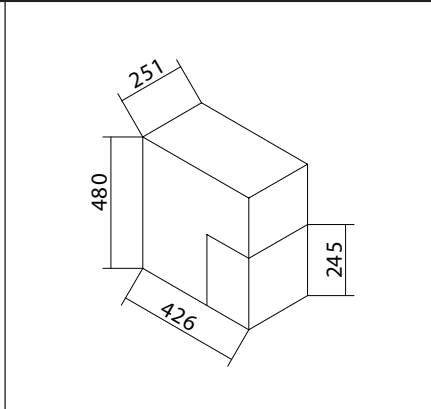


order no.:	
	01.1560.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	26 kg
volume:	58 l

Bus and truck cool box available over-the-counter

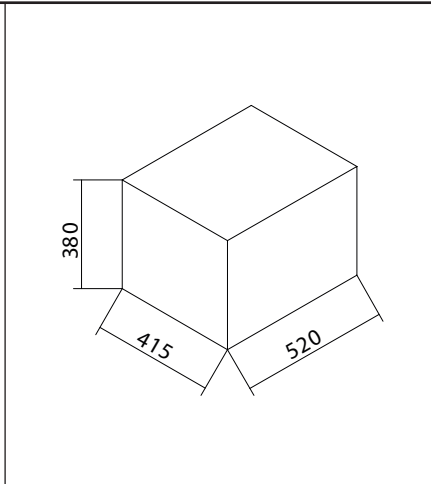
Universal and mobile cool box for bus und truck
CoolFix series: For the installation in e.g. caravans, boats,
mini and midibuses

Type CoolFix Mini



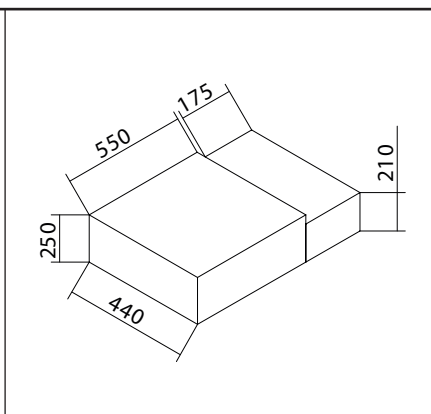
order no.:	01.0210.00.00
voltage:	12/24 V DC
undervoltage protection:	11,3 / 24,6 V
power:	54 W
current consumption:	4,6 / 2,3 A
thermostat:	infinitely variable
weight:	17 kg
volume:	20 l

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 Megaspacer

Type CoolFix 35 – DAF/VOLVO/RENAULT

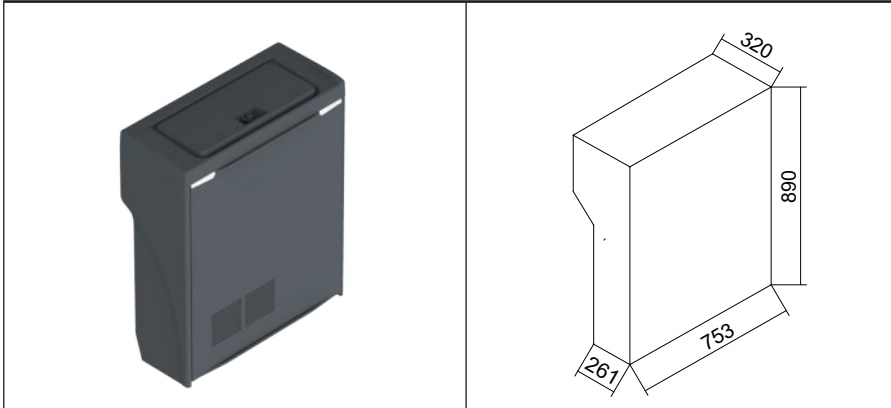


order no.:	01.0035.00.00
voltage:	12/24 V DC
undervoltage protection:	10,4 / 22,8 V
power:	60 W
current consumption:	2,6 / 1,3 A
thermostat:	infinitely variable
weight:	16 kg
volume:	35,5 l

Bus and truck cool box available over-the-counter

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

Type KT 80

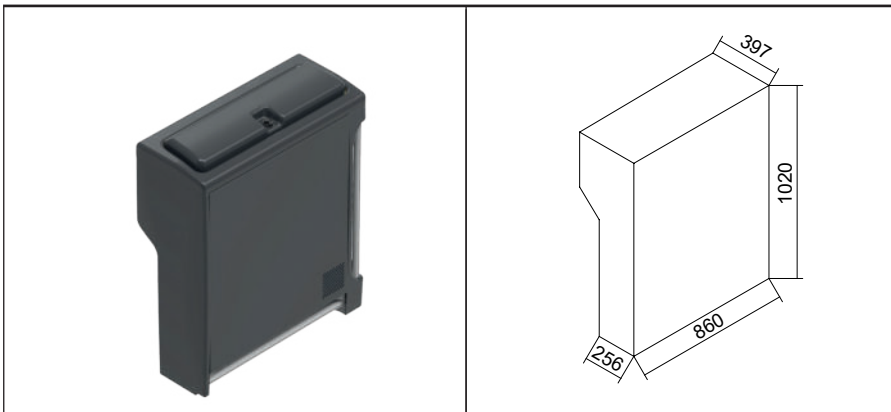


order no.:	
	01.4038.00.00
voltage:	12 / 24 V DC
power:	60 W
current consumption:	5,0 / 2,5 A
weight:	42 kg
volume:	80 l

scope of delivery 01.4038.00.00:

- folding table
- luggage net
- cup holder

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.

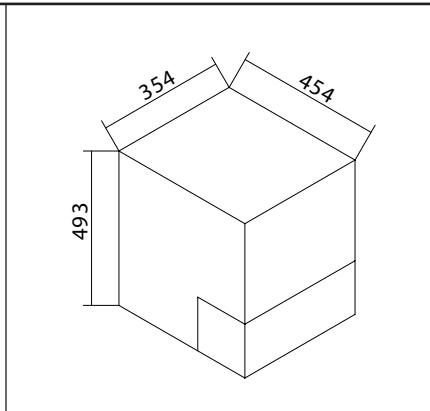
scope of delivery 01.3040.00.00:

- cup holder
- luggage net

Bus and truck cool box available over-the-counter

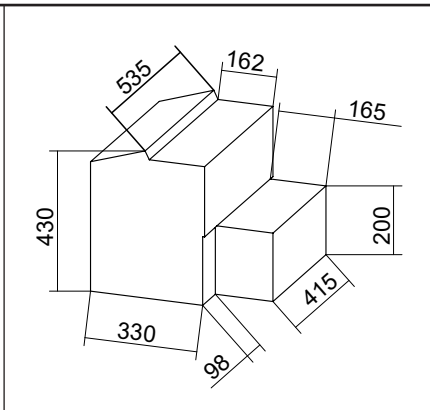
Universal and mobile cool box for bus und truck
Built in cool box: For installation in transporters, trucks and touring coaches e.g. in the dashboard area

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

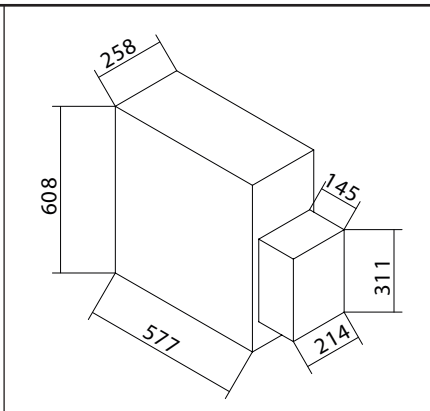
Type Transporter cool box



order no.:	01.1460.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	17 kg
volume:	40 l

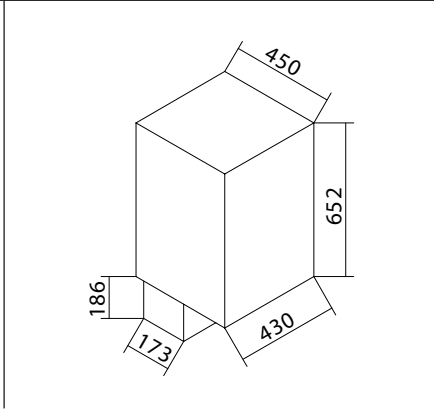
Ideal for installation in the dashboard area of transporters and mini/midibuses

Type A-KT TM



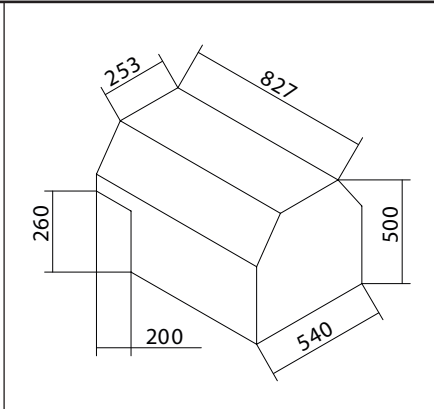
order no.:	01.2000.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/1,5 A
weight:	18 kg
volume:	60 l

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

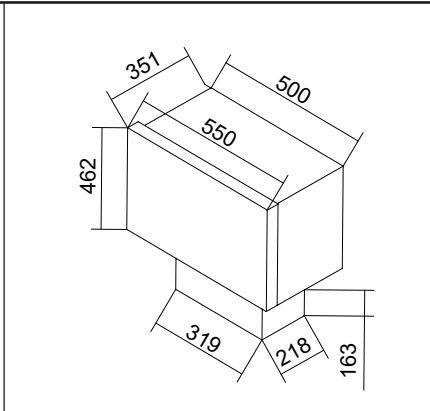


order no.:	01.9001.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	34 kg
volume:	87 l

Bus and truck cool box available over-the-counter

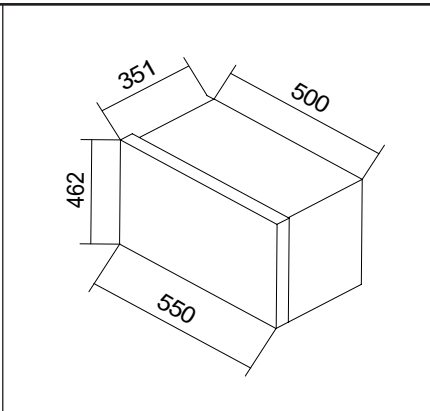
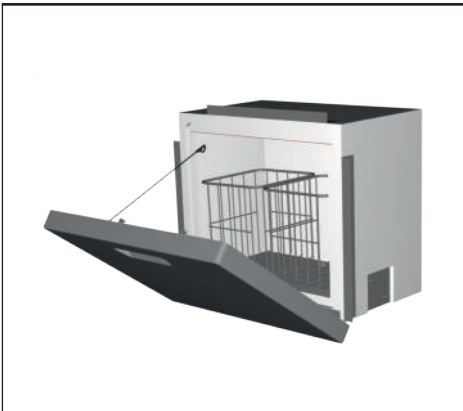
Mobile cool box for medicine transport

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
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	

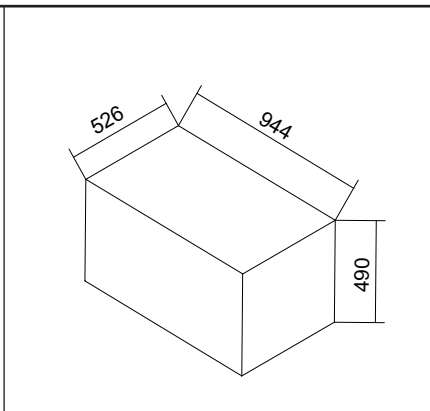
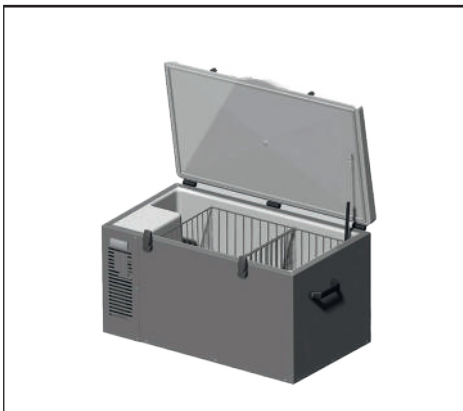


Type Ambulance temperate

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



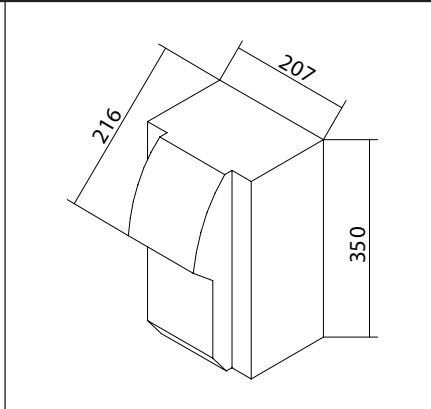
Type BTK

order no.:	
01.1215.00.00	
voltage: 12/24 V DC	
undervoltage protection: 10,4/22,8 A	
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

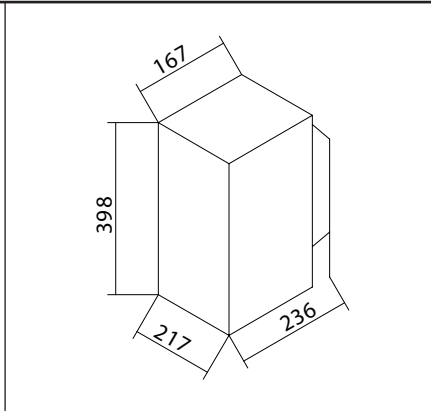
Cool boxes with thermoelectric cooling technology – Peltier
Summertime series: Abrasion and maintainance free technology, high cooling capacity by a peltier element. Efficiency up to 22° C to ambient temperature.

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:	4,6 l

Type Summertime 2

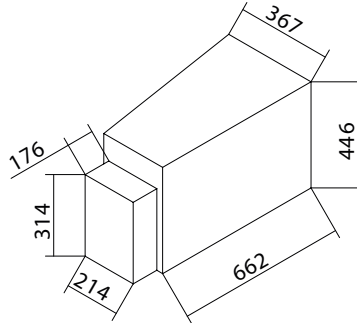


order no.:	
	01.0024.00.00
voltage:	12/ 24 V DC
power:	36 W
current consumption:	1,5/3,0 A
weight:	2,9 kg
volume:	5,5 l

Bus and truck cool box customer-specific

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

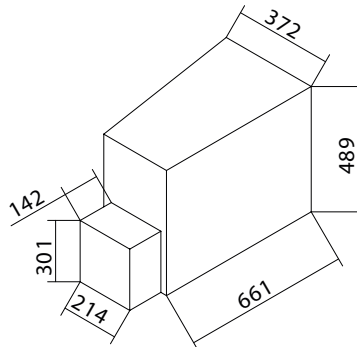
power: 60 W

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

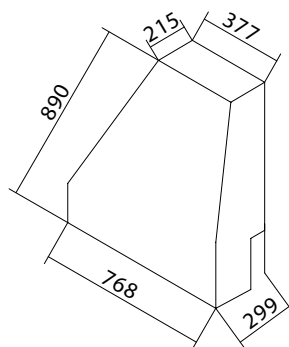
power: 50 W

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

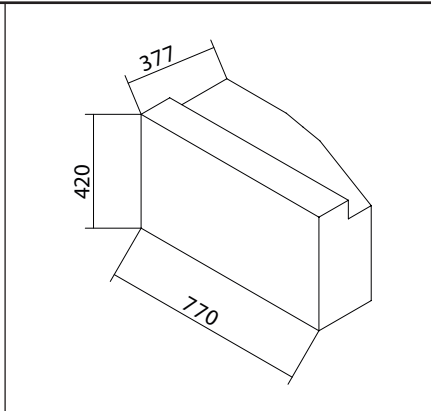
current consumption: 3,0/1,5 A

weight: 23 kg

volume: 60 l

Bus and truck cool box customer-specific

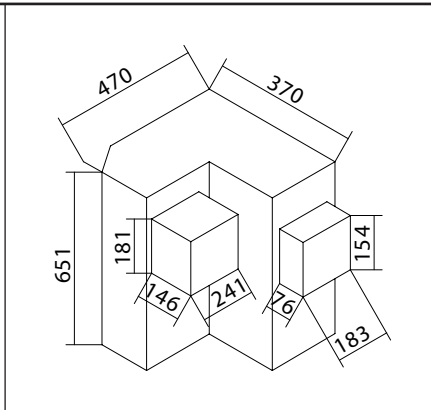
Type KTS 327 SETRA S 315 UL/H



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

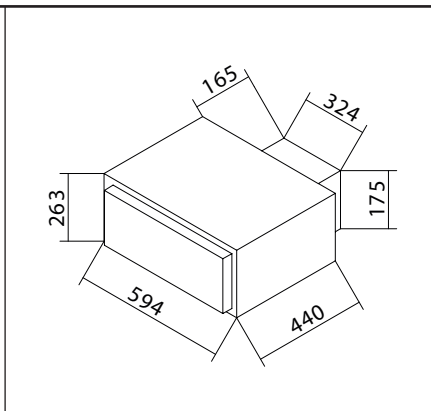


order no.:	
	01.3640.00.00
voltage:	12/24 V DC
power:	35 W
current consumption:	3,0/ 1,5 A
weight:	26 kg
volume:	60 l

Assembled on removable floor panel;
digital temperature indicator

Cool boxes for EVOBUS – SETRA Series 400

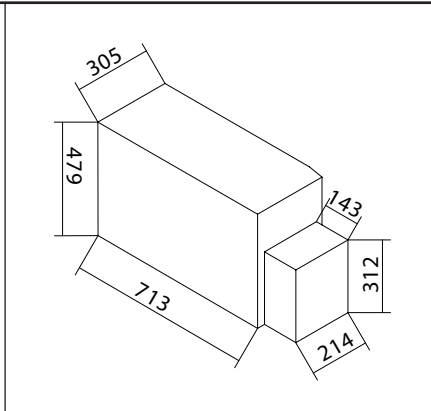
Type KTS 420 SETRA 411/415 HD/415 HDH



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

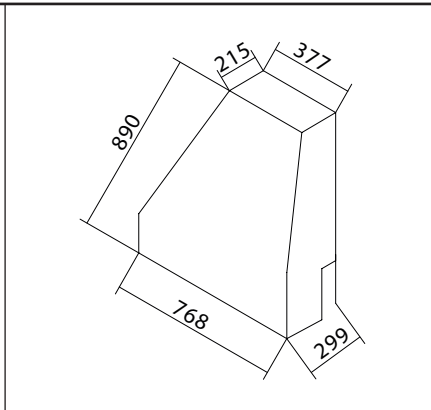
Type KTS 410 SETRA 411/415 HD/415 HDH



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

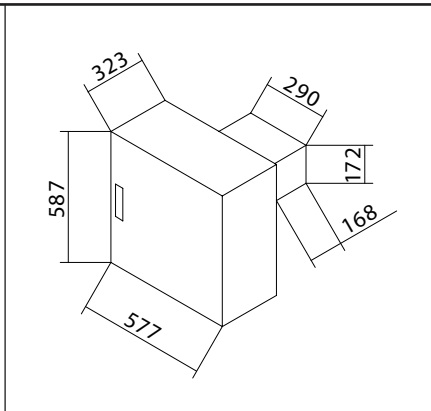
Type KTS 590 toilet annex SETRA series 300 + 400



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

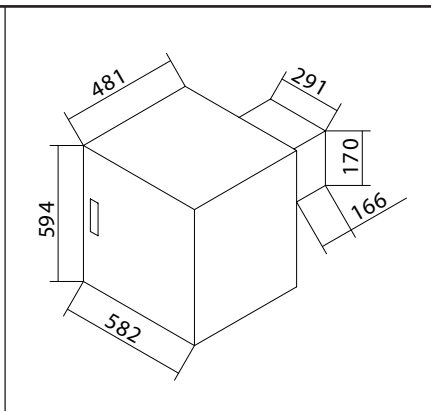
Type KTS 440 SETRA 415/417 HDH – three-axle



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

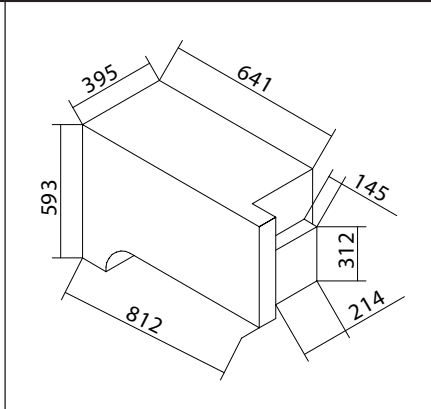


order no.:	01.4500.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	27 kg
volume:	110 l

Adjustable internal floor; stainless steel inside

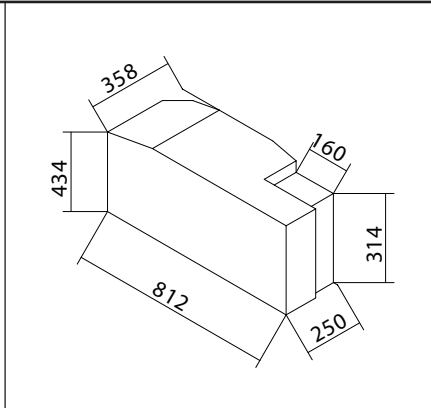
Bus and truck cool box customer-specific

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



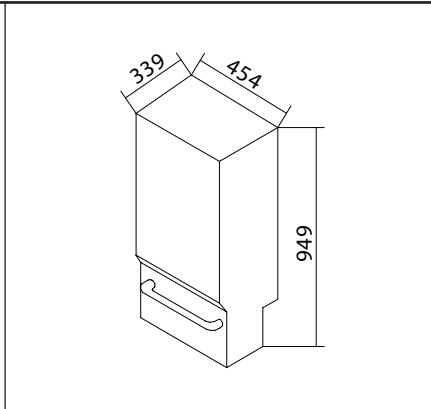
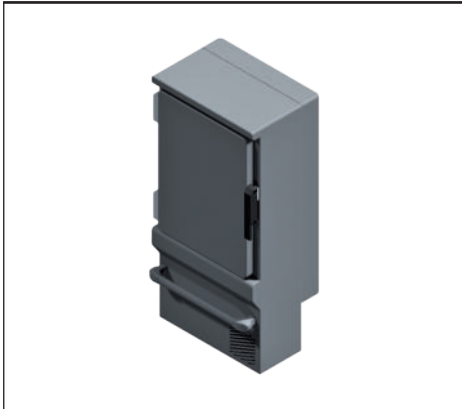
order no.:	
	01.4600.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	26 kg
volume:	67 l

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

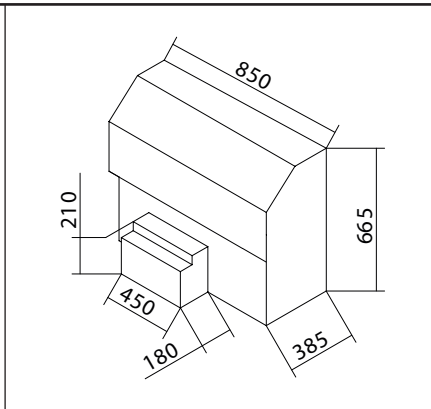
Type KTS 471 SETRA/Mercedes



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

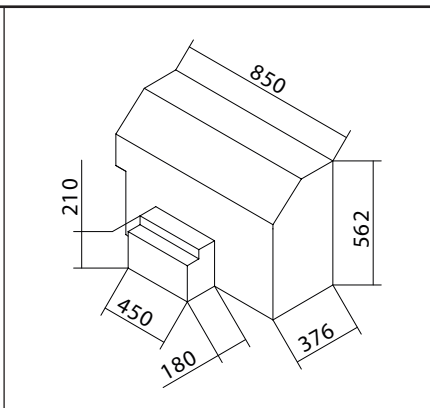
Tour guide refrigeration cabinet

Type KTS 483 SETRA 431 DT 3 stars



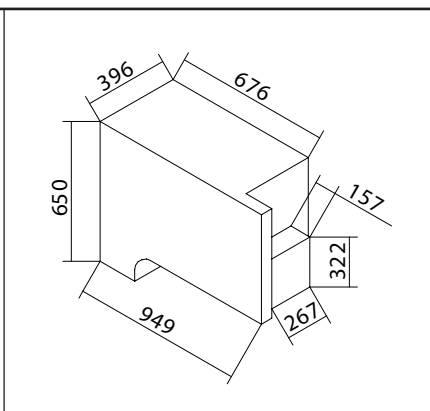
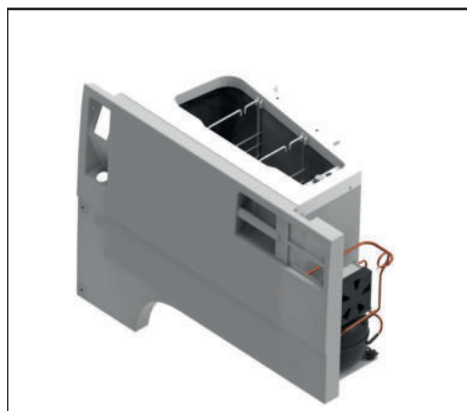
order no.:	
	01.4830.00.00
voltage:	12/24 V DC
power:	50 W
current consumption:	4,0/2,0 A
weight:	25 kg
volume:	110 l

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

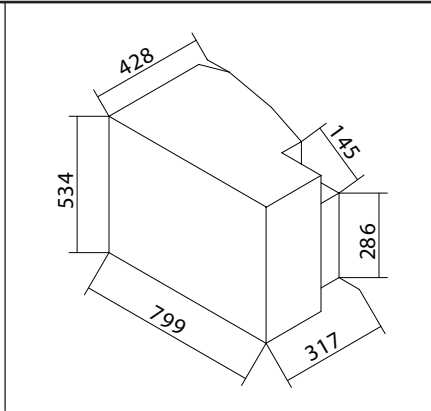


order no.:	
	01.4800.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	26 kg
volume:	67 l

Bus and truck cool box customer-specific

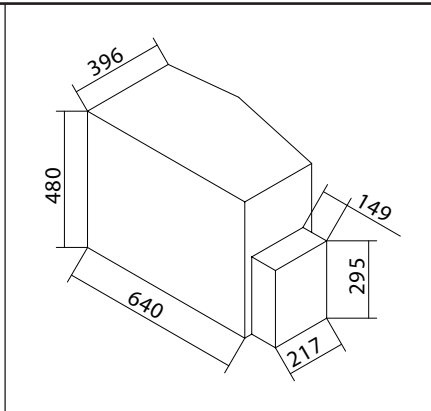
Cool boxes for EVOBUS – SETRA
Series 500

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



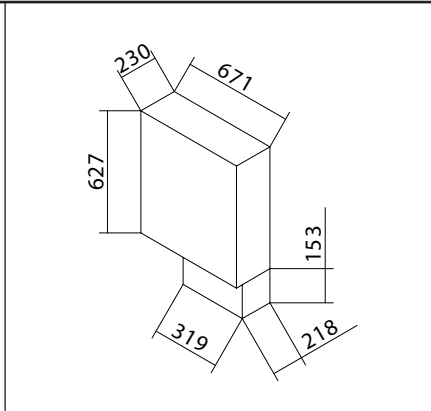
order no.:	
	01.5100.00.00
voltage:	12/24 V DC
power:	60 W
current consumption:	5,0/2,5 A
weight:	22 kg
volume:	55 l

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

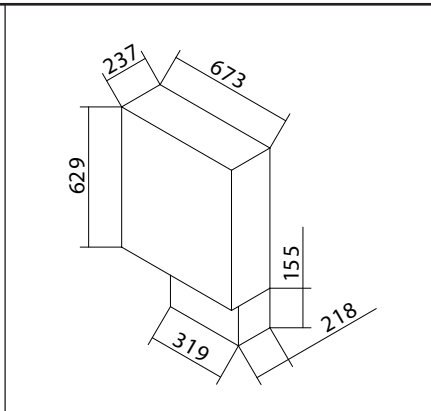
Cool boxes for MCV



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	

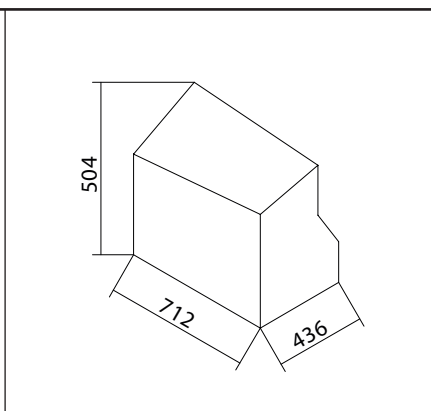
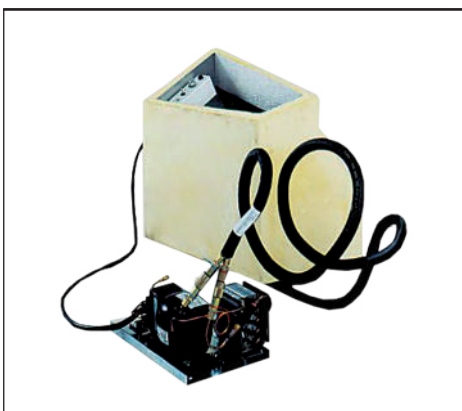
2 baskets, removable



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	

Cool boxes for MERKAVIM



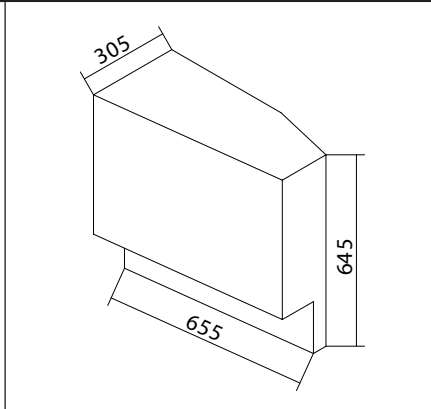
Type MERKAVIM/VOLVO

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

Bus and truck cool box customer-specific

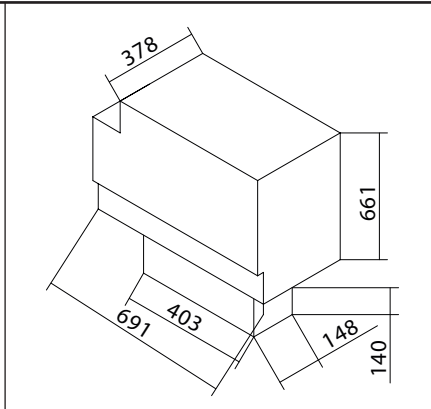
Type MERKAVIM/Apollo



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

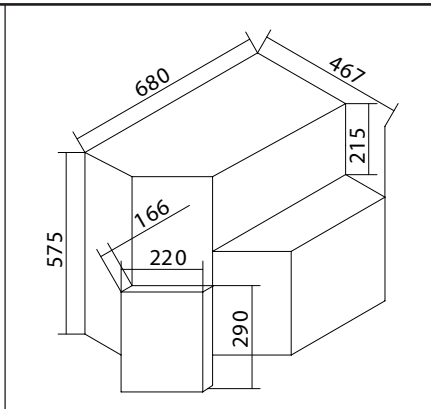
Cool boxes for NEOMAN – NEOPLAN

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

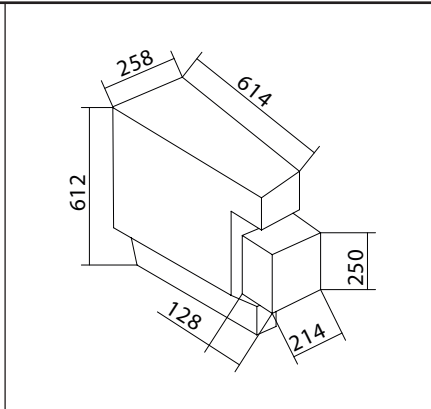
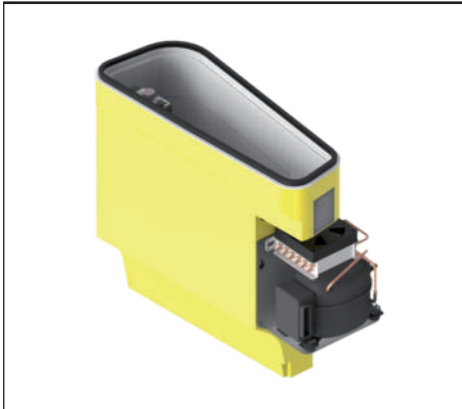
Type KBN-G double-deck



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

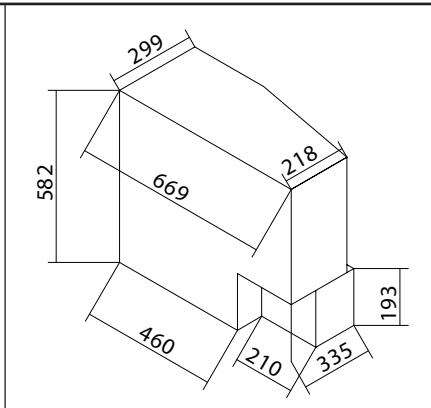
Cool boxes for TEMSA

Type Aventurin



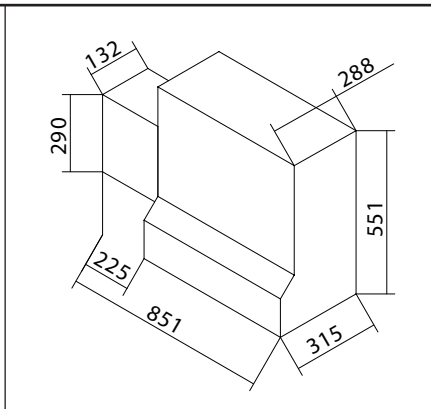
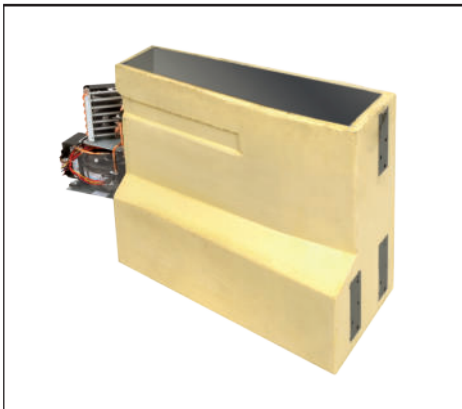
order no.:	
01.1911.00.00	
01.1912.00.00 RHD	
voltage: 12/24 V DC	
power: 35 W	
current consumption: 3,0/1,5 A	
weight: 13 kg	
volume: 25 l	

Type Safari/Safir



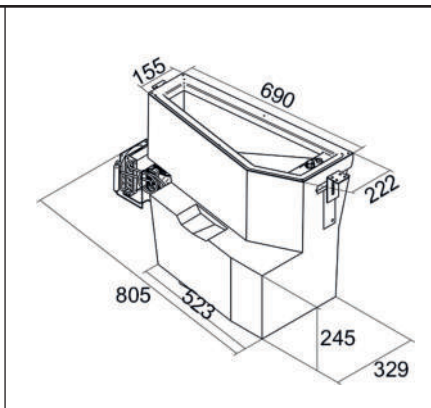
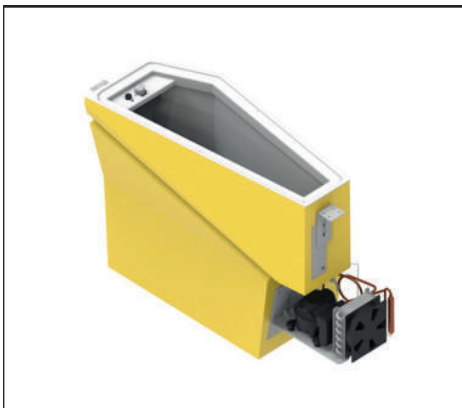
order no.:	
01.1910.00.00	
voltage: 12/24 V DC	
power: 35 W	
current consumption: 3,0/1,5 A	
weight: 16 kg	
volume: 50 l	

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	
Inhalt: 51 l	

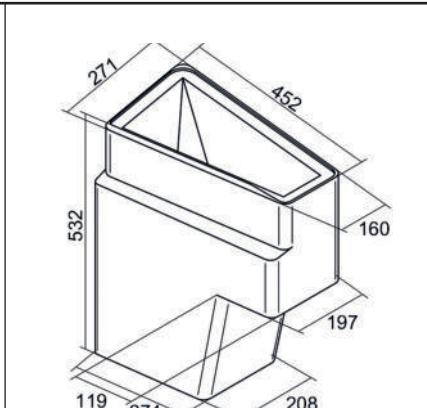
Type A-KT EX A624



order no.:	
01.3103.00.00	
voltage: 12/24 V DC	
power: 48 W	
current consumption: 5,0/2,5 A	
weight: 17 kg	
volume: 50 l	

Bus and truck cool box customer-specific

Type A-KT EX-SD-RHD-UK



Artikel-Nr.:

01.3104.00.00

Spannung: 12/24 V DC

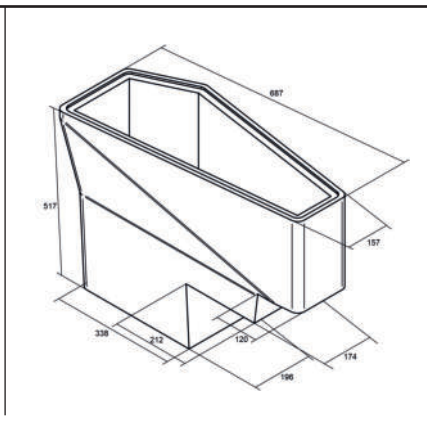
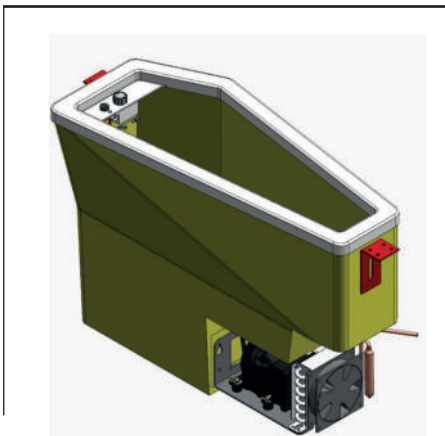
Leistung: 60 W

Stromaufnahme: 5,0/2,5 A

Gewicht: 27 kg

Inhalt: 26 l

Type A-KT EX-DD



Artikel-Nr.:

01.3105.00.00

Spannung: 12/24 V DC

Leistung: 60 W

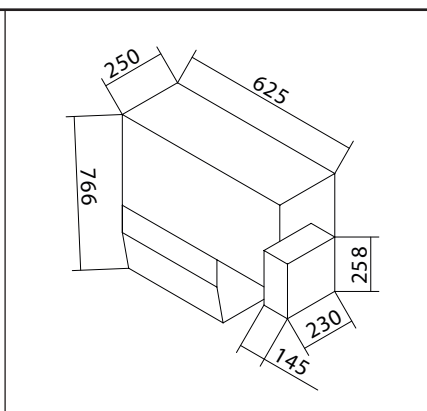
Stromaufnahme: 5,0/2,5 A

Gewicht: 27 kg

Inhalt: 35 l

Cool boxes for VDL

Type VDL



order no.:

01.6010.00.00

01.6011.00.00 RHD

voltage: 12/24 V DC

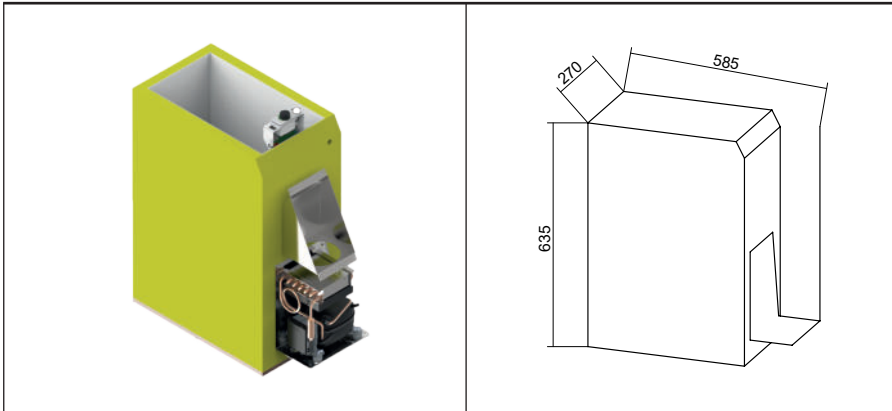
power: 60 W

current consumption: 5,0/2,5 A

weight: 17 kg

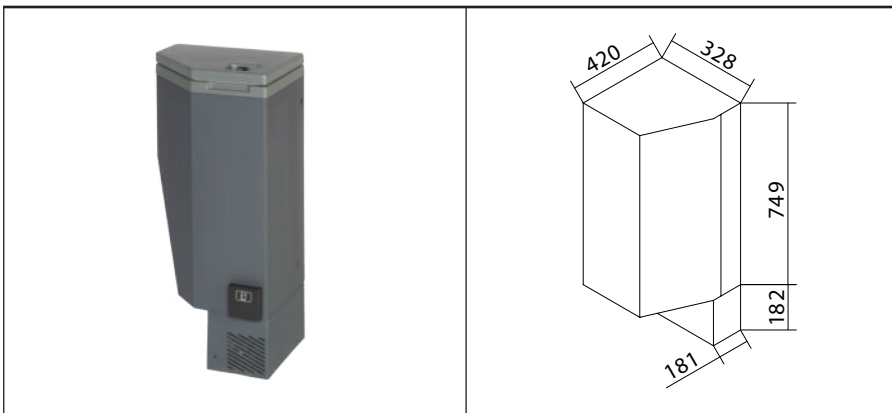
volume: 55 l

TK behind the toilet



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

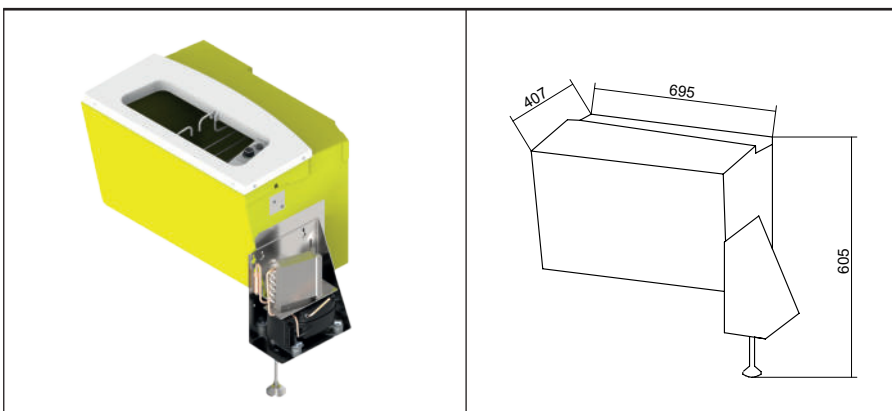
Type KS Toplader



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

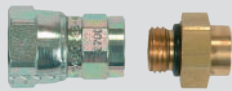
Cool boxes for Volvo

A-KT P9420



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

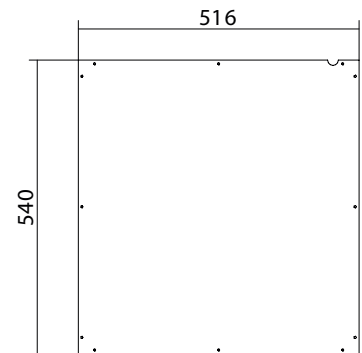
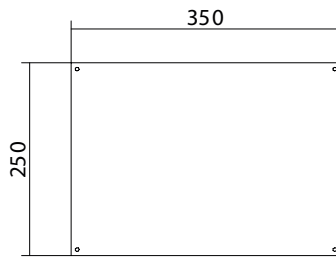
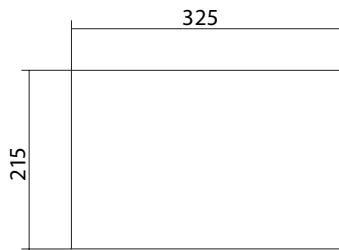
Other individual model versions available upon request
white, powder-coated



order no.:
27.0000.00.00

order no.:
27.0544.31.01

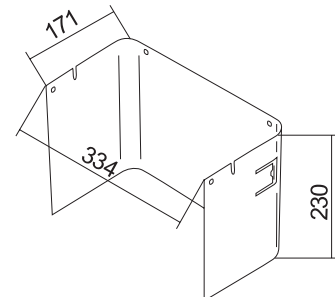
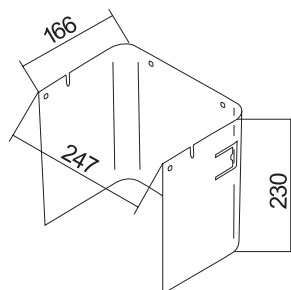
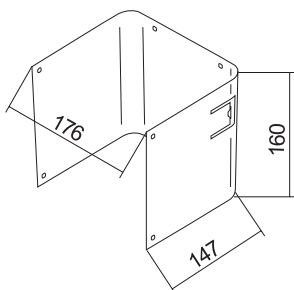
order no.:
27.4500.10.20



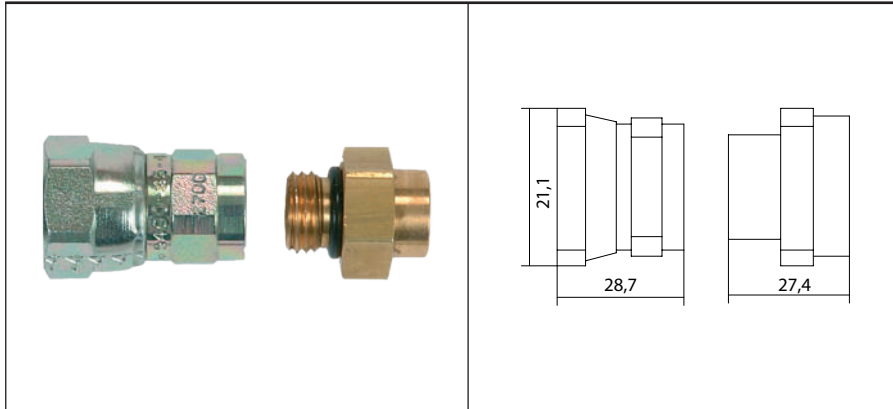
order no.:
27.1400.00.01

order no.:
27.0220.00.01

order no.:
27.0225.00.01



Coupling



order no.:

50.6060.01.01 Vent sleeve

50.6060.01.02 Vent coupling

Coupling self-sealing; several evaporators deliverable with soldered coupling

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

SECOP

General

SECOP 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. length*	24 V
		12 V
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 length between battery and electronic control unit.

Number of flashes

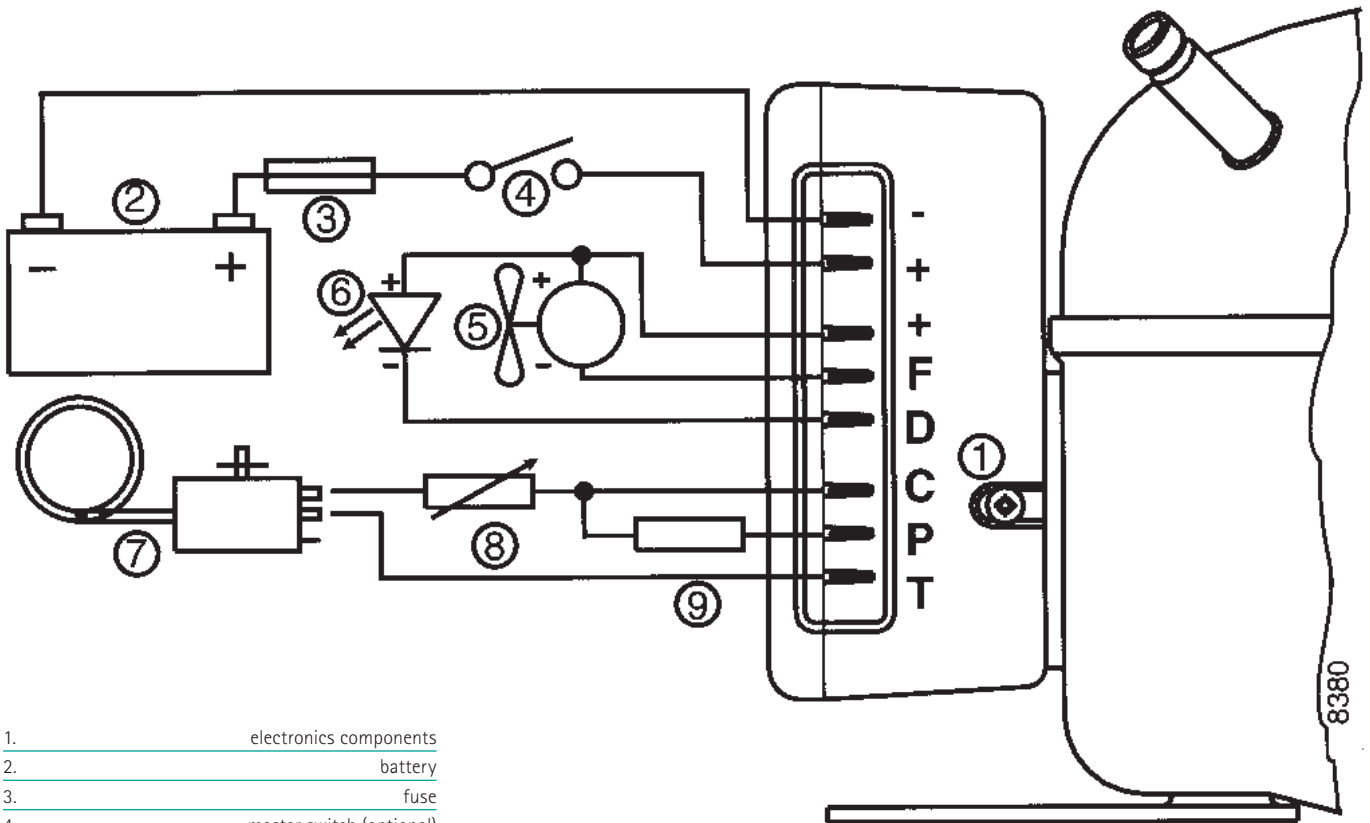
Errortype

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)
9. resistance to battery protection voltage preset (optional)

8380

DC Cooling Units

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

order no.:
03.0580.00.00 (BD 35 F)
03.0580.50.00 (BD 50 F)

	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

order no.:
03.2524.02.00 (BD 35 F)
03.2524.50.00 (BD 50 F)

	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

order no.:
03.0220.00.00 (BD 35 F)
03.0220.50.00 (BD 50 F)

	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

order no.:
03.1300.10.00 (BD 35 F)
03.1300.50.00 (BD 50 F)

	BD 35 F	BD 50 F
voltage:	1 2/24 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

DC Cooling Units

DC Cooling Units 12/24 V

Including refrigerant R 600A and the reliable SECOP full hermetic compressors BD 35 K und BD 50 K

		order no.: 03.0581.00.00 (BD 35 K) 03.0581.50.00 (BD 50 K)																
		<table border="1"> <thead> <tr> <th></th> <th>BD 35 K</th> <th>BD 50 K</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 600 A</td> <td>R 600 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 K	BD 50 K	voltage:	12/24 V	12/24 V	current consumption:	depending on technical product design		refrigerant:	R 600 A	R 600 A	operating noise:	25 db (A)	25 db (A)	weight:
	BD 35 K	BD 50 K																
voltage:	12/24 V	12/24 V																
current consumption:	depending on technical product design																	
refrigerant:	R 600 A	R 600 A																
operating noise:	25 db (A)	25 db (A)																
weight:	4,7 kg	6,7 kg																

		order no.: 03.2525.02.00 (BD 35 K) 03.2526.50.00 (BD 50 K)																
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	BD 35 K	BD 50 K																
voltage:	12/24 V	12/24 V																
current consumption:	depending on technical product design																	
refrigerant:	R 600 A	R 600 A																
operating noise:	25 db (A)	25 db (A)																
weight:	7,5 kg	7,5 kg																

		order no.: 03.0221.00.00 (BD 35 K) 03.0221.50.00 (BD 50 K)																
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	BD 35 K	BD 50 K																
voltage:	12/24 V	12/24 V																
current consumption:	depending on technical product design																	
refrigerant:	R 600 A	R 600 A																
operating noise:	25 db (A)	25 db (A)																
weight:	5,7 kg	5,7 kg																

		order no.: 03.1301.00.00 (BD 35 K) 03.1301.50.00 (BD 50 K)																
		<table border="1"> <thead> <tr> <th></th> <th>BD 35 K</th> <th>BD 50 K</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 600 A</td> <td>R 600 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 K	BD 50 K	voltage:	12/24 V	12/24 V	current consumption:	depending on technical product design		refrigerant:	R 600 A	R 600 A	operating noise:	25 db (A)	25 db (A)	weight:
	BD 35 K	BD 50 K																
voltage:	12/24 V	12/24 V																
current consumption:	depending on technical product design																	
refrigerant:	R 600 A	R 600 A																
operating noise:	25 db (A)	25 db (A)																
weight:	7 kg	7 kg																



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.

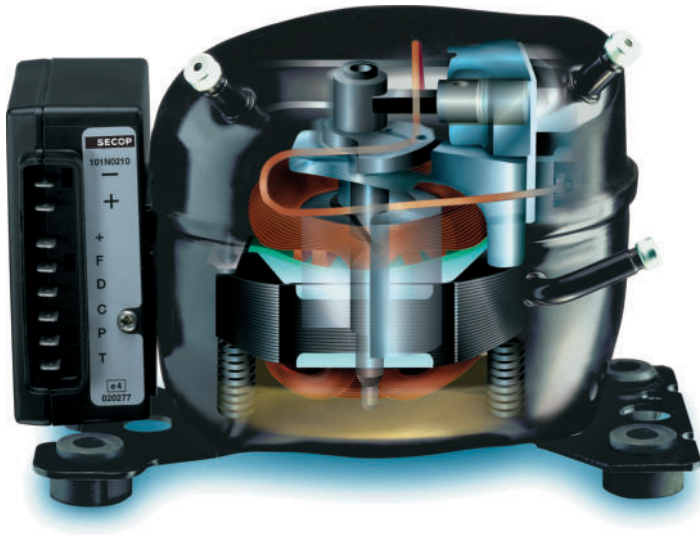
Our quality standard provides every cooling box with a clear operation panel. This panel allows an easy and clear operation. The operation panel contains:

- 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:

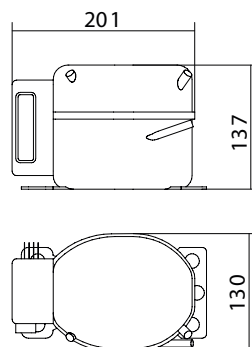
cable diameter	max. length*	
	12 V	24 V
2,5 mm ²	2,5 mm ²	5,0 m
4,0 mm ²	4,0 mm ²	6,0 m
6,0 mm ²	6,0 mm ²	12,0 m
10,0 mm ²	10,0 mm ²	20,0 m

* 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

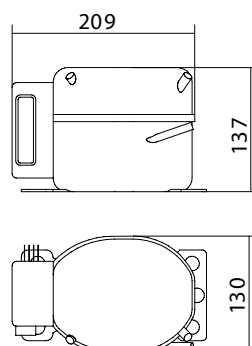
Type BD 35 F



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.

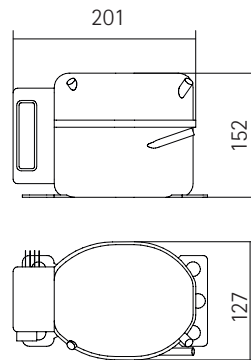
Type BD 50 F



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.

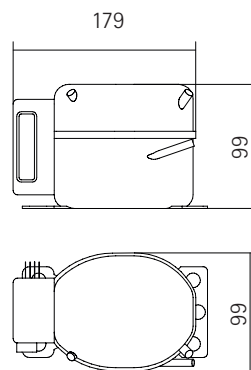
Type BD 35 K



order no.:	
compressor/elektronic unit	25.0600.24.00
compressor seperate	25.0600.24.01
elektronic unit seperate	25.0600.24.02
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:	R600A
operating noise:	25 db (A)

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

Type BD 80 F



order no.:	
compressor/elektronic unit	25.6114.10.00
compressor seperate	25.6114.10.08
elektronic unit seperate	25.6114.10.10
voltage:	12 / 24 V DC
undervoltage protection:	19-27 V
current consumption:	depending on technical product design
weight:	2,3 kg
refrigerant:	R600A
operating noise:	k. A.

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



1



2



3

1. Dashboard integrated cool box
2. QS Multiplus 2 G Kitchen
3. Transporter cool box
4. Summertime 2
5. Cool box KBU60
6. Central access toilet

TM Product landscape



4

5

6

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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.