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 **VAN DER HEIJDEN**
Labortechnik GmbH

Cool Solutions 2013/2014

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MINORE®
PARALAQUA®
COOL CARE®

are registered
 Trademarks

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We are constantly improving the design of our equipment. The values provided on this CD are therefore subject to change.

Version: March 2014

Close the water tab!



A few words to help you with our catalogue.

Various standard models are shown over the following pages but also some options and variations that are possible with our KÜHLMOBIL unit. These, however, only represent part of our range. Our particular strengths lie in providing comprehensive advice and individual configurations to meet your requirements.

More about us

The retail trade company Van der Heijden (laboratory equipment) was founded 1974 and changed to a production plant for chillers approx in 1985.

For years we are active in this market and have the experience in the field of laboratory appliances.

We are specialized on manufacturing special builds, beside a main standard product range. Our particular strength lie in providing comprehensive advice and individual configurations to meet your requirements.

We place particular importance on

our customer's wishes regarding the manufacture of a machine and After-Sales service. To ensure the continued existence of our company and that we are there for you in the future, we have changed the name of our company from 1st August 2001 onwards to Van der Heijden-Labortechnik GmbH.

The whole company, including Production, Development and Sales, is certified to DIN EN ISO 9001.

Despite constantly monitoring the VAN DER HEIJDEN operation and permanently maintaining the certification, we essentially try hard to keep our prices low. This however is

not entirely possible without loading some costs onto the equipment.

Bear in mind, therefore, that you are buying equipment of guaranteed high quality and that even years later a contact is still there for you. If prices are calculated too low, quality cannot be maintained long-term. This, however, is an essential pre-requirement for a company's long-term existence.

Quality strongly affects service costs; these, however, cannot be seen implicitly when purchasing a unit. You should therefore not just look at the purchase price but also consider the product behind it.



cool solutions
- your advantage





Set us a challenge!

The following list shows a portion of our expertise.

Please feel free to take advantage of this !

A telephone call, a fax or email and a subsequent discussion on site will be sure to provide a custom-tailored solution to your cooling water problem.

Contact

-  +49 5265-94552-0
-  +49 5265-94552-10
-  info@van-der-heijden.de
-  www.van-der-heijden.de

Laboratory

Experience and used in laboratories:

- ~ Distillation devices
- ~ Electron microscopes
- ~ Extraction devices
- ~ Forellenbassins
- ~ Trout ponds
- ~ High frequency furnaces
- ~ Cooling tables
- ~ Laser devices
- ~ Mass spectrometers
- ~ N.M.R. equipment
- ~ Pilot systems
- ~ X-ray fluorescence spectrometers
- ~ X-ray diffractors
- ~ X-ray generators
- ~ Rotation evaporators
- ~ Tempering chambers
- ~ Plasma Quad
- ~ ICP – OES
- ~ ICP Mass spectrometers
- ~ Tracking detectors
- ~ X-ray sequence spectrometers
- ~ Ion spectrometer
- ~ Plasma focus
- ~ Firing systems
- ~ Tritium Target
- ~ Sputtering systems
- ~ E.S.R Electron Spin Resonance
- ~ Zyclotron Target

Operations

Experience and used in

- ~ Vacuum depositing systems
- ~ Distillation devices
- ~ Form presses
- ~ Freon degreasing systems
- ~ Galvanic baths
- ~ High frequency furnaces
- ~ High frequency spindles
- ~ Laminating machinery
- ~ Laser devices
- ~ Soldering equipment
- ~ Mixers
- ~ Pilot systems
- ~ Spot welding machinery
- ~ Rotation evaporators
- ~ Sintering presses
- ~ Trichlorine degreasing systems
- ~ Packaging machinery
- ~ Drum cooling
- ~ High frequency spindles
- ~ Grinding spindles
- ~ Welding robots
- ~ Tin can welding machinery
- ~ Sputtering systems
- ~ Firing systems
- ~ Printing machinery

We manufacture in accordance with

- ~ UVV
- ~ BGR 500
- ~ EMV 2004/108/EG
- ~ VDE 0411
- ~ Niederspannungsrichtlinie 2006/95/EG
- ~ EG-Maschinenrichtlinie 2006/42/EG
- ~ CE
- ~ RoHS

Used harmonised guidelines, especially

- ~ DIN EN ISO 12100 – 2011-03
- ~ EN 60204-1 2006
- ~ DIN EN 60204-1
- ~ DIN VDE 0100-430
- ~ DIN EN 61010-1

Our technic – Your advantage!

Van der Heijden-Labortechnik GmbH can offer 41 standard models of the **KÜHLMOBIL** with cooling capacities between 180 watt and 40 kW. There are many more variations with higher cooling capacity. Almost all of these can be classified according to the following characteristics:

1. Cooler versus air (principle car-cooler)
2. Cooler with compressor and air-cooled condenser (waste air will given up into the room)
3. Cooler with compressor and water-cooled condenser (no waste air in the room)
4. Coolers with compressor and air-cooled condenser with a split design (waste air and noise will be not in the room)
5. All cooler variations as circulating cooler without tank
6. Water-water cooler, e.g. system separator without cooling aggregate
7. Cooler as a rack insert in laboratory furnishing (G 9408595.1 and G9114652.6)
8. Similar to itm 3, but using opposite principle (DE 4206020C1)
9. Miniature cooler but with optional installed vaccum pump and regulator, especially for rotary evaporators (Cool-vacuum-devices)
10. Items 1-9 designed for other types of current

This product range is complemented by a wide selection of options (variations and recommended accessories for the **KÜHLMOBIL**, e.g. PVC tubing, remote control, bypass, multiple distributor, etc.



The advantages of the **KÜHLMOBILs** are

- ~ 100 % water savings
- ~ No sewage costs
- ~ Extremely short amortisation periods
- ~ Constant water quality, also available as distilled water model
- ~ Constant water pressure, adjustable, if necessary
- ~ Proper cooling water temperature, the formation of condensation on pipework can be prevented during the Summer
- ~ Constant cooling water temperature
- ~ Choice of 41 standard devices in 12 device sizes
- ~ Large choice of options
- ~ Smallest surface area with highest cooling performance
- ~ Mobile (on wheels)
- ~ Infinitely variable temperature selection
- ~ Casing made of 2 mm thick epoxy resin coated aluminium sheeting
- ~ Display for malfunction alarm (different things)
- ~ Acoustical alarm
- ~ Directly accessible electrical circuit boxes by key (from size 1 on)
- ~ Easily Handling
- ~ Relative noiseless
- ~ Serviceable

Summary of CFC-free KÜHLMOBILs standard design

NOTE! All models are available in water cooled version and also as system separator.
 Due to the pump capacity every chiller will be designed and can have other dimensions.

Model	Cooling capacity in watts of water outlet			Max. pressure in bar	Max. volume l/min.	Reservoir/ Volume in l	Quick lock coupling
	20°C	10°C	0°C				
COOL-CARE®	200	140	95	0,15	5	0,8	9 mm S*
MINORE® 0-RB400	300	210	180	0,4	28	5	9 mm S
MINORE® I-RB400	350	250	150	0,4	28	5	9 mm S
MINORE® II-RB400	500	400	270	0,4	28	5	9 mm S
0000-RB400	600	450	300	0,4	28	5	9 mm S
0001-RB400	600	450	300	3,5	10	5	9 mm S
0002-RB400	800	620	400	0,4	28	5	9 mm S
0004-RB400	800	620	400	3,5	10	5	9 mm S
000-RB400	1000	800	500	0,4	28	5	9 mm S
002-RB400	1000	800	500	3,5	10	5	9 mm S
010-RB400	1200	850	560	3,5	10	15	9 mm S
101-RB400	1500	1100	750	3,5	10	15	9 mm S
111-RB400	1900	1250	850	3,5	10	15	9 mm S
121-RB400	2100	1500	1150	3,5	10	15	9 mm S
132-RB400	2400	1750	1200	3,5	10	15	9 mm S
142-RB400	2900	2000	1300	4,5	40	25	1/2" K**
142-B400	3000	2200	1500	4,5	40	50	1/2" K**
210-B400	3200	2400	1600	4,5	40	100	1/2" K
221-B400	3900	3200	2100	4,5	40	100	1/2" K
311-B400	4300	3400	2200	4,5	40	100	1/2" K
312-B400	5000	4300	3100	5,5	66	100	3/4" K
313-B400	5400	4800	3600	5,5	66	100	3/4" K
322-B400	6000	4800	3300	5,5	66	100	3/4" K
423-B400	7000	5200	3600	5,5	66	200	3/4" K
424-B400	7700	5900	4000	5,5	66	200	3/4" K
433-B400	8300	6500	4900	5,5	66	200	1" K
442-B400	9500	8000	5200	5,5	66	200	1" K
512-B400	10000	8300	5500	5,5	66	200	1" K
513-B400	11500	9300	6600	5,5	66	200	1" K
531-B400	12500	10800	8000	5,5	66	200	1" K
534-B400	14500	12200	9100	5,5	66	200	1" K
543-B400	16000	13200	9800	5,6	100	225	1 1/4" K
544-B400	18000	15200	11000	5,6	100	250	1 1/4" K
549-B400	20000	16500	11600	5,6	100	250	1 1/4" K
615-B400	23800	19000	14000	5,6	100	250	1 1/4" K
626-B400	28500	21000	16000	5,6	100	250	1 1/4" K
627-B400	32000	25000	18000	5,6	100	250	1 1/4" K
634-B400	40000	31000	23000	5,6	100	250	1 1/4" K

S* = Quick lock coupling with sleeves for 9 mm inner hose ☒

K** = Ball valves with hose sockets

Summary of CFC-free KÜHLMOBILs standard design

Model	Current	Dimensions in mm without castors, WxDxH, using R404A	Dimensions in mm with castors, WxDxH, using R134A	Castors Ø mm	Weight in kg	Size
COOL-CARE®	230 V/50 Hz		260 x 390 x 245	–	13	
MINORE® 0-RB400	230 V/50 Hz		360 x 470 x 590	70	31	00
MINORE® I-RB400	230 V/50 Hz		360 x 470 x 590	70	37	00
MINORE® II-RB400	230 V/50 Hz		360 x 470 x 590	70	38	00
0000-RB400	230 V/50 Hz		360 x 470 x 590	70	51	00
0001-RB400	230 V/50 Hz		360 x 470 x 590	70	52	00
0002-RB400	230 V/50 Hz		430 x 470 x 695	70	54	0
0004-RB400	230 V/50 Hz		430 x 470 x 695	70	54	0
000-RB400	230 V/50 Hz		430 x 470 x 695	70	55	0
002-RB400	230 V/50 Hz		430 x 470 x 695	70	55	0
010-RB400	230 V/50 Hz		530 x 580 x 750	70	70	06
101-RB400	230 V/50 Hz		530 x 580 x 750	70	72	06
111-RB400	230 V/50 Hz		530 x 580 x 750	70	79	06
121-RB400	230 V/50 Hz		530 x 580 x 750	70	81	06
132-RB400	230 V/50 Hz		530 x 580 x 750	70	82	06
142-RB400	230 V/50 Hz		580 x 660 x 820	70	91	08
142-B400	230 V/50 Hz		590 x 620 x 1205	125	93	1
210-B400	400 V/50 Hz/3		680 x 730 x 1520	125	175	2
221-B400	400 V/50 Hz/3		680 x 730 x 1520	125	181	2
311-B400	400 V/50 Hz/3		680 x 730 x 1520	125	183	2
312-B400	400 V/50 Hz/3		680 x 730 x 1520	125	189	2
313-B400	400 V/50 Hz/3		680 x 730 x 1520	125	191	2
322-B400	400 V/50 Hz/3	680 x 730 x 1520		125	199	2
423-B400	400 V/50 Hz/3		800 x 850 x 1665	125	223	3
424-B400	400 V/50 Hz/3		800 x 850 x 1665	125	247	3
433-B400	400 V/50 Hz/3		800 x 850 x 1665	125	252	3
442-B400	400 V/50 Hz/3		800 x 850 x 1665	125	264	3
512-B400	400 V/50 Hz/3		800 x 850 x 1665	125	267	3
513-B400	400 V/50 Hz/3		800 x 850 x 1665	125	267	3
531-B400	400 V/50 Hz/3	800 x 850 x 1665		125	270	3
534-B400	400 V/50 Hz/3	800 x 850 x 1665		125	275	3
543-B400	400 V/50 Hz/3	980 x 820 x 1770		125	337	4
544-B400	400 V/50 Hz/3	1400 x 1000 x 1800		125	337	5
549-B400	400 V/50 Hz/3		1400 x 1000 x 1800	125	420	5
615-B400	400 V/50 Hz/3		1400 x 1000 x 1800	125	425	5
626-B400	400 V/50 Hz/3	1400 x 1000 x 1800		125	437	5
627-B400	400 V/50 Hz/3	1400 x 1000 x 1800		125	450	5
634-B400	400 V/50 Hz/3	1400 x 1000 x 1800		125	476	5

Model Minore 0 to model 142: All equipped with complete shut off in case of malfunction, overheating alarm or lack of water. Manometer and bypass regulator waterside is standard when the pump pressure is more then 3.5 bar.

From model 142: Interface or floating contact for switching off device to be cooled in case of malfunction. All models are equipped with bypass regulator and manometer.

Options

	order-no		order-no
bottle Thermoclean-DC, algae-free, 50 ml	09000		
PVC-hose, nylon-reinforced, complete with 4 hose clamps, for pipe connection	1/4" – 6 x 3 09010 3/8" – 9 x 3 09020 1/2" – 13 x 3,5 09050 3/4" – 19 x 4 09075 1" – 25 x 4,5 09100		
PVC-hose, nylon-reinforced, PU foam coated, complete with 4 hose clamps for pipe connection	3/8" – 9 x 3 10020 1/2" – 13 x 3,5 10050 3/4" – 19 x 4 10075 1" – 25 x 4,5 10100		
Automatic switch over to water line during malfunction or power failure to maintain the cooling function	3/8" 11020 1/2" 11050 3/4" 11075 1" 11100		
Floating contact for devices up to 2.4 kW (for standard models from sizes of 2.7 km onwards)	12000		
Multi header, 2-fold with 4 ball valves	3/8" 13020 1/2" 13050 3/4" 13075 1" 13100		
Multi header, 3-fold with 6 ball valves	3/8" 13120 1/2" 13150 3/4" 13175 1" 13200		
Multi header, 4-fold with 8 ball valves	3/8" 13220 1/2" 13250 3/4" 13275 1" 13300		
Design for use with Aqua Dest	15000		
Aqua-Dest supply (only in combination with option 15000) supplementary unit for treatment of completely desalinated water. From model 141, interated into KÜHLMOBIL . Water quality selection in ms on measuring instrument. Monitoring via a floating contact, including built-in circulating pump	16010		
Remote control in casing with control unit B400 (according to the chiller model with set value and actual value display). The plug connections are mounted on the chiller. The remote control is optional available for all chiller models.	up to 20 m 17000 cabel lengths up to 40 m 17001 up to 60 m 17002		
Check flap valve in the prerun and magnetic valve in the backrun for geodetic differences in level starting at 5 m	3/8" – 9 x 3 18020 1/2" – 13 x 3,5 18050 3/4" – 19 x 4 18075 1" – 25 x 4,5 18100		
Operating time meter	19000		
External switching option for possibility for the KÜHLMOBIL from the device to be cooled, 230 V/50 Hz	19100		
Digital flow display in l/min, up to 10 l/min, can be read out front side by pressing a button	20100		
Flow control device (with signal)	20200		
Automatic refilling device	21100		
Software version for automatic run-on for up to 10 hours after manual shut-off of KÜHLMOBIL	21200		
Bypass valve for regulating the max. permitted feed pressure (standard from 3.5 bar pump pressure), required for low water through put amounts or for multiple header	3/8" 22020 1/2" 22050 3/4" 22075 1" 22100		
Manometer with pressure display in bar (standard from 3.5 bar pump pressure), 0-6 bar range	40 mm, 23000		
Automatic bypass valve	3/8" 24020 1/2" 24050 3/4" 24075 1" 24100		
Dirt filter with sieve insert < 0.25 mm	3/8" 25020 1/2" 25050 3/4" 25075 1" 25100		
Additional price for KÜHLMOBIL with water-cooled condenser using pressure controlled water quantity regulating valve	bis Typ 101 26000 bis Typ 142 26001 bis Typ 210 26002 bis Typ 423 26003 bis Typ 534 26004 bis Typ 634 26005		
Elec. power regulator, microprocessor controlled, for constant feed temperatüre (for COOL-CARE® and models MINORE® 0 – II)	26900		
Electronically power regulation unit by a proportional valve to hold a constant water prerun temperature. Microprocessor steering model B400 with set value and actual value in O-LED display, up to 3.5 kW	27000		
Same as option 27000	27001		
Possible up to 6 kW	27002		
Electronically power regulation unit by magnetic valve to hold a constant water prerun temperature. Microprocessor steering model B400 with set value and actual value in O-LED display. Possible up to 12.5 kW	27002		
Same as option 27002	27003		
Possible up to 40 kW	27003		
For devices when set up outdoors			
Winter-start equipment up to 5 kW	28001		
from 5,4 up to 23,8 kW	28002		
from 28,5 up to 40,0 kW	28003		
Custom units available on demand			
Crane lugs for placement on the roof	29000		
Rain roof made of 2 mm aluminium sheeting, in RAL painted design; dimensions and color to match the KÜHLMOBIL	up to size 0 30000 up to size 06 30001 up to size 08 30002 up to size 1 30003 up to size 2 30004 up to size 3 30005		
Tank heater with thermostate and bypass valve for water circulation (winterized for downtimes in Winter)	31000		

Control Module B400 / RB400

Option 17000

Remote control in console housing
with control system B400



- ~ light O-LED display
- ~ easy care and hygienic operating area
- ~ capacitive touch technique with acoustic confirmation
- ~ easy reasonable control element, menue guided and multilingual
- ~ acoustic alarm with reset function
- ~ only keys with available function are displayed
- ~ display of error messages with explanation about reason and removal
- ~ quick recognizability of state of function with moving symbols
- ~ display of parameter without key code
- ~ display of actual and target temperature simultaneously
- ~ Interface with voltage free contact for collective alarm
- ~ PID control characteristic for high temperature constancy of the water flow temperature
- ~ serial number available at the display
- ~ Display in °C or Fahrenheit with resolution 1/10° possible
- ~ Electronic calibration
- ~ Delayed pump switch-off for after-cooling possible
- ~ Drive of 3 different pumps within one device possible
- ~ Digital flow dectector in l/min by pressing a button (as option)
- ~ RS 232

Additional options



Now standard

from 1.5 bar pump pressure: Manometer with pressure display, Ø 40 mm, with chrome-plated ring, range 0-6.0 bars, 0-10 bars alternatively.

Bypass valve for regulating the maximum permissible initial pressure and/or regulating the flow volume.

Bypass can be delivered with or without red handwheel



The picture shows unmistakable water connectors for water prerun and water backrun. A dirt filter in the water prerun (option 25050) and an automatically bypass valve (option 24050). Interface by external plug contact for possibility to switch on the chiller extern (option 19100).



Standard version from size 1 model 142-B400. Manometer for prerun pressure display. Bypass between water prerun and water backrun. Ball valves with hose sockets. Plug contact as interface for floating contact.



Option 13150

3-port distributor with 6 x 1/2" ball valves and one flow detector per water backrun. Designed for external wall mounting and can be placed at any place.

The distribution device is mounted on a wall bracket and can be fixed external on different places. On the biggest size of the wall bracket can be mounted 10 flows and 10 returns

COOL-CARE® aircooled

In order to avoid cooling water being consumed during the range of applications VAN DER HEIJDEN has developed the **COOL-CARE®**.

The **COOL-CARE®** operates on the principle of a circulating cooler. A refrigeration unit cools the circulating water or the anti-freeze mixture in a small container made by plastics, from where a circulating pump conveys it to the unit which is to be cooled. The filling of the container occurs at the top of the unit, where it is easily accessible.

The cover can be screwed on. If maintaining the temperature constant within a determined range is more important than water savings, the **COOL-CARE®** is available with a small heating unit. A wear-resistant microprocessor-controlled control unit regulates a container heating unit and ensures a very precise water outflow temperature.



Range of application

- ~ HPLC
- ~ Electrophoresis
- ~ Micro-Rotis
- ~ Soxleth
- ~ Water baths
- ~ and other more

Advantages

- ~ 100 % water savings
- ~ Temperature of cooling water can be set as required
- ~ Minimal space requirements on any laboratory table
- ~ Virtually silent in operation
- ~ Exceptionally easy to use
- ~ Suitable for wide range of uses

Technical data

COOL CARE®

Refrigerating capacity	200 watts at 20° C Medium outlet temperature
Ambient temperature	approved up to +28° C
Pumping capacity	10 l/min.
Feed pressure	0.15 bar
Connections	3/8" quick lock coupling rear of unit
Tank contents	0.8 liter
Dimensions	W x D x H = 290 x 450 x 270 mm
Type of current	230 V / 50 Hz / 1 PH / N / PE
Power consumption	80 watts
Weight	15 kg
Refrigerant	R 134 a (CFE-free)
Upper housing	pure white
Lower housing	pure white

MINITOWER model 0002-RB400 MT. wg



This picture shows a water-cooled version of a cooling unit. Thanks to its relatively small dimensions it can be easily positioned inside a laboratory cabinet or similarly confined space. Since the unit releases very little heat into the surrounding area, there is no need for ventilation of the installation location. The unit's performance is sufficient to supply up to three workstations with rotating vaporizers.

The chiller can be operated by the capacitive pad which is easy to understand. All error messages are shown on the display and indicated by means of an acoustic alarm. A powerful magnetic coupled feed pump ensures good flow through the heat exchanger. A static maximum pressure up to 3.5 bar is available. All versions of the cooling unit are low-noise. The coolant tank is also located on the front of the unit, also making it easy to top up after the unit has been installed. The filler cap is an easy to open screw top. A yellow symbol indicates if the coolant level in the reservoir tank is too low. The water side connections are located on top of the unit at the rear.

This unit is also available for flow temperatures above zero.

As far as the supplier side for the cooling unit is concerned, this can be provided by the building's own water-cooling circuit or by the drinking water supply pipe. The unit consumes only as much water as it needs to meet the cooling output. When the cooling unit is switched off, water consumption is equal to zero. Everything functions automatically and maintenance-free.

Technical data MINITOWER

model 0002-RB400 MT.wg.-

Cooling output at - 15°C coolant outlet temp.	300 watts Medium outlet temperature
Ambient temperature	approved up to 35° C
Pumping capacity	10 l/min.
Feed pressure	3.5 bar
Connections	3/8" inside thread
Tank contents	3.5 liter
Dimensions (W x D x H)	253 x 403 x 520 mm (including feet)
Type of current	230 V/50 Hz
Power consumption	0.69 kW max.
Weight	approx. 30 kg
Refrigerant	R 404a
Colour, frame/panelling	RAL 5003 (blue) / RAL 9002 (gray-white)

Thanks to a special system, two side panels can be removed very quickly, making everything easily accessible and greatly enhancing the service friendliness of the unit.

This unit is also available as a system separator without a compressor (water-water cooler), which means that an output of up to 9 kW can be achieved with the same unit dimensions.

MINORE® aircooled



The **MINORE®** is a small circulatory cooling unit. A cooling unit cools the circulating water and /or antifreeze mixture in a small container, from which it is extracted by a circulation pump and supplied to the cooling unit. The container is filled from under the hinged cover on the top of the unit and is easily accessible.

This type of unit is available in the same size of casing up to 600 W and 3.0 bars pump pressure. Technical details are provided on the following page. The types involved are models 0000 and 0001.

Range of application

- ~ Rotation evaporators
- ~ Distillation devices
- ~ Soxhlet extractions
- ~ Water baths

Advantages

- ~ 100 % water savings in tap water = no tap water costs
- ~ No sewage costs for waste water
- ~ Cooling water temperature can be regulated
- ~ Constant water quality, no lime, no algae
- ~ Minimum space requirements on every laboratory table
- ~ Constant water pressure
- ~ Almost noiseless
- ~ Temperature display in O-LED
- ~ capacitive touch pad
- ~ Can be used for varying applications
- ~ On castors
- ~ Also available with higher pump pressure
- ~ Power regulation by micro-processor controlled heating, this means high temperature constance of water prerun temperature (0.1 K)

Technical data MINORE®	model 0-RB400	model I-RB400	model II-RB400
Cooling output at water discharge temperature of 20° C	300 watts	350 watts	500 watts
Ambient temperature	approved up to +32° C	approved up to +32° C	approved up to +32° C
Pumping capacity	5 l/min. at 0.3 bar	5 l/min. at 0.3 bar	5 l/min. at 0.3 bar
Feed pressure	0.4 bar	0.4 bar	0.4 bar
Connections	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves
Tank contents	5 liter	5 liter	5 liter
Dimensions (W x D x H)	360 x 470 x 590 mm	360 x 470 x 590 mm	360 x 470 x 590 mm
Type of current	230 V/50 Hz/1 PH/N/PE	230 V/50 Hz/1 PH/N/PE	230 V/50 Hz/1 PH/N/PE
Power consumption	220 watts max.	270 watts max.	340 watts max.
Weight	25 kg	37 kg	38 kg
Refrigerant	R 134 a (CFE-free)	R 134 a (CFE-free)	R 134 a (CFE-free)
Colour	RAL 5003/RAL 7035	RAL 5003/RAL 7035	RAL 5003/RAL 7035

MINORE® aircooled (backside)



Backside this appliance is equipped with a prerun pressure manometer, bypass and quick couplings



The tank with screwable plug is placed under the lid. NOTE! Our model plates are also placed under the lid. The hinged lid stays after opening like it is shown on the picture, so that it is easy to fill the tank.

KÜHLMOBIL model 0000-RB400 and model 0001-RB400



In standard version these appliances will be delivered with castors.

Technical data KÜHLMOBIL	model 0000-RB400	model 0001-RB400
Cooling output at water discharge temperature of 20° C	600 watts	600 watts
Ambient temperature	approved up to +32° C	approved up to +32° C
Pumping capacity	5 l/min. at 0,3 bar	4 l/min. at 1,8 bar
Feed pressure	0.4 bar	3.5 bar
Connections	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves
Tank contents	5 liter	5 liter
Dimensions (W x D x H)	360 x 470 x 590 mm	360 x 470 x 590 mm
Type of current	230 V/50 Hz/1 PH	230 V/50 Hz/1 PH
Power consumption	430 watts max.	500 watts max.
Weight	51 kg	52 kg
Refrigerant	R 134 a (CFE-free)	R 134 a (CFE-free)
Colour	RAL 5003/RAL 7035	RAL 5003/RAL 7035

KÜHLMOBIL model 0002-RB400 to 010-RB400 aircooled



All the models are available with electronic power control, which provides a highly consistent temperature at the water outlet (0.1K).

The desired flow volume on the water side can be adjusted using a bypass.

All the units are mobile and equipped with a pump cut-out in the event of water failure.

External installation with appropriate options is available.

The feed pump is extremely quiet.

Temperature display in O-LED.

Faults are shown in the display textual.

Serviceable due to the new fixing technic of the sheets. Every side has just 2 screws which are easy to release.

Range of application

- ~ Rotation evaporators
- ~ E-Mics
- ~ AAS devices
- ~ ICP devices
- ~ Extraction devices
- ~ Destillation devices
- ~ and other more

Technical data KÜHLMOBIL	model 0002-RB400	model 0004-RB400	model 000-RB400
Cooling output at water discharge temperature of 20° C	800 watts	800 watts	1000 watts
Ambient temperature	approved up to +32° C	approved up to +32° C	approved up to +32° C
Pumping capacity	5 l/min. at 0.3 bar	4 l/min. at 2.2 bar	5 l/min. at 0.3 bar
Feed pressure	0.4 bar	3.5 bar	0.4 bar
Connections	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves
Tank contents	5 liter	5 liter	5 liter
Dimensions (W x D x H)	430 x 470 x 695 mm	430 x 470 x 695 mm	430 x 470 x 695 mm
Type of current	230 V/50 Hz/1 PH/N/PE	230 V/50 Hz/1 PH/N/PE	230 V/50 Hz/1 PH/N/PE
Power consumption	550 watts max.	630 watts max.	580 watts max.
Weight	52 kg	53 kg	54 kg
Refrigerant	R 134 a (CFE-free)	R 134 a (CFE-free)	R 134 a (CFE-free)
Colour	RAL 5003/RAL 7035	RAL 5003/RAL 7035	RAL 5003/RAL 7035

KÜHLMOBIL model 0002-RB400 tu 010-RB400 aircooled (backside)



Standard version backside



Shows the backside of the chiller with a plug contact as interface for the floating contact.

Technical data KÜHLMOBIL	model 002-RB400	model 010-RB400
Cooling output at water discharge temperature of 20° C	1000 watts	1200 watts
Ambient temperature	approved up to +32° C	approved up to +32° C
Pumping capacity	4 l/min. at 2.2 bar	4 l/min. at 2.2 bar
Feed pressure	3.5 bar	3.5 bar
Connections	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves
Tank contents	5 liter	5 liter
Dimensions (W x D x H)	430 x 470 x 695 mm	530 x 580 x 750 mm
Type of current	230 V/50 Hz/1 PH	230 V/50 Hz/1 PH
Power consumption	650 watts max.	720 watts max.
Weight	55 kg	70 kg
Refrigerant	R 134 a	R 134 a
Colour	RAL 5003/RAL 7035	RAL 5003/RAL 7035

KÜHLMOBIL model 101-RB400 to 132-RB400 aircooled



All the models switch off completely in the event of a fault or water failure.

The air inlet is on the front face. The air outlet is at the rear.

If no warming of the surrounding area is desired, every version can be supplied water-cooled. Versions as temper units are possible too.

Range of application

- ~ Laser devices
- ~ High frequency furnaces
- ~ Sputtering systems
- ~ Trout ponds
- ~ and other more

Technical data KÜHLMOBIL	model 101-RB400	model 111-RB400
Cooling output at water discharge temperature of 20° C	1500 watts	1900 watts
Ambient temperature	approved up to +32° C	approved up to +32° C
Pumping capacity	5 l/min. at 2.0 bar	5 l/min. at 2.0 bar
Feed pressure	3.5 bar max.	3.5 bar max.
Connections	quick lock coupling with 13 mm hose sleeves	quick lock coupling with 13 mm hose sleeves
Tank contents	15 liter	15 liter
Dimensions (W x D x H)	530 x 580 x 750 mm	530 x 580 x 750 mm
Type of current	230 V/50 Hz/1 PH/	230 V/50 Hz/1 PH/
Power consumption	850 watts max.	1050 watts max.
Weight	72 kg	79 kg
Refrigerant	R 134 a (CFE-free)	R 134 a (CFE-free)
Colour	RAL 5003/RAL 7035	RAL 5003/RAL 7035

KÜHLMOBIL model 101-RB400 to 132-RB400 aircooled

If flow displays are desired as an option, they are essentially installed on the last point on the return. Even with bypass control, the number of litres per minute flowing through the unit being cooled can be read. With the bypass an exact adjustment is possible. The volume flow will be monitored digital in the front side display of the operating panel.



The tank (15 liter) is placed under the lid.

Technical data KÜHLMOBIL	model 121-RB400	model 132-RB400
Cooling output at water discharge temperature of 20° C	2100 watts	2400 watts
Ambient temperature	approved up to +32° C	approved up to +32° C
Pumping capacity	5 l/min. at 2.0 bar	5 l/min. at 2.0 bar
Feed pressure	3.5 bar max.	3.5 bar max.
Connections	quick lock coupling with 13 mm hose sleeves	quick lock coupling with 13 mm hose sleeves
Tank contents	15 liter	15 liter
Dimensions (W x D x H)	530 x 580 x 750 mm	530 x 580 x 750 mm
Type of current	230 V/50 Hz/1 PH/N/PE	230 V/50 Hz/1 PH/N/PE
Power consumption	1100 watts max.	1140 watts max.
Weight	81 kg	82 kg
Refrigerant	R 134 a (CFE-free)	R 134 a (CFE-free)
Colour	RAL 5003/RAL 7035	RAL 5003/RAL 7035

KÜHLMOBIL model 142-RB400



The model 142-RB400 is exceptionally compact and particularly suitable for applications that require very constant water temperatures (has to be ordered as option). The litre-performance of the circulation pumps is designed for low volume flow at high pressures. If higher

circulation quantities are required then the model 142-B400/Gr1 (page 21) is recommended.

The control of the cooler displays permanent the actual value and set value at the same time. The O-LED display is very visible even at a distance. The simple attachment

of the casing provides quick service-friendly detachment possible. Everything is accessible and can be replaced relatively easily. Despite a cooling power of 2900 Watts the device is over proportionally quiet.

Technical data KÜHLMOBIL

model 142-RB400

Cooling output at water discharge temperature of 20° C	2900 watts
Ambient temperature	approved up to +32° C
Pumping capacity	40 l/min.
Feed pressure	4.5 bar
Connections	ball valves 3/8"
Tank contents	25 liter
Dimensions (W x D x H)	580 x 660 x 820 mm
Type of current	230 V/50 Hz/1 PH
Power consumption	1,7 kW
Weight	91 kg
Refrigerant	R 134 a
Colour	RAL 5003/RAL 7035

KÜHLMOBIL model 142-B400/Gr1



This circulatory cooling unit is particularly popular because of its sturdiness and versatility.

The unit is easy to operate and the controls are readily accessible through the door of the control cabinet.

With a ramp regulator, this model can also be used as a heating unit up to +95 °C. Several temperature levels can be time-controlled and run automatically in an other casing size.

If the **KÜHLMOBIL** is not directly in the same room, a plug-in remote control is available.

Multi-port distributors with up to 6 ports can readily be installed on the **KÜHLMOBIL**.

Technical data KÜHLMOBIL

model 142-B400/Gr1

Cooling output at water discharge temperature of 20° C	3000 watts
Ambient temperature	approved up to +32° C
Pumping capacity	40 liter / min
Feed pressure	4.5 bar max.
Connections	ball valves with ½" hose sockets
Tank contents	50 liter
Dimensions (W x D x H)	590 x 620 x 1205 mm
Type of current	230 V/50 Hz/1 PH/N/PE
Power consumption	1700 watts max.
Weight	95 kg
Refrigerant	R 134 a (CFE-free)
Colour	RAL 5003/7035

Range of application

- ~ Bi-Distillation devices
- ~ Drum cooling
- ~ X-ray devices
- ~ High frequency spindles
- ~ and other more

KÜHLMOBIL model 142-B400/Gr1 (backside)



The chiller in its standard version is equipped with ball valves, which are mounted backside and show vertical to the bottom. Bypass for adjustment of pressure and quantity and manometer are also standard as the floating contact. Other connections can also be delivered. Also the place of the water connections is variable. The chiller has a good access from all sides.

KÜHLMOBIL model 210-B400 to 512-B400



These models of cooling unit are also mobile units with plug-in connections.

Depending on the performance, the tanks contain 100 to 250 litres. The containers are easy to fill thanks to the large filling holes on the top of each cooling unit. Screwable covers with sealing rings tightly seal off the water side. Evaporation rates are very low.

Since the heat emitted from units of this size can be very considerable (warming of more than 40% to the surrounding area from the cooling operation), these units are frequently installed outside, in technical areas or even in large fields.

The amortisation times are relatively short since the **KÜHLMOBIL** saves significant amounts of water per year.

All the variants are also possible on these versions.

An overview of the performance figures is available on pages 6 and 7.

Technical data KÜHLMOBIL

model 313-B400

Cooling output at water discharge temperature of 20° C	5400 watts
Ambient temperature	approved up to +32° C
Pumping capacity	2400 l/h at 3.9 bar
Feed pressure	4.2 bar
Connections	ball valves with 3/4" hose sockets
Tank contents	100 liter
Dimensions (W x D x H)	680 x 730 x 1520 mm
Type of current	400 V/50 Hz/3 PH/N/PE
Power consumption	3.4 kW max.
Weight	191 kg
Refrigerant	R 134 A
Colour	RAL 5003/7035

Range of application

- ~ Packaging machinery
- ~ Sputtering systems
- ~ X-ray fluorescence spectrometer
- ~ X-ray generators
- ~ Form presses
- ~ and other more

KÜHLMOBIL model 210-B400 to 512-B400 (backside)



This application shows a version with manual bypass. Automatic bypass as option which opens when the unit which is to be cooled closes. There will be customer's cases where the water ways will be closed by magnetic valves. To let the feed pump of the chiller not run against closed valves, this automatic bypass opens in this case and water will flow by a short circuit. The pump will not be damaged by this and the maximum pressure will be limited. The required opening pressure will be adjusted here in our production. But due to the good access another adjustments are also possible. Turn right means more pressure and turn left means low pressure.

Water-water-chiller (System separator)



Photo shows water-water cooler with 30, 50 and 70 kW power

Dimensions 30 kW: W x D x H = 590 x 620 x 1205 mm
 50 kW: W x D x H = 680 x 730 x 1520 mm
 70 kW: W x D x H = 800 x 850 x 1665 mm

Today, many institutes already have their own cooling water supply. This cooling water is generally too cold to cool a laser or an electronical microscope or the water quality may be of a poor quality. As a system separator, the **KÜHLMOBIL** offers the ideal solution for such problems and has very small dimensions. It operates without a compressor and consequently without any refrigerant – only the feed pump requires energy, as the refrigerant output uses the

domestic water system. The drawing on the next page shows the basic functional principle. The purchasing price of such a device is far below those of a compressor-cooled device.

This appliance works with a 3-way motor valve. Due to the analogue steering signals (0-10 V) the constant temperatures will be reached and source of disturbances will be balanced.

The variant is also available with a motorised valve, controlled via a microprocessor-controlled PID regulator.

This version can be delivered with a full-way valve as motor valve, if a 3-way valve is not required.

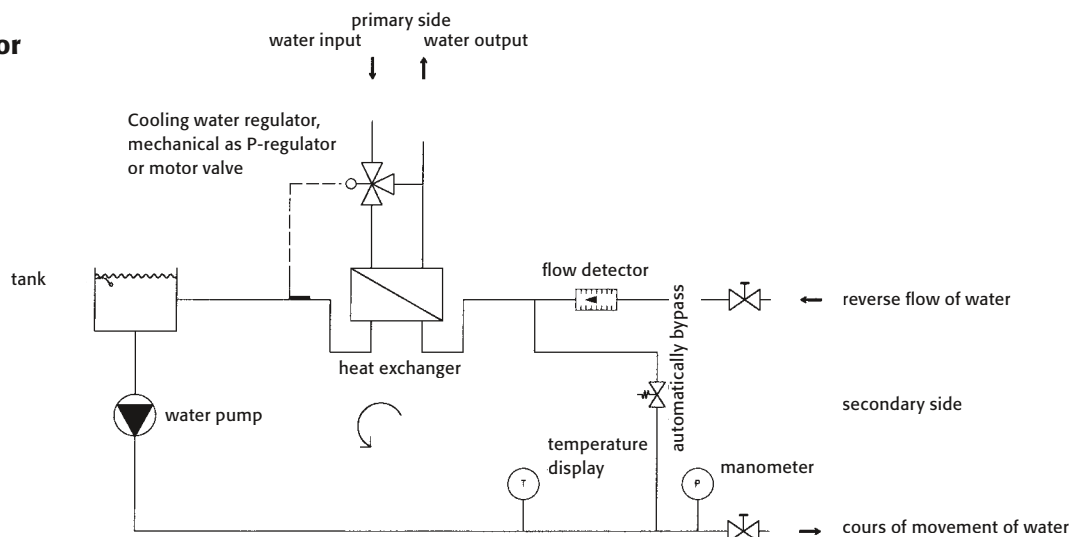
Further details are provided on page 26.

Water-water-chiller (System separator) (backside)



Photo shows the backside of the three water-water cooler with 30 kW, 50 kW and 70 kW power.

Principle of system separator



Water-water-cooler (system separator)



Photo shows water-water cooler from 1 kW up to 15 kW power.

Water-water coolers from Van der Heijden-Labortechnik GmbH are available in the same performance versions as the standard **KÜHLMOBIL** (see table on pages 6/7).

All the models are specially designed for the existing water circuits and can be supplied with outputs up to 150 kW.

The standard models are all fitted

with bypass, manometer and sensor to monitor the flow. The unit switches off if any kind of fault occurs. Temperature control is on the secondary circuit. A motorised valve on the primary circuit automatically regulates the water volume. The stepped motor operates in fine stages to ensure a highly consistent temperature (more details on the B400/RB400 control unit are available on Page 9).

So that these units can be designed specifically, the following domestic water details are required:

- ~ Water outlet temperature on the domestic water side and/or the inlet temperature to the cooling unit.
- ~ The pressure differential over the domestic water circuit
- ~ How much water is available?

Please telephone us. We will gladly design a suitable unit for you!

Water-water-cooler (System separator) (backside)



Water-Water-Chillers in different sizes and capacities showed backside. All systems are equipped as standard with 3-way motor valves.

These models of cooling unit are increasingly cheaper than cold compression units the higher the output. This also applies to the size and the noise levels. These units provide particularly good noise insulation, are relatively quiet at high output levels and are extremely compact.

The heat emitted to the surrounding environment is virtually negligible. There are no problems with water evaporation because the primary circuit essentially is isolated. If this model of **KÜHLMOBIL** is to be connected to fixed pipes, feet are available instead of castors.

Water-air-coolers



The photo shows the **LUFTIKUS** model in tower format. The air supply is from left to right.

AIR COOLERS

Cooling using only air is the most economical method of cooling.

Because of physical limitations, however, the cool water temperature cannot be brought any lower than the ambient temperature.

The units can be used very readily with water distillation units or certain AAS units.

A pre-requisite for this model of cooling is a permissible water inlet temperature for the unit being cooled, which lies above the ambient temperature. The temperature is controlled via a fan control unit.

We deliver this kind of chillers as standard versions with 500 Watt or 3000 Watt capacity. Cooler for outdoor placement can be delivered also with higher capacities.

Water-air-coolers (backside)

The photo shows the backside of the **LUFTIKUS** model with optional container emptying.



Technical data	LUFTIKUS	KM 30 in case size 0
Refrigerating capacity	500 Watt bei 35° C water outlet temperature and 20° C ambient temperature	3000 watts at 39° C water outlet temperature and 20° C ambient temperature
Pumping capacity	4 l/min. at 2.2 bar	4 l/min. at 2.2 bar
Feed pressure	3.5 bar max.	3.5 bar max.
Connections	quick lock coupling with 9 mm hose sleeves	quick lock coupling with 9 mm hose sleeves
Tank contents	5 liter	5 liter
Dimensions (W x D x H)	280 x 480 x 560 mm	430 x 470 x 695 mm
Type of current	230 V/50 Hz/1 PH/N/PE	230 V/50 Hz/1 PH/N/PE
Power consumption	160 watts max.	180 watts max.
Colour	RAL 9002 complete	RAL 5003/7035

PARALAQUA® III TOWER for rotary evaporators



Advantages

- ~ 100 % water savings
- ~ Adjustable cooling water temperature
- ~ Minimal space requirement on any laboratory table
- ~ Nearly silent
- ~ Easy to handle
- ~ Handle for quick transport
- ~ Use variable
- ~ Adjustable vacuum
- ~ Nearly 100 % solvent recovery
- ~ Conclusion: In distillation with rotary evaporators the water costs are now nil and there is no further load on the environment
- ~ The vacuum can be used separately to the cooling system, e.g. for filtration or extraction cooling

The photo shows combination with rotary evaporator from IKA-Werke GmbH & Co. KG

The **PARALAQUA®** is a device especially designed for rotary evaporators, which simultaneously created a controllable vacuum and provides cooling water. Only a connection to a 230 V mains outlet is necessary, the water connection is superfluous.

As a result of the lowest possible cooling water temperature (to -5°C using antifreeze), and the controllable vacuum, almost loss-free solvent distillation is possible, as the cooling temperature and the vacuum, for every distillation programme can be individually set.

This in turn means a maximum efficiency in reclaiming the solvents as well as a minimum sewage burden and the fact that the water consumption drops to nil since the water jet pump and the cooling of the tap water is no longer required.

The vacuum area is a combination between a PTFE diaphragm pump and a electronic regulator, and which contains a ceramic sensor; the regulator range is between 1000 and 0 mbar.

The **PARALAQUA®** is therefore the very best in rotary evaporators.

The vacuum can be infinitely varied. Once the required level is reached, the vacuum pump switches off. The monitoring of the vacuum is carried out via a ceramic pressure sensor which is free of wear and stable for a long period. The pressure sensor is covered by a 2 year guarantee.

A gasification option exists to break the vacuum created.

PARALAQUA® III TOWER



Possible Accessoires

Option 09000

1 bottle ThermoClean-DC, 50 ml, algae-free for the cooling water

Option 1201

Silencer / active charcoal filter inclusive 50 cm silicon hose



Option 1202

Alternative with water-cooled receptacle in combination with water-cooled condenser



Option 1200

Water-cooled condenser for readjustment of suction, complete with support

Technical Data

PARALAQUA® III TOWER

Refrigerating capacity	400 watts at 20° C water inlet temperature and 32° C max. ambient temperature (approx. 250 watts at 5° C water inlet temperature)
Pumping capacity	10 l/min.
Feed pressure	0.15 bar
Connections	quick lock coupling on the backside Ø 9 mm
Tank contents	5 liter
Dimensions (W x D x H)	250 x 550 x 600 mm
Type of current	230 V/50 Hz/1 PH/N/PE
Power consumption	0.4 kW
Weight	33 kg
Refrigerant	R 134 a (CFE-free)
Upper panelling	Alu-sheets 2 mm, RAL 7035 (light-grey)
Lower panelling	RAL 5003
Vacuum	up to 10 mbar
Feed power	25 l/min. at atmospheric pressure
Vacuum regulator	1000 - 0 mbar, digital
Vacuum / gasification connections	on the backside Ø 10 mm
Vacuum pump	chemical resistant, i.e. solid teflon with Kalrez valves

VAN DER HEIJDEN - AQUASTOP® analog and digital



**Safe substitute
for the jet water pump**

Advantages

- ~ Adjustable vacuum
- ~ Nil water consumption
- ~ Nil water and waste water costs
- ~ Nearly 100 % solvent recovery
- ~ 100 % oil-free
- ~ Suitable for continuous operation
- ~ Maintenance free
- ~ Corrosion resistant

~ In combination with chillers ideal for solvent recovery by rotary evaporators. No solvents in the waste water

Accessories see page 32

VAN DER HEIJDEN	AQUASTOP® II analog	AQUASTOP® II digital
Suction	25 l/min.	25 l/min.
Vacuum	10 mbar	10 mbar
Pump head	PTFE	PTFE
Valves	Kalrez	Kalrez
Membranes	PTFE	PTFE
Current type	230 V/50 Hz/150 W	230 V/50 Hz/150 W
Meter scale	1200 to 0 bar, analog	1200 to 0 bar, digital
Vacuum regulator	needle valve type	needle valve type
Cable length	150 cm	150 cm
Dimensions (W x D x H)	250 x 350 x 240 mm	250 x 350 x 240 mm
Colour	RAL 7035/5001	RAL 7035/5001

VAR/VAC

Easily installed vacuum measuring devices for use in vacuum lines

These instruments are also available as digital models. Caution: A mains connection with 230 V / 50 Hz is necessary for digital units. There is no mains connection needed by analog models.



Worrying about mercury pressure gauge ?

A Bennert pressure gauge has the characteristic of always breaking when you have a mishap with it. You then end up down on all fours trying to collect all the mercury that has been dispersed.

We have long time ago solved this by developing a vacuum device that contains

NO MERCURY

This device is serially switched with an electric vacuum pump (oil or diaphragm pump).

This vacuum is displayed in mbar (no more conversion necessary).

Two barrel clamps are attached to the back of this device so that the device can be quickly clamped to a supporting wall.

This device is also available with an **INTEGRATED REGULATOR**

so that you can set your own vacuum levels (model VAR).

The vacuum is regulated with a regulator button on the vacuum line, which maintains the pre-set vacuum level.

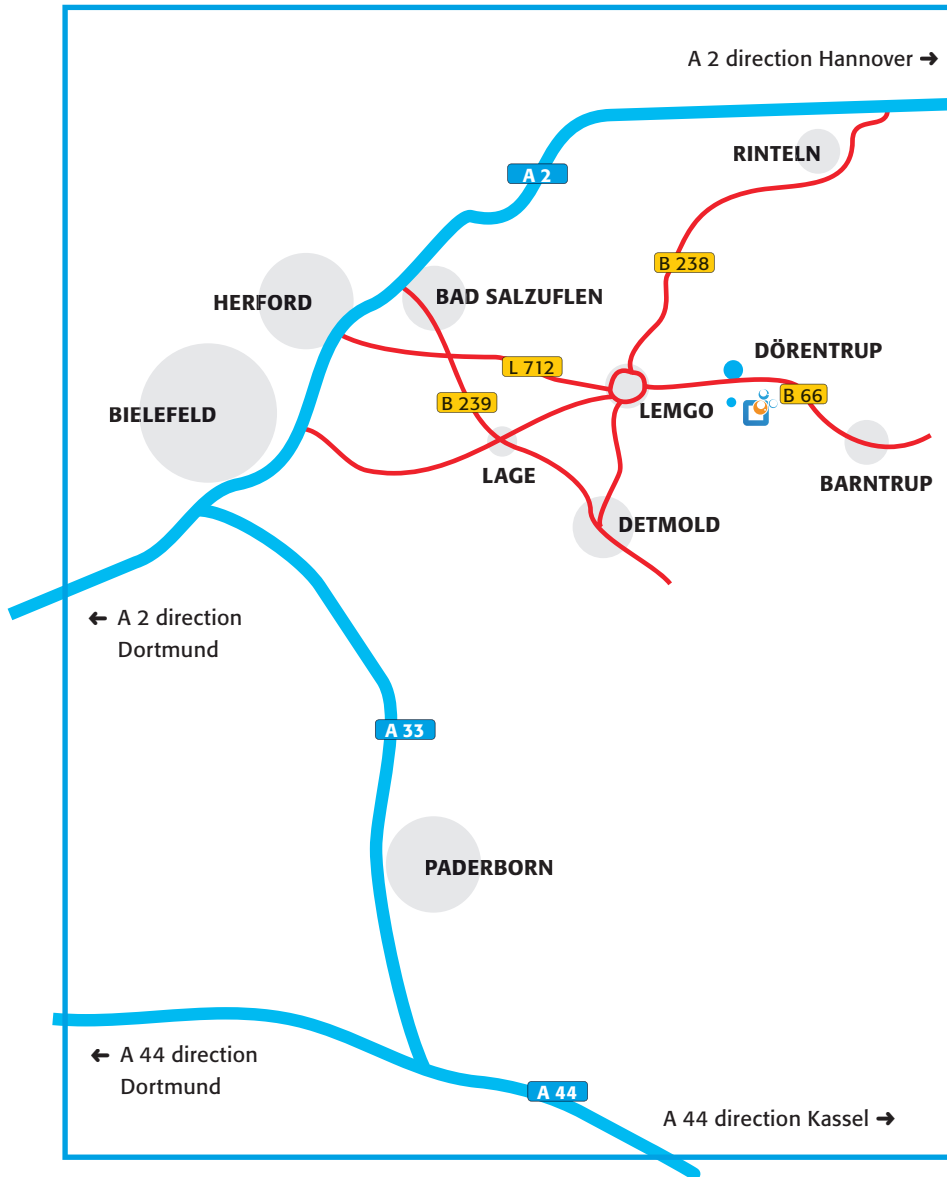
The precise vacuum, without conversion, is displayed by a vacuum measurement device without any hysteresis problems

Technical Data

VAR/VAC

Dimensions (W x D x H)	80 x 80 x 150 mm
Meter	72 x 72 mm
Reading	1020 - 0 mbar
Connections	8 mm nickered

Where do you find us?



From the direction of Hamburg

A 7 direction Hannover
A 352 direction A2/Dortmund
A 2 direction Dortmund;
Bad Eilsen exit direction Extertal/Barntrop;
in Barntrop, direction Dörentrup/Lemgo
(B 66); stay in Humfeld on the B66.
You can find us directly beside of the B66 on the
left side (industrial area Dörentrup).

From the direction of Berlin / Hannover

A 2 direction Dortmund;
Bad Eilsen exit direction Extertal/Barntrop;
in Barntrop, direction Dörentrup/Lemgo
(B 66); stay in Humfeld on the
left side of the B66 in the industrial area Dörentrup.

From the direction of Cologne/ Ruhr area

At the Kamener cross-roads on the A2, take
the direction for Hannover;
Ostwestfalen-Lippe/Lemgo exit;
In Lemgo, direction Dörentrup/Hameln
(B 66); stay on the B66. You can find us in
the industrial area Dörentrup, ahead
of Humfeld on the right side of the B66.

From the direction of Munich/Kassel

A 7 direction Hanover/Hamburg
At Südkreuz Kassel (southern crossroads)
on the A 44, direction Dortmund/Pader-
born;
Warburg exit, direction Blomberg/Lemgo;
in Donop bear right, direction Wendinghau-
sen/Spork, direction Dörentrup, until you come
up to the B66. Make a right turn on the B66 and
stay there. You can find us in the industrial area
Dörentrup ahead of Humfeld on the right side of
the B66.

Van der Heijden - Labortechnik GmbH

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Tel: 0320-266171 Fax: 0320-257354
email: laboratorium@dijkstra.net
www.dijkstra.net

Yours adress / Company stamp

Questionnaire

Direction to determining the right KÜHLMOBIL required

- | | |
|--|--------------------------|
| 1.) Which device is to be cooled? | _____ |
| 2.) What is the tap water temperature before cooling ? | _____ ° C |
| 3.) What is the tap water temperature after cooling ? | _____ ° C |
| 4.) What is the ambient temperature ? | _____ ° C |
| 5.) How many liters of water are currently needed for cooling ? | _____ l/h |
| 6.) What is the required cooling water pressure ? | _____ bar |
| 7.) How many connections are required ?
(1 connection= 1 supply and 1 return) | _____ connection |
| 8.) Should the KÜHLMOBIL be placed outdoors? | _____ yes/no |
| 9.) Our tap water currently costs | _____ EUR/m ³ |
| 10.) Our waste water currently costs | _____ EUR/m ³ |

1. Measure the water temperature fresh out of the tap.
 2. Then measure the post-cooling temperature (when it comes out of the device to be cooled) and,
 3. at the same time, measure the quantity of cooling water exiting from the device to be cooled.
- The best way is to let the waste water flow into a bucket and see how long it takes for the bucket to fill.
When the thermometer is hung in the bucket, the answer to Point 2 is also obtained.
ATTENTION! Buckets come in different sizes. The bucket capacity must first of all be known.
Weighting is even better.
Please note that an exact measuring is needed to get the right capacities.