

STANDARD CONFIGURATION VAPODEST 500 / VAPODEST 500 CAROUSEL

Standard configuration	VAP500	VAP500 Carousel
Multi Touch Sensitive Screen 7"	●	●
Automatic addition H_3BO_3	●	●
Automatic addition H_2O	●	●
Automatic addition NaOH / reagent	●	●
Programmable reaction time	●	●
Programmable distillation time	●	●
Variable steam power 0 - 100 %	●	●
Automatic suction of sample waste	●	●
Automatic suction of the receiver	●	●
Selection of language	●	●
Distribution of user rights	●	●
Optical and acoustical error messages	●	●
Stand-by-Function	●	●
Automatic calculation of results	●	●
Method data base	●	●
Programmable methods	●	●
Connection for external keyboard	●	●
Connection for external PC-mouse	●	●
Automatic check of chemical reservoir	●	●
Kjeldatherm digestion tubes can be used[1)]	●	●
Kjeldahl flasks can be used[1)]	●	-
Automatic titration	●	●
Micro dosing pump for titration	●	●
Gerhardt Dashboard (Data management program for PC)	●	●
Automatic sample feeeding (carousel) for 20 tubes	-	●
Set of storage tanks incl. level control sensors	-	●
Compressor [2)] (only for Version Carousel)	-	(●)
Compressor tubing for external compressed air supply	-	●
USB-interface on the front side	1 x	1 x
USB-interface on the back	4 x	4 x
Ethernet-interface on the back	1 x	1 x
RS-232 interface on the back	1 x	1 x

● = Standard configuration
1) = see digestion tubes and Kjeldahl-flasks on page 4
2) = Available with and without external compressor (see ordering data). VAPODEST Carousel can also be connected to the in-house compressed air supply

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SCOPE OF DELIVERY

Type	VAP 500	VAP500 Carousel
Distillation system	1 x	1 x
Gerhardt Dashboard Data management program for VAPODEST 500[1)]	1 x	1 x
KJELDATHERM digestion tube	1 x	20 x
pH-electrode	1 x	1 x
Buffer solution pH7	1 x	1 x
Buffer solution pH4	1 x	1 x
KCL-solution	1 x	1 x
Tubing set complete	1 x	1 x
Compressor tubing for external compressed air supply	-	1 x (4 m)
Mains cable	1 x	1 x

1) **Computer**: Personal computer and printer are not included the delivery.
1) **Operating system**: Windows 10, Windows 11, 1 x free USB-interface, 1 x free LAN-Port RJ45

TECHNICAL DATA

Type	VAP 500	VAP500 Carousel
Cooling water consumption [l/min]	2 / 5 / 7 adjustable	2 / 5 / 7 adjustable
Cooling water pressure [bar]	1 - 6	1 - 6
Average distillation time per sample [min]	2 - 4	2 - 4
Recovery rate [%]	> 99,5	> 99,5
Reproducibility [%]	+/- 1	+/- 1
Detection limit N [mg]	0,1	0,1
Nominal voltage [VAC]	230 (115)	230 (115)
Frequency [Hz]	50/60	50/60
Current [A]	9,5 (19,1)	10 (20)
Nominal wattage [W]	2200	2300
Weight [kg]	ca. 44 kg	ca. 205
Dimensions W / D / H [mm]	527 x 390 x 697	960 / 600 / 1670

ORDER INFORMATION VAP500

Order No.	Type	Description
12-0500	VAP500	Distillation system, **Version Standard 230 V**
12-0501	VAP500	Distillation system, **Version Standard 115 V**

ORDER INFORMATION VAP500 CAROUSEL (including compressor)

Order No.	Type	Description
12-0510	VAP500 Carousel	Distillation system, complete with carousel for **20 x 250/300 ml** tubes, **Version 230 V**, incl. external compressor
12-0513	VAP500 Carousel	Distillation system, complete with carousel for **20 x 400 ml** tubes, **Version 230 V**, incl. external compressor

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ORDER INFORMATION VAP500 CAROUSEL (without compressor)

Order No.	Type	Description
12-0574	VAP500 Carousel	Distillation system, complete with carousel for **20 x 250/300 ml** tubes, **Version 230 V**, without compressor[1)]
12-0575	VAP500 Carousel	Distillation system, complete with carousel for **20 x 400 ml** tubes, **Version 230 V**, without external compressor[1)]
12-0579	VAP500 Carousel	Distillation system, complete with carousel for **20 x 250/300 ml** tubes, **Version 115 V**, without external compressor[1)]
12-0580	VAP500 Carousel	Distillation system, complete with carousel for **20 x 400 ml** tubes, **Version 115 V**, without external compressor[1)]

1) As the sample lift is pneumatically operated, the device must be connected to the in-house compressed air supply or to an external compressor.

Technical requirements for connection to the in-house compressed air supply
A pressure reducer with condensate separator must be connected in between and set to 4.5 bar.

Technical requirements when using an external compressor
Pressure range 5 to 6 bar • Pressure reducer for constant pressure of 4.5 bar • Flow rate 12 to 15 L/min • Tank volume Compressor min. 3 L • Oil separation or oil-free version with compressed air quality ISO class 3 • Noise level max. 45 dB (recommended)

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UPGRADE KITS

The C. Gerhardt upgrade kits offer maximum flexibility. For example, the VAP500 can be retrofitted with an autosampler (carousel) at any time. Various carousel inserts for analysis with different glass sizes are also available for the VAP500 carousel system.

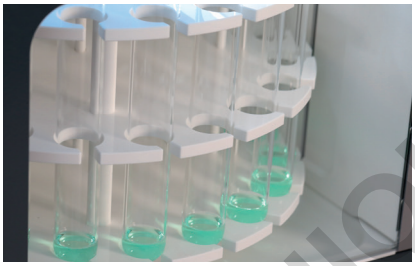
ORDER INFORMATION UPGRADE KITS for VAP500

The VAPODEST 500 distillation systems can be upgraded with an automatic sample changer and operated as VAP500 carousel.

Order No.	Type	Description
12-0509		Lower part automatic sample changer VAP500 carousel, 230 V, **for 20 x 250 ml tubes 12-0301** Suitable for a later update from VAP 500 to VAP 500 carousel
12-0516		Upgrade kit VAP500 to VAP500 carousel, 250 ml ***Required accessories for lower part 12-0509***
12-0517		Lower part automatic sample changer VAP500 carousel, 230 V **for 20 x 400 ml tubes 12-0308 or 12-0310** Suitable for a later update from VAP 500 to VAP 500 carousel
12-0507		Upgrade kit VAP500 to VAP500 carousel, 400 ml ***Required accessories for lower part 12-0517***

ORDER INFORMATION CAROUSEL INSERT for VAP500 Carousel

For the use of different glass tubes C. Gerhardt offers conversion kits with suitable carousel inserts and sample tube guide cages.



Order No.	Type	Description
12-0518	KIT400	Conversion kit carousel for 20 x 400 ml tubes, for tubes KDD 400 ml and BS 400 ml, complete with: - Sample tube guide cage 400 - carousel 20-place 400 ml, PP-white Ø 480 mm - 20 x digestion tubes 400 ml, No. 12-0308
12-0519	KIT250	Conversion kit carousel for 20 x 250 ml tubes, complete with: - Sample tube guide cage 250 - carousel 20-place 250 ml, PP-white Ø 480 mm - 20 x digestion tubes 250/300 ml, No. 12-0301

COMPRESSOR for VAPODEST 500 Carousel



Order No.	Type	Description
12-0210		Compressor for operating the VAP 500 Carousel autosampler, 230 VAC 50-60 Hz Dimensions (W x D x H): 340 x 240 x 340 mm Weight: 16 kg Max. pressure: 8 bar

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CONSUMABLES AND ACCESSORIES

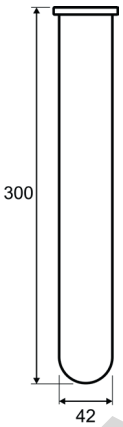
Make sure to use only original C. Gerhardt spare parts in order to obtain the best possible results. These parts have been tested thoroughly for the operation with VAPODEST in the C. Gerhardt application lab.

KJELDAHL-DIGESTION TUBES AND KJELDAHL-FLASKS

Depending on sample type and sample quantity VAPODEST 500 can use a lot of Kjeldahl-digestion tubes as well as Kjeldahl-flasks. All tubes are made of high standard Duran material.

Order No.	Type	Description	VAP500	VAP500 C
12-0301	KTG	KJELDATHERM-digestion tube, macro 250/300 ml - 10 pcs	●	●
12-0306	KTG/E	KJELDATHERM-digestion tube, macro 250/300 ml, with constriction + calibrated at 250 ml	●	-
12-0308	BS-400	KJELDATHERM-digestion tube, 400 ml, diminished	●	●
12-0310	KDD400	Jumbo-digestion tube 400 ml - 4 pcs	●	●
12-0311	KDD800	Jumbo-digestion tube 800 ml - 4 pcs	●	-
12-0243	KDD1200	Jumbo-digestion tube 1.200 ml	●	-
12-0304	KMT	KJELDATHERM-digestion glas, micro 100 ml - 10 pcs	●	-
12-0305	KMT/E	KJELDATHERM-digestion glas, micro 100 ml with constriction + calibrated at 100 ml	●	-
12-0307	KMT	KJELDATHERM-Glas, mikro 100 ml, calibrated at 100 ml + 75 ml	●	-
12-0312	KD250	Kjeldahl-flask 250 ml, with enlarged neck	●	-
12-0313	KD500	Kjeldahl-flask 500 ml, with enlarged neck, 4 pcs	●	-
12-0314	KD750	Kjeldahl-flask 750 ml, with enlarged neck, 4 pcs	●	-

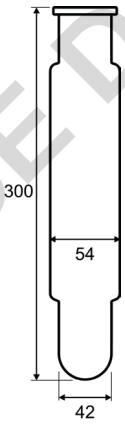
12-0301



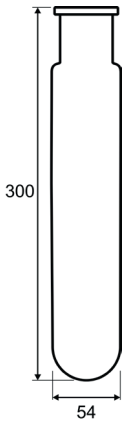
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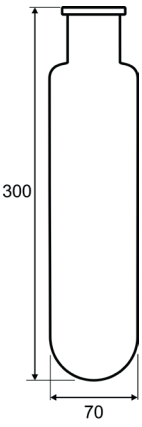
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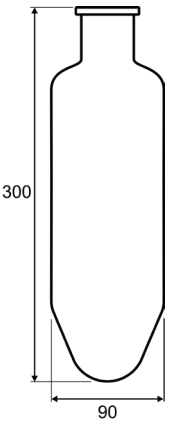
12-0310



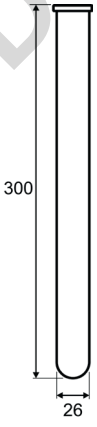
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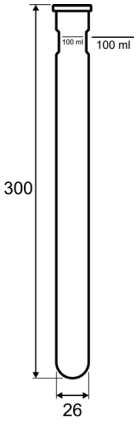
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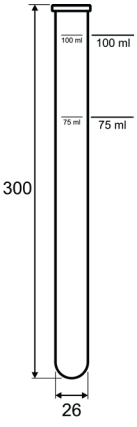
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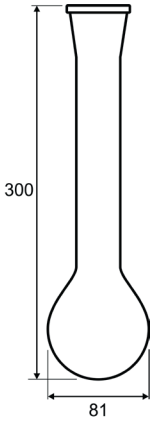
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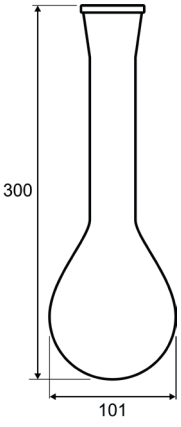
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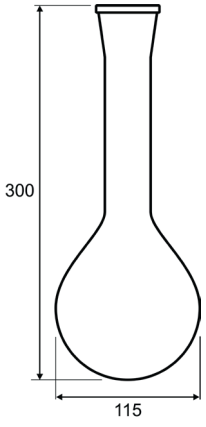
12-0312



12-0313



12-0314

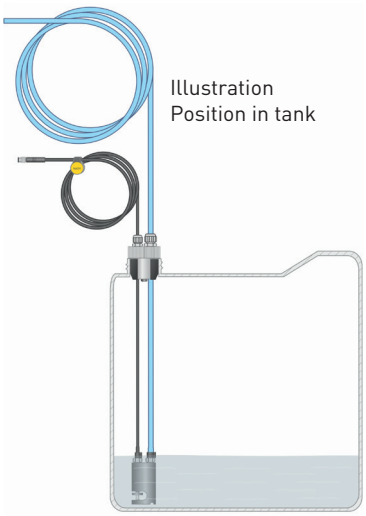


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Tank level control



Tank level control 1005098



Order No.	Type	Description
1005098	ID8	Tank level control for **Reagent-storage tank**, incl. cable labels for clear identification, suitable for tanks with the following dimensions: - Height = min. 130 mm... max. 2000 mm - Filler neck = min. Ø 40 mm... max. Ø 50 mm
1005721	PA8	Tank level control for **sample waste storage tank**, incl. cable labels for clear identification, suitable for tanks with the following dimensions: - Height = all tanks - Filler neck = min. Ø 47 mm... max. Ø 50 mm
12-0505	NIV500	Tank level control set for 3 reagent-tanks and 1 sample waste tank and 1 titration tank, consisting of: - 3 x Tank level control for reagent-tank no. 1005098 - 1 x Tank level control for sample waste tank, no. 1005721 - 1 x Tank 5 L for titration acid, incl. tank level control

Storage tanks



Order No.	Type	Description
1005849	KAN10	Tank made of HDPE, 10 L
1005850	KAN20	Tank made of HDPE, 20 L

Note
Due to the limited design of the canister drawer in the VAPODEST 500 Carousel, the maximum dimensions when using commercially available storage tanks are as follows: W = 246 mm, D 290 mm, H = 385 mm.

Labelling - Stickers

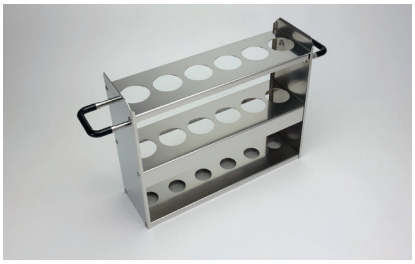


Order No.	Type	Description
1005823		Stickers for tank level sensors (cable banner), can be attached to the tubes. 12 Stickers: Reagent 1, Reagent 2, H_2O, NaOH, HCl, H_3BO_3, NDF, ADF, H_2SO_4, KOH, Sample Waste, Neutral
1005824		Stickers for tanks, can be affixed to any place on the tank. 12 Stickers: Reagent 1, Reagent 2, H_2O, NaOH, HCl, H_3BO_3, NDF, ADF, H_2SO_4, KOH, Sample Waste, Neutral

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Insert racks for digestion tubes

Insert racks made of stainless steel, best for collecting the single digestion tubes, e.g. for direct distillation.



Order No.	Type	Description
12-0269	EG625	Insert rack 6-place for tubes 250 ml
12-0273	EG125	Insert rack 12-place for tubes 250 ml
12-0271	EG440	Insert rack 4-place for tubes 400 ml
12-0272	EG480	Insert rack 4-place for tubes 800 ml
12-0277	EG12-100	Insert rack 12-place for tubes 100 ml
12-0593	EG6-1200	Insert rack 6-place for tubes KDD 1200 ml

Gerhardt Dashboard



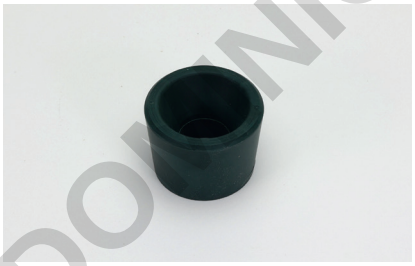
Order No.	Type	Description
12-0506		Gerhardt Dashboard, program to support sample input and sample management via a network / PC in combination with VAPODEST 500. The program offers convenient functions for data management and supports requirements of EN ISO 17025 and GLP. Delivery incl. USB-Stick.

Connection stopper, Viton



Order No.	Type	Description
12-0477		Viton-connection stopper, normal size for PP distribution head 1006342

Connection stopper, Micro



Order No.	Type	Description
12-0352		Connection stopper VK, Isoversinic micro, special edition for the use of micro digestion tubes 100 ml For type VAP200 - VAP500

Upgrade kit Büchi



Order No.	Type	Description
12-0568		Adapter Set for Büchi tubes, suitable for all distribution heads type VAP200 - VAP500, complete with: 1 x Viton-connection stopper, no. 12-0567 suitable for distribution heads with connection pipe Ø 31 mm 1 x Viton-connection stopper, no. 12-0566 suitable for distribution heads with connection pipe Ø 33 mm 1 x Viton-connection stopper, no. 12-0351 1 x Adapter PP-nature

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pH-combined electrode



Order No.	Type	Description
12-0555	ET-KCL	pH-combined electrode KCl, require regularly filling with KCl

Distribution head PP



Order No.	Type	Description
1006342		Distribution head PP for VAP500 / VAP500 Carousel

Catalyst tablets



Order No.	Type	Description
12-0326	Se	KJELCAT-tablets, tin of 1,000 pcs 3.5 g K_2SO_4 + 0.0035 g Se
12-0328	Cu	KJELCAT-tablets, tin of 1,000 pcs 5.0 g K_2SO_4 + 0.5 g $CuSO_4$ x $5H_2O$
12-0329	CuTi	KJELCAT-tablets, tin of 1,000 pcs 5.0 g K_2SO_4 + 0.15 g $CuSO_4$ x $5H_2O$ + 0.15 g TiO_2
12-0336	Cu light	KJELCAT-tablets, tin of 1,000 pcs 5.0 g K_2SO_4 + 0.1 g $CuSO_4$ x $5H_2O$
12-0336	CK	Kjelcat tablets, 3.5g K_2SO_4 + 0.4g $CuS0_4$ x $5H_2O$, 1,000 pcs

Antifoam tablets



Order No.	Type	Description
12-0332	AS	Antifoam extra tablets, tin with 1,000 pcs 0.97 Na_2SO_4 + 0.03 g silicone antifoam

KCL and Buffer solution



Order No.	Type	Description
1000178		Electrolyte solution KCL
1000176		Buffer solution pH 4
1000177		Buffer solution pH 7

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Impedance converter for pH-combined electrode



Order No.	Type	Description
1002740		The impedance converter improves the pH measurement. It prevents malfunctions caused by dirt, moisture or electrical fields of powered lines.

Accessories for receiver



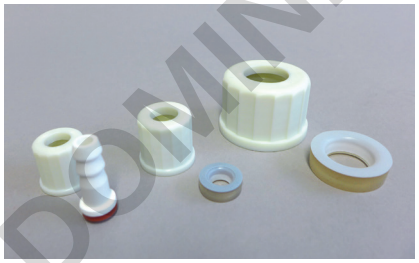
Order No.	Type	Description
1001269	REC	Receiver vessel for collecting distillate

Destillationskühler



Order No.	Type	Description
12-0552		Distillation condenser glass with short outlet pipe, for PP-distribution head 1006342 with connecting piece for ventilation valve
1000036		Ventilation valve for distillation condenser

GL-Screw caps + seals



Order No.	Type	Description
1004320		Screw cap GL14, nature white
1004321		Screw cap GL18, nature white
1006792		Screw cap GL 32, nature white, with borehole ø 22 mm (Version VAP500 / 500C)
1000358		Silicone seal GL 14 with connection, straight
1000356		Silicone-seal GL 18
1000357		Silicone-seal GL 32

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Drip tray



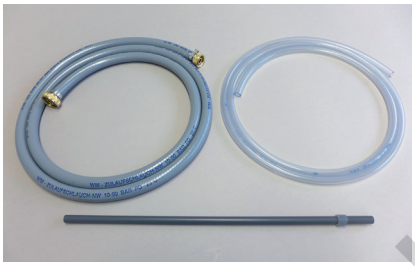
Order No.	Type	Description
1006749	TW	Drip tray VAP500, front side
1006691	TWC	Drip tray VAP500 Carousel, front side with whole for glass feeder

Plastic bottles



Order No.	Type	Description
1006521		Bottle for buffer solution, 50 ml with screw cap

Tubings / Cable



Order No.	Type	Description
1000394		Water inlet tube 10/17, 2 m long, 90bar, 3/8 x 1/2"+ 3/8 x 3/4"
1000047*		PVC-tubing, 8 x 12 mm
1000499*		Verpren-tubing, 8 x 12 mm
1000567		PVC-pipe 400 mm long, 10,2 x 1,4 mm
10-0057		Mains cable, 3 m

*length needed when order

Compressed air connection lines



Order No.	Type	Description
12-0590		Compressor connection kit, for connection to external compressor or in-house compressed air supply, assembled with: 1 x Coupling plug NW 5 for 6 mm PU-tube 1 x Plug in connector for 6 mm PU-tube 1 x PU-tube 6 x 4 mm, length = 4 m

Guide cage Carousel



Order No.	Type	Description
1006925		Sample tube guide cage compl. for 250 ml tubes
1006692		Sample tube guide cage compl. for 400 ml tubes

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SUPPORT AND SERVICE

In addition to its high quality instruments, C. Gerhardt offers comprehensive services to maintain the functionality and effeciency of your equipment.

INSTALLATION / EQUIPMENT QUALIFICATION

Order no	Type	Description
99-0202	ABI-VAP	Installation and Instruction VAPODEST 500 - Installation and connection of the unit - functional check - operating instructions
99-0211	GQF-VAP	Equipment Qualification (IQ/OQ) VAPODEST 500 - Installation of the unit and instruction - **I**nstallation **Q**ualification **IQ** and **O**perational **Q**ualification **OQ**, Guidance for **P**erformance **Q**ualification **PQ** - Training of laboratory personnel with certificate - Individual training certificates, if reqested

SERVICING AND MAINTENANCE CONCEPTS

For detailed information on servicing and maintenance concepts, please contact your local authorised C. Gerhardt representative.

WORKSHOPS / SEMINARS / APPLICATIONS TRAINING

For detailed information on trainings and workshops, please contact your local authorised C. Gerhardt representative.

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APPLICATION SERVICE

The following listed applications are examples from our comprehensive application data base. Please contact your local C. Gerhardt representative or write to application@gerhardt.de to ask for one of the listed application data sheets or to ask for an application which is not yet listed.

ANALYSIS OF FEED- AND FOODSTUFFS



Selection	Description
( )	Non Protein content in Meat
( )	Nitrogen in bread and rolls
( )	Total Nitrogen in Raw Material for Breweries
( )	Solulable Nitrogen Content Wort
( )	Raw Protein Determination in Eggs
( )	Total Protein in Margarine
( )	Tomato puree and Ketchup
( )	Nitrogen in Milk and Dairy Products
( )	Nitrogen in Cream
( )	Protein in Milk Powder
( )	Non-Protein in Milk and Dairy Products
( )	Raw Protein in Meat and Meat Products
( )	Raw Protein in Grain and Grain Products
( )	Raw Protein in Beer and Wort acc. to Lochner
( )	Total Nitrogen in Sugar at very low N-content
( )	Nitrogen in Starch
( )	Nitrogen in Fish and Fish Products
( )	Nitrogen in Chocolate
( )	Total Protein in Fresh Yeast
( )	Raw Protein in Feed

ENVIRONMENTAL ANALYTICS / OTHER



Selection	Description
( )	Coagulated Nitrogen
( )	Nitrogen Determination in Fertilizers with Nitrate
( )	Fertilizers without Nitrate Content
( )	Ammonium Determination in Fertilizers
( )	Water soluable Ammonium nitrogen in Fertilizers
( )	Determination of Nitrat and Ammonium Nitrogen fert
( )	Total Nitrogen in Xanthan
( )	Total Nitrogen in Water
( )	Total Nitrogen in Soil
( )	Total Nitrogen in Grass and Plant Material
( )	Total Nitrogen in Coal
( )	Ammonium in Solid Samples
( )	Ammonium in Aqueous Samples
( )	Nitrate in Aqueous Samples and Eluates

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TABLE OF CONFIGURATION

Please arrange the required system

DISTILLATION SYSTEM / TYPE

Quantity	Order No.	Type	Description

CONSUMABLES / ACCESSORIES

Quantity	Order No.	Type	Description

SUPPORT AND SERVICE

Quantity	Order No.	Type	Description

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Send offer to:

Customer No.	
Company	
Name	
Address	
Tel.	
E-Mail	
Web	

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Presented by: