



PROTEIN ANALYZER KJELDAHL DNP SERIES



Food Analysis

PERFECT STEAM DISTILLATION
SYSTEM FOR PERFORMING NITROGEN
ANALYSIS ACCORDING TO KJELDAHL
AND MUCH MORE

Steam distillation system

Our Kjeldahl distillers work according to the internationally recognized Kjeldahl method, a reference procedure to analyze nitrogen and protein content in several fields of application.

KJELDAHL DISTILLERS THAT CAN DETERMINE MUCH MORE THAN JUST NITROGEN

Besides performing protein nitrogen analysis according to Kjeldahl or volatile acidity, you can also determine alcohol, sorbic acid, SO₂, phenols, cyanide, ammonia and nitric nitrogen content.

DIFFERENT OPTIONS TO ADAPT TO EACH LABORATORY REQUIREMENTS

Different models of our Kjeldahl distillers adapt to each laboratory requirements, from semiautomatic models to fully automatic, all options guaranteeing safety for the users with automatic distillation interruption on overtemperature or overpressure and fixing cooling water input if required. Furthermore, our distillers work according to standardized procedures such as AOAC, ISO, EPA and DIN. The DNP Series distillers are designed to give reliable, accurate and precise results.

MAIN FIELDS OF APPLICATION

FOOD INDUSTRY

Protein, Non-protein nitrogen, Casein, Total volatile basic nitrogen, Sulphur dioxide, Formaldehyde | Milk and derivatives (ISO 8968-1), Meat and derivatives (ISO 937, AOAC 981.10), Nuts (AOAC 950.48).





BEVERAGES

Alcoholic strength by volume, Volatile acidity, Sorbic acid, Sulphur dioxide, Protein | Beer and elaboration raw materials (AOAC 920.53), Alcohol content (Reg. CEE 2676/90, Reg. CEE 2870/2000), Sorbic Acid (OIV).



ENVIRONMENTAL ANALYSIS

Ammonia, Total Kjeldahl nitrogen, Phenol, Formaldehyde, Nitrate, Nitrite, Cyanide | Coal (ISO 333:1996), Water (AOAC 973.48), Rubber (ISO 1656:1996).



AGRICULTURAL ANALYSIS

Ammonia, Nitrate, Nitrite, Cyanide, Total nitrogen | Water (ISO 10048:1991), Industrial waste (EPA 9065), Fertilizers (AOAC 920.03).



PHARMA

Organic nitrogen, Ammonia, Urea, Formaldehyde.



COSMETICS

Protein, Organic nitrogen, Ammonia, Urea, Formaldehyde

ANIMAL FEED

Protein, Non-protein nitrogen | Cereals and grains (AOAC 979.09), Forage (AOAC 978.04), Feeds (AOAC 941.04).



FEATURES

EASY MAINTENANCE

DNP distillers are designed to simplify the maintenance process. They have predefined programs to preheat or perform a cleaning cycle when necessary. The calibration system for all dosing pumps is also integrated in the equipment itself

ADAPTABLE TO DIFFERENT SAMPLES

DNP distillers allow application notes storage according to sample type. It contains a total of 21 programs of which 18 are editable and can be specifically arranged by each user. Steam generation intensity, reagents dosage volumes, delay, distillation times and sample aspiration* can be customised in each program, giving our distillers the flexibility to be used with a large number of applications.

- Compatible with different methods and a wide variety of samples.
- Included application support service.
- 21 user programs available.
- According to standardized analysis procedures.
- Accurate and reproducible results.
- Pumps calibration system included.
- Automatic dispensing of reagents.
- Efficient and fast distillations.
- Pre-installed methods for common applications.
- Environmentally friendly.
- Integrated preheating, cleaning and verification programs.
- Easy to use.



ACCORDING TO STANDARDIZED METHODS

Nitrogen content and several other analyses with DNP distillers are performed in accordance to official methods described by international entities such as AOAC, ISO, EPA and DIN in order to guarantee accurate results.

RESOURCES OPTIMIZATION

Both steam generator and cooling water automatically stop water intake when the equipment is not distilling, resulting in a considerable amount of water saved. Reagents volumes are also regulated to minimize waste

USER PROTECTION

DNP has all electrical and mechanical elements properly protected. The elements that may come into contact with chemical agents are also reagent-resistant. The equipment has a safety thermostat and pressure switch that are activated to stop the process if necessary.

EXCELLENT SAFETY MEASURES

DNP distillers has warning messages to guarantee operator security, correct maintenance and sample loss minimization. The equipment emits an acoustic signal and a text is shown on the screen if the steam generator does not have enough water. In addition, there are also tube and open door sensors that block the distillation.

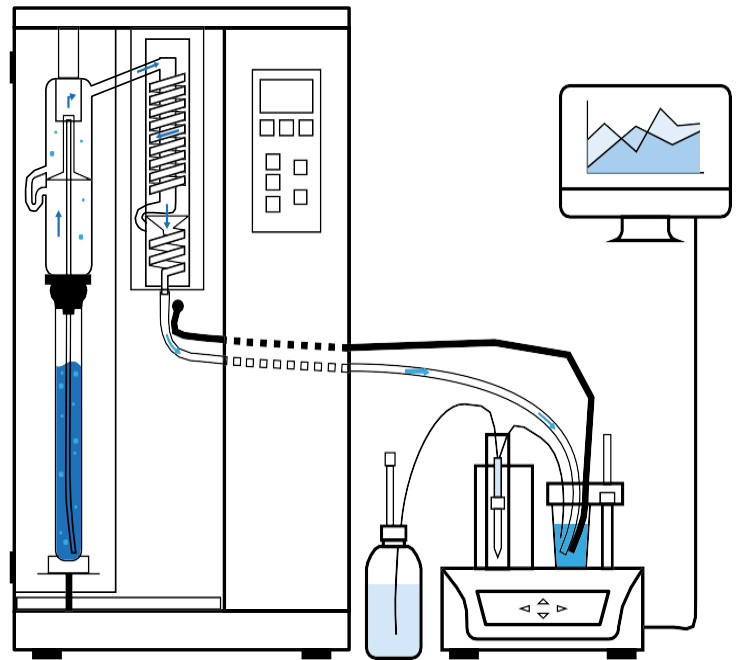
INDIVIDUALIZED SOLUTIONS

We have different distiller models according to the desired degree of automation and we have a technical food analysis support service accessible to all our customers.

WORKING PRINCIPLE

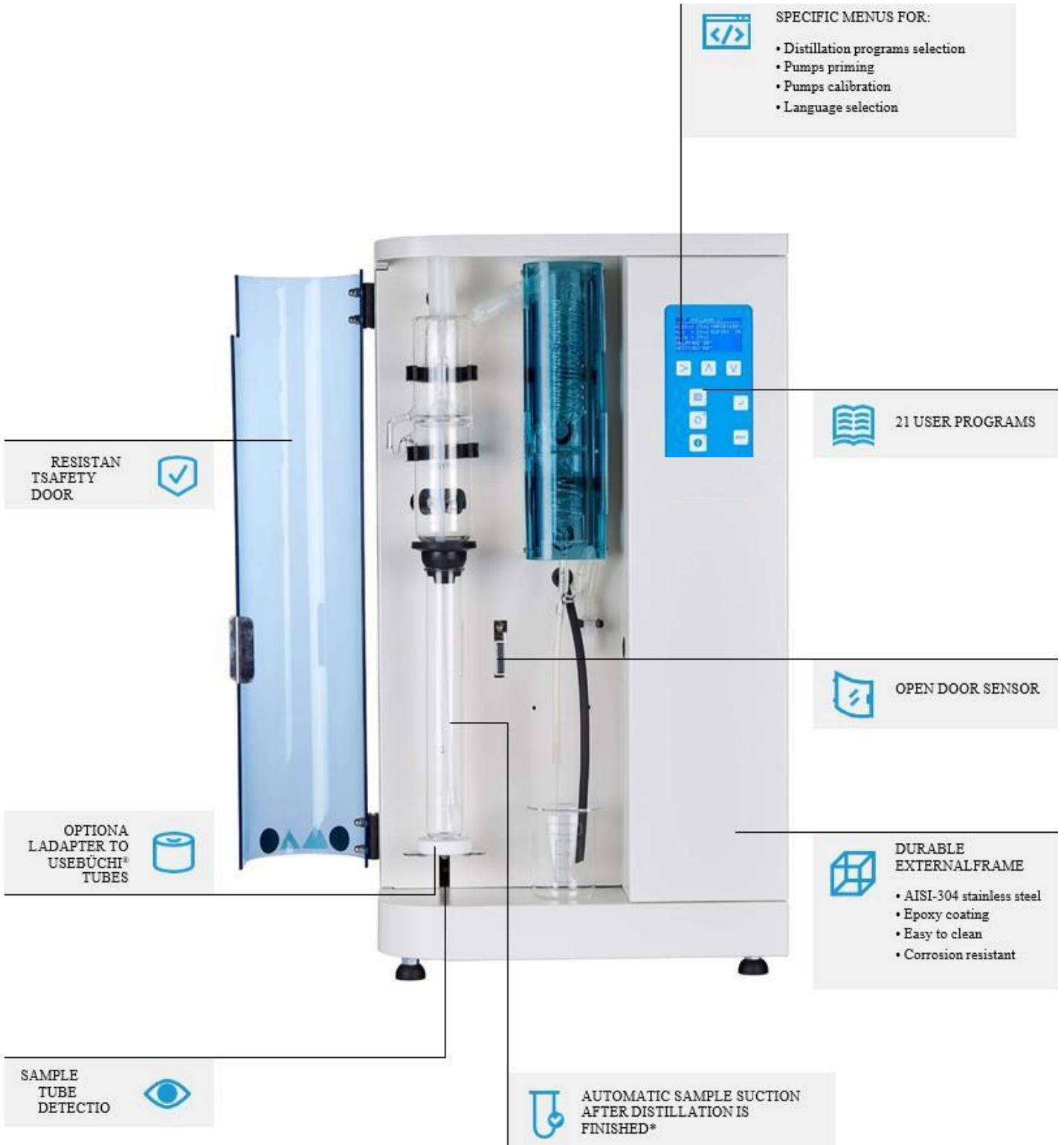
Once the sample is digested and ready for distillation, load it into the DNP distiller and choose the required program. The equipment adds the selected reagents in the exact quantity and the analyte is separated by steam distillation. At first it is evaporated and then it condenses falling into the receiver flask. In the next step nitrogen content is accurately determined through titration and results are exported into your PC.

To save water, the steam generator and the water refrigeration circuit are only activated during distillation. Once the distillation is completed, the residue left in the sample tube is aspirated and removed.



BASTAK

instruments



RESISTANT SAFETY DOOR



OPTIONAL ADAPTER TO USE BÜCHI® TUBES



SAMPLE TUBE DETECTION



SPECIFIC MENUS FOR:

- Distillation programs selection
- Pumps priming
- Pumps calibration
- Language selection



21 USER PROGRAMS



OPEN DOOR SENSOR



DURABLE EXTERNAL FRAME

- AISI-304 stainless steel
- Epoxy coating
- Easy to clean
- Corrosion resistant



AUTOMATIC SAMPLE SUCTION AFTER DISTILLATION IS FINISHED*





DNP-1500-MP

FOR SMALL LABORATORIES THAT DON'T REQUIRE A DEVICE WITH ADVANCED FEATURES BUT A RELIABLE KJELDAHL DISTILLER WITH ALL BASIC FUNCTIONS TO GUARANTEE COMPLETE AND SAFE SAMPLES DISTILLATION.



FEATURES

- 21 user programs including:
 - Preheating, washing and ammonium sulphate test.
 - Preset programs for alcohols, cereals, dairy products, meat, fish, sewage waters, fertilizers, nuts and animal feed.
 - Free programs to set as required.
- Electric steam generator with water level control.
- Automatic dilution water addition pump.
- Automatic alkaline addition pump.
- Pumps calibration by end user.
- Language selection (ENG, ESP, FR).
- Control of the system by microprocessor with LCD screen.
- Cooling water saving system.
- External frame made of AISI-304 stainless steel painted with epoxy resin.

SAFETY

- Open door sensor.
- Sample tube detection.
- Overtemperature thermostat.
- Overpressure switch.
- Cooling water inlet pressure regulator.

PROGRAMMABLE PARAMETERS AND VALUES

- Dilution water: 0-240 ml
- NaOH solution: 0-240 ml
- Reaction time (delay): 0-30 minutes.
- Distillation time: 0-30 minutes.
- Steam power regulation: 30-100 %

SUPPLIED WITH THE FOLLOWING COMPONENTS

- 1 macro sample tube of \varnothing 42x300 mm
- 2 containers of 10 liters for H₂O and NaOH.
- 1 Anti-drip tray.
- Several connection hoses.

INSTALLATION REQUIREMENTS

- Power supply: 230V 50/60Hz (or 115V 50/60Hz).
- Power consumption: 1800 W
- Water consumption (during distillation only): 2 l/min at 20 °C
- Ambient temperature: 5 °C to 40 °C
- Ambient humidity: 30 % to 80 %
- Weight: 30 Kg
- Dimensions (LxDxH): 440x340x790 mm

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DNP-2000-MP + TITRA-RAY

THE COMBINATION OF THE DNP-2000-MP AND TITRA-RAY IS OUR MOST AUTOMATED SOLUTION, OFFERING BOTH SAMPLE DISTILLATION AND TITRATION. SIMPLY PLACE THE SAMPLE TUBE, CHOOSE THE PARAMETERS AND LET BOTH DEVICES WORK, WITHIN FEW MINUTES YOU WILL GET YOUR RESULT IN TERMS OF THE NITROGEN AND/OR PROTEIN PERCENTAGE ON YOUR COMPUTER.



FEATURES

- 21 user programs including:
 - Preheating, washing and ammonium sulphate test.
 - Preset programs for alcohols, cereals, dairy products, meat, fish, sewage waters, fertilizers, nuts and animal feed.
 - Free programs to set as required.
- Electric steam generator with water level control.
- Automatic dilution water addition pump.
- Automatic alkaline addition pump.
- Automatic receiver solution addition pump.
- Pumps calibration by end user.
- Sample aspiration.
- Language selection (ENG, ESP, FR).
- Control of the system by microprocessor with LCD screen.
- Cooling water saving system.
- External frame made of AISI-304 stainless steel painted with epoxy resin.
- Optional external titrator.

SAFETY

- Open door sensor.
- Closed door detection.
- Digestion tube detection.
- Overtemperature thermostat.
- Overpressure switch.

PROGRAMMABLE PARAMETERS AND VALUES

- Dilution water: 0-240 ml
- NaOH solution: 0-240 ml
- H_3BO_3 solution: 0-240 ml
- Reaction time (delay): 0-30 minutes.
- Distillation time: 0-30 minutes.
- Steam power regulation: 30-100%

SUPPLIED WITH THE FOLLOWING COMPONENTS

- 1 macro sample tube of \varnothing 42x300 mm
- 2 containers of 10 L for H_2O and NaOH
- 1 container of 5 L for H_3BO_3
- 1 Anti-drip tray.
- 1 Additional aspiration tube without filter.
- Several connection hoses.

INSTALLATION REQUIREMENTS

For DNP

- Power supply: 230V 50/60Hz (or 115V 50/60Hz).
- Power consumption: 1800 W
- Water consumption (during distillation only): 2 L/min at 20 °C
- Ambient temperature: 5 °C to 40 °C
- Ambient humidity: 30 % to 80 %
- Weight: 30 Kg
- Dimensions (LxDxH): 440x340x790 mm

For TITRA-RAY (optional accessory)

- Power supply: 230V 50/60Hz
- Power consumption: 80 W
- Ambient temperature: 15 °C to 35 °C
- Ambient humidity: 20 % to 80 %
- Weight: 4 Kg
- Dimensions (LxDxH): 220x400x360 mm

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Accessories

KIT FOR AUTOMATIC TITRATION

Reference	KIT-TITRA-RAY
Titration	✓
Stirrer	✓
Reaction vessels and connection hoses	✓
Dimensions L x D x H mm	220 x 400 x 360
Power W	80
Weight Kg	4
Voltage V	230
Frequency Hz	50/60



Features

- Potentiometric titrator.
- Multiple titration programs.
- Kjeldahl nitrogen determination.
- Results in N and protein percentage.
- pH calibration.
- Burette autocalibration.
- Titration calibration.
- Multiple users.
- 2 USB ports:
 - Copy analysis tests and extract data.
 - Connect printer, keyboard or mouse.
- Connect to balance.
- Ethernet port: optional software connection.

Specifications

- Resolution: 0,001 pH, 0,1 mV, $\pm 0,3$ °C.
- Reproducibility: $\pm 0,001$ pH.
- Temperature compensation with probeCat Pt100.

Components

- Reaction vessels (5x50 mL and 5x150 mL).
- Conical adapter (1x).
- Magnetic stir bars (5x).
- Sensor (type and quantity depends on application).
- Syringe holding ring (1 for each syringe).
- Syringe.
- USB applications key.
- Bottle caps (1xGL45 and 1xGL25).
- Several connection hoses.

Installation requirements

- Power supply: 230V 50/60Hz
- Power consumption: 80 W
- Ambient temperature: 15 °C to 35 °C
- Ambient humidity: 20 % to 80 %
- Weight: 4 Kg
- Dimensions (LxDxH): 220x400x360 mm

EXTERNAL TITRATOR SOFTWARE

- Communication software between the titrator and a PC.
- The purchase of this accessory includes an Ethernet connection cable to use in conjunction with the external titrator.
- Control to start and stop analysis.
- Real-time data display directly from the workstation.
- Manage data stored locally or on a server (search, compare, delete, print).
- Export data.



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DISTILLATION TUBES

Reference	TB-26300	TB-42300	TB-42300E*	TB-80300
Sample vol. ml	100	250	250	400
Material	glass	glass	reinforced glass	glass
Dimensions Ø x H mm	26 x 300	42 x 300	42 x 300	80 x 300

* Reinforced distillation tube for waste water or slurry analysis.

REACTION VESSEL








Reference Sample	VR-75300
vol. mlMaterial	200
Dimensions Ø x H mm	glass 80 x 95

DNP ADAPTER FOR BÜCHI® TUBES

- Adapter to use Büchi® tubes in the DNP distiller.

Reference: **ADAP-BU**

TECHNICAL SUMMARY OF DNP SERIES

	Reference	DNP-1500-MP	DNP-2000-MP	
 General information	Official standards compliance	AOAC, DIN, EPA, ISO	AOAC, DIN, EPA, ISO	
	Dimensions L x D x H mm	440 x 340 x 790	440 x 340 x 790	
	Weight Kg	30	31	
	Power W	1800	1800	
	Frequency Hz	50/60	50/60	
	USB port and printer connection	-	Through optional external titrator	
 Main applications	Nitrogen analysis according to Kjeldahl	✓	✓	
	Alcoholic strength by volume	✓	✓	
	Volatile acidity	✓	✓	
	Sulphur dioxide	✓	✓	
	Formaldehyde, Urea, Cyanide	✓	✓	
	Phenols	✓	✓	
 Materials	Sample protection door	Transparent methacrylate	Transparent methacrylate	
	Parts made of glass	Borosilicate 3.3	Borosilicate 3.3	
	Tube stopper	Resistant rubber	Resistant rubber	
	Tubing	Silicone, Teflon® and fluorinated elastomer	Silicone, Teflon® and fluorinated elastomer	
	External housing	AISI-304 stainless steel painted with epoxy resin	AISI-304 stainless steel painted with epoxy resin	
	 Display	Screen type	LCD	LCD
Size pixels		64 x 128	64 x 128	
Values of steam power, distillation time, timer, reagents volumes		✓	✓	
Error messages		Open door, Insert test tube, High temperature, Steam inverted, Cold steam, Low water, Voltage fault, Preheating fault		
Available selection of languages		ESP, ENG, FR	ESP, ENG, FR	
 Microprocessor and programs		Type of microprocessor	PID digital	PID digital
	Number of total customizable programs	21	21	
	Preset customizable programs	8	8	
	Preheating, rinsing and process validation program included	✓	✓	
	Pumps calibration programs	✓	✓	
	 Process control	Automatic steam generation	✓	✓
Automatic water level control of steam generator		✓	✓	
Automatic cooling water control		✓	✓	
Automatic addition of alkaline solution (NaOH)		✓	✓	
Automatic addition of dilution water		✓	✓	
Automatic addition of receiver solution (H ₃ BO ₃)		-	✓	
Automatic sample residues elimination after distillation phase		-	✓	
Automatic titration with external titrator		-	○	
 Adjustable program parameters		Name of program	✓	✓
		Steam generator power %	30 - 100	30 - 100
	H ₂ O addition ml	0 - 240	0 - 240	
	NaOH addition ml	0 - 240	0 - 240	
	H ₃ BO ₃ addition ml	-	0 - 240	
	Reaction delay time min	0 - 30	0 - 30	
	Distillation time min	0 - 30	0 - 30	
	Sample suction	-	Activated / Deactivated	

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TECHNICAL SUMMARY OF DNP SERIES (continued from)

	Reference	DNP-1500-MP	DNP-2000-MP
 Performance for Kjeldahl analysis	Distillation speed at 100% steam addition at 230V ml/min	30	30
	Nitrogen recovery %	≥ 99,5	≥ 99,5
	Measuring range mg N	0,1 - 200	0,1 - 200
	Reproducibility %	± 1	± 1
	Resolution ml	1	1
	Dispensing NaOH, H ₂ O and H ₃ BO ₃ pumps precision %	± 2	± 2
	Steam generator water consumption during distillation phase l/min	0,03	0,03
	Cooling water consumption during distillation phase l/min	2,4	2,4
 Sample tube placement	Tube stopper material	Resistant rubber	Resistant rubber
	Max. - Min. Height mm	320 - 280	320 - 280
	Max. - Min. Width Ø mm	35 - 22	35 - 22
	Adapter for Büchi® tubes	0	0
	Removable tray to collect eventual drops	✓	✓
 Reagents and residues management	NaOH pump	✓	✓
	NaOH tank volume L	10	10
	H ₃ BO ₃ pump	-	✓
	H ₃ BO ₃ tank volume L	-	5
	H ₂ O pump	✓	✓
	H ₂ O tank volume L	10	10
	Residues aspiration pump	-	✓
	Pumps calibration system	✓	✓
	Reagent resistant drag guard and reagent resistant dispensing and/or aspiration tubes	✓	✓
	Water saving system	✓	✓
 Sensors and alarms	Optical warning alarms	✓	✓
	Acoustic warning alarms	✓	✓
	Open door sensor	✓	✓
	Sample tube detection	✓	✓
	Safety thermostat	✓	✓
	Safety pressure switch	✓	✓
 Functions gained with the external titrator accessory	Distilled sample titration	-	0
	USB port	-	0
	Connection to balance	-	0
	Connection to printer	-	0
	Ethernet port for PC connection with optional software for real-time data display	-	0
	Data logging and management	-	0
	Creation of different users	-	0
 Functions gained with the titrator software accessory	Control the titration unit with ability to start and stop analysis	-	0
	Display live data at run time in a stack while the titration device realizes the analyses	-	0
	Display data archived locally or on a server with search, compare, print, export & delete features	-	0
	Export results to formatted files (*.CVS...)	-	0

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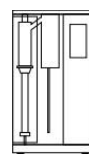
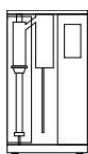
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Dimensions and performance

Reference	DNP-1500-MP	DNP-2000-MP	TITRA-RAY
External dimensions L x D x H mm	440 x 340 x 790	440 x 340 x 790	220 x 400 x 360
Power W	1800	1800	80
Voltage* V	230	230	230
Weight Kg	30	31	4
Tank capacity	H ₂ O L	10	10
	NaOH L	10	10
	H ₃ BO ₃ L	-	5
External titrator	-	0	

* Also available with a voltage of 115 V. 0 : Optional

Safety

- Sample tube and open door sensors to protect the users.
- Several alarms and error messages for maximum safety.
- Resistant sample door to protect the user.
- Antidip tray for eventual splashes.
- Corrosion-resistant easy-to-clean external frame made of stainless steel.

International standardized methods

- DNP Series Kjeldahl distillers have different automation levels to adapt to each user specific requirements and they are fabricated guaranteeing compliance with a variety of international standards such as AOAC, ISO, EPA and DIN.

Regulations: Our DNP Series Kjeldahl distillers are designed to comply with the strictest international directives and standards including the following regulations:

- **EN-61010-1** Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements.
- **EN-61010-2-081 Part 2-081** Requirements for automatic and semi- automatic laboratory analyzers.
- **UNE-EN-ISO 9001:2015** Quality management system.
- **EN-61326** Electrical equipment for measurement, control and laboratory use. EMC Requirements.
- **2014/35/UE** Low voltage.
- **2014/30/UE** Electromagnetic compatibility

When you work with BASTAK you receive;

- ✓ Free technical consultancy for tailor made solutions,
- ✓ High quality instruments with free webinars and on-line trainings,
- ✓ Fast delivery of instruments, spare parts and consumables,
- ✓ Remote technical support (Audio and Video) six (6) days a week,
- ✓ Economical spare parts and consumables available in 10 years,
- ✓ Free factory visits, live tests and demos,
- ✓ On-Site Warranty and On-Site After Sales Service (for >20.000 USD orders)

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<https://www.youtube.com/watch?v=ktEz2PHdDQg&t=10s>

Bastak Factory - 7000 m2

20.000 instruments in 142 countries



Youtube > Bastak Factory

<https://www.youtube.com/watch?v=UbtWWhEblY4>



You can find all Catalogues and Competitor Comparison Tables in this link:

https://drive.google.com/drive/folders/1_4aXqljmISG0Gi7c0KeMuPAGWqvi65mT



Sensitive
Nutrition



High
Efficiency



Monoblock
Study Body



Standard
Grinding



Personal
Security

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