Steam distillation unit Kjeldahl “Pro-Nitro M”

DETERMINATION OF ORGANIC NITROGEN (KJELDAHL METHOD).
AUTOMATIC NaOH DOSAGE AND TEMPORIZE STOP.

Steam distillation Kjeldahl unit.
Simple secure systematic analysis suitable for small to Medium throughput of samples.

FEATURES

Steam distillation system.
Compact steam generator with safety over temperature thermostat and over pressure device.
Safety door, the system will not operate if the door is open.
“Tube in place” sensor: if the tube is not located, the dosing process of NaOH will not take place.
Universal adapter for digestion/distillation tubes MACRO (Ø 42 mm) and MICRO (Ø 26mm)
Small footprint, saves bench top space: The H_2O and NaOH reservoirs are placed within the unit.
Stainless steel case with reinforced ABS plastic front.
Automatic distillate titration kit. (See accessories).

SPECIFICATIONS

Measuring range: from 0.2 to 200 mg of Kjeldahl Nitrogen.
Programmable distillation time.
Nitrogen recovery >99.5%
Distillation speed: from 35-40ml/minute
Typical distillation time: from 7-10 minutes.
Water consumption rate: from 80-100 litres/Hr.
Steam generator water consumption: 2,5 Litres/ Hr.
Water reservoir for steam generator: 6 litres
NaOH reservoir: 2 Litres.

ALARMS

Low water level for the steam generator.
Safety door open or no distillation/digestion tube in place.
Steam generator over temperature.

AUTOMATED SEQUENCES

Open and closure of cooling water to the cooling coil.
Automatic load of NaOH once the distillation has started.
Select NaOH volume.
Stop at the end of the pre-set programmed time.

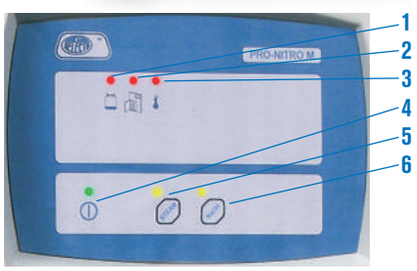
ADDITIONAL REQUIREMENTS

To complete Kjeldahl Nitrogen analysis a digestion block is also required.
(See Bloc Digest pages 251 and 252).

MODEL

Part No.	Height / Width / Depth cm			Power W	Weight Kg
4002627	75	50	50	1800	30

Supplied with a MACRO Ø 42mm tube, set of reagent containers and tubing.



CONTROL PANEL

1. Low water indicator.
2. Door open or no tube presence indicator.
3. Over temperature indicator.
4. Mains on indicator.
5. Push button and indicator start/stop distillation.
6. NaOH volume selection.

ACCESSORIES

Tube for digestion and distillation Series MICRO of 100 ml volume.
Part No. 4001045
Digestion and distillation tube Series MACRO of 250 ml volume.
Part No. 4042300

Adapter kit for automatic determinations. Vessel with location positions for pH electrode, stirrer and reagents and distillate sample.
Part No. 4001724

Polycarbonate conical flasks durable. CAPACITY 250 ml
Part No. 5310100 with cap.
Part No. 5310101 without cap.

Steam distillation unit Kjeldahl Semi-Automatic “Pro-Nitro S”

DETERMINATION OF ORGANIC NITROGEN (KJELDAHL METHOD).
AUTOMATIC BORACIC AND NaOH DOSAGE, SAMPLE DRAINAGE AND TEMPORIZED STOP.

Semi-automatic steam distillation Kjeldahl unit. Simple secure systematic analysis suitable for medium to large throughput of samples.

FEATURES

Steam distillation system. Compact steam generator with safety over temperature thermostat and over pressure device. Safety door, the system will not operate if the door is open.
“Tube in place” sensor: if the tube is not located, the dosing process of NaOH will not take place.
Universal adapter for digestion/distillation tubes MACRO (Ø 42mm) and MICRO (Ø 26 mm).
Small footprint, saves bench top space: The H_2O, NaOH and H_3BO_3 reservoirs are placed within the unit.
Empty Digestion/Distillation tube system.
Stainless steel case with reinforced ABS plastic front.
Green LED 2 digit display.
Distillation program: (Add NaOH, Add Boric Acid, Distillation time, Empty tube.)
Automatic distillate titration kit. (See accessories).

SPECIFICATIONS

Measuring range: from 0.1 to 200 mg Nitrogen.
Programmable distillation time.
Nitrogen recovery >99.5%
Distillation speed : from 35-40ml/minute
Typical distillation time: from 7-10 minutes.
Water consumption rate: from 80-100 litres/Hr.
Steam generator water consumption: 2.5 Litres/ Hr.
Water reservoir for steam generator: 6 litres
NaOH reservoir: 2 Litres.
Boric Acid reservoir: 2 Litres

ALARMS

Low water level for the steam generator.
Safety door open or no distillation/digestion tube in place.
Steam generator over temperature.

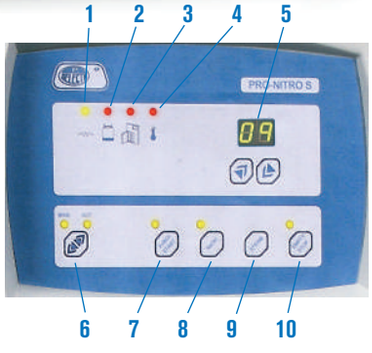
AUTOMATIC

Single push button to start the distillation cycle:
- Boric acid dosing
- Start distillation.
- NaOH dosing
- Stop Distillation (Programmed time transpired.)
- Acoustic indicator at the end of the cycle.

ADDITIONAL REQUIREMENTS

To complete Kjeldahl Nitrogen analysis a digestion block is also required.
(See Bloc Digest pages 251 and 252).

CONTROL PANEL



1. Illuminated indicator. Steam generator
2. Low water in the steam generator
3. Door open or no tube present indicator.
4. Over temperature indicator.
5. Push button and display to select parameters.
6. Mode push button, Manual or Automatic.
7. Push button, dose Boric Acid/Push button START in automatic mode.
8. Dose NaOH push button.
9. Push button, start the distillation in manual mode.
10. Push Button, empty sample tube.

MODEL

Part No.	Height / Width / Depth cm			Power W	Weight Kg
4002851	75	50	50	1800	32

Supplied complete with a MACRO Ø 42 mm tube, set of connection tubes, set of reservoirs.

ACCESSORIES

Tube for digestion and distillation Series MICRO of 100 ml volume.
Part No. 4001045
Digestion and distillation tube Series MACRO of 250 ml volume.
Part No. 4042300

Adapter kit for automatic determinations. Vessel with location positions for pH electrode, stirrer and reagents and distillate sample.
Part No. 4001724

Polycarbonate conical flasks durable. CAPACITY 250 ml
Part No. 5310100 with cap.
Part No. 5310101 without cap.

Automatic steam distillation unit Kjeldahl "Pro-Nitro A"

DETERMINATION OF ORGANIC NITROGEN (KJELDAHL METHOD)
FULLY AUTOMATIC OPERATION. FROM THE REAGENT DOSAGE TO THE TITRATION.

Steam distillation system Kjeldahl, complete with automated "ON-LINE" analysis (evaluation in real time). For systematic precise analysis, with minimum personnel intervention, simple and safe. Adequate for a laboratory with a medium to large throughput of samples.

The Kjeldahl steam distillation unit «PRO-NITRO A» evaluates the distillate at the same time as it is produced (evaluation «On-Line»), the evaluation and distillation are completed as one operation, reducing drastically the analysis time. This type of evaluation offers the following additional advantages: detects the point where the sample no longer produces Nitrogen, which means that, the distillation stops at the optimum maximum Nitrogen recovery and does not prolong the analysis longer than necessary.

The titration is a colorimetric method and is accepted by AOAC and does not require any periodic calibration.

FEATURES

Distillation by steam generation.
Automatic «On-line» colorimetric evaluation.
Steam generator with safety thermostat, over temperature and over pressure device.
Safety, door closed, that prevents distillation if open.
Detects that a digestion/distillation tube is present. This prevents the dosing of NaOH if there is no tube located.
Universal adapter for MACRO (Ø 42 mm) and MICRO (Ø 26 mm)distillation tubes.
Space saving in the laboratory: the reservoirs for the H2O, NaOH, Boric Acid and HCl are located inside the unit.
Empties the digestion/distillation tubes and the collector automatically.
Automatic stop when distillation is complete.
Large LCD display of 20 x 4 characters.
RS232 output to results printer.
Main system made from stainless steel with an ABS plastic front.

SPECIFICATIONS

Measuring range: 0.2 to 200 mg Nitrogen.
Nitrogen recovery:> 99.5%
Distillation speed: from 35 to 45 ml/minute
Coolant water consumption: 80 to 100 litres per hour.
Steam generator water consumption: 2.5 Litre/Hr.
Steam generator water reservoir capacity: 6 litres.
NaOH reservoir capacity: 2 Litres.
Boric Acid reservoir capacity: 2 Litres.
Titrant reagent reservoir capacity: 2 Litres.
Evaluation precision: 1.5%
Minimum reagent dose 0.01ml.

ALARMS

Low water level for the steam generator.
Safety door open or no distillation/digestion tube in place.
Steam generator over temperature.

ADDITIONAL REQUIREMENTS

To complete Kjeldahl Nitrogen analysis a digestion block is also required.
(See Bloc Digest pages 251 and 252).

MODEL

Part No.	Height / Width / Depth cm			Power W	Weight Kg
4002430	75	50	50	1800	38

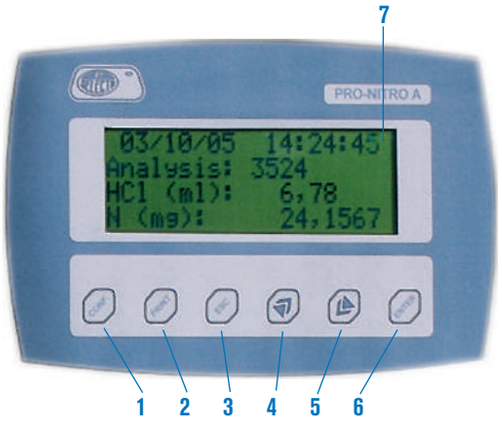
Supplied complete with a MACRO Ø 42 mm tube, set of connection tubes, set of reservoirs, 250 ml. of mixed indicator 4.8 and 100 gr. of sulphate ammonium.

AUTOMATION

Closing and opening of the condenser cooling water in line with the distillation process.
Dosing of Boric Acid.
Dosing of NaOH once the distillation has started.
Select NaOH and Boric Acid volume.
«On-line» evaluation of distillate.
Auto detection of the end of the distillation process.
Special functions to maximise performance.
Special functions for maintenance.

REAGENTS

All the reagents used in the «PRO-NITRO A» are easily located:
- Solution of 30-40% NaOH.
- Solution of Boric Acid at 1% concentration (approx.) with mixed indicators (Bromo-cresol green and methyl red).
- Reagent for titration: HCl or H2SO4 from 0.05N or 0.25N adjusted to 0.001 Normal.



CONTROL PANEL

1. Menu to configure the date, time and selectable parameters.
2. Print the analysis information using the optional printer 4120113, purchased as an accessory.
3. <<ESC>> to cancel changes and escape from the menu.
4. Increase values and navigation through the menu.
5. Decrease values and navigate through the menu.
6. <<ENTER>> to accept changes to parameters and navigation through the menu.
7. LCD display to visualise parameters and results

ADVANTAGES

Excellent precision on results.
Complete Nitrogen recovery from the sample.
Minimum operator intervention.
No calibration required.
Minimum analysis time.

RESULTS

The results can be downloaded to a printer (Optional), required for GLP, and includes the following data:
- Consecutive unrepeatable I.D. number of analysis.
- Date and time.
- Volume of NaOH.
- Volume of Boric acid.
- Reagent normality.
- Nitrogen detected.

```
15/10/05 12:16:08
Analysis Nr: 087598
NaOH:       75ml.
Boric:      25ml.
Normality: 0.1503

Results:
Reagent:    10.521ml
Nitrogen:   22.1382mg
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ACCESSORIES

Ink printer (not thermal paper), size (4/6/10 cm) suitable for use with the PRONITRO A.
Paper 2 1/4" (56 mm) wide.
Interface RS232.
Includes interface and mains cables.
Part No. 4120113

Digestion and distillation tube. Series MACRO of 250 ml volume. Graduated to 100 ml 42 mm Ø x 300 mm high.
Part No. 4042300

Tube for digestion and distillation. Series MICRO of 100 ml volume. 26 mm Ø x 300 mm high.
Part No. 4001045

QUALITY CONTROL INFORMATION

ALL OF THE KJELDAHL DISTILLATION UNITS 4002430 REQUIRE A PROTOCOL ASSAY FOR THE RECOVERY OF NITROGEN WHEN MANUFACTURED.
THESE RESULTS COME WITH THE EQUIPMENT AND ARE VALID FOR IQ AND OQ CLARIFICATION.

COMPLEMENT

Digital colorimeter "Pro-A 520"

MICROPROCESSOR CONTROLLED.
AUTOMATIC ZERO ABSORBANCE AND 100% TRANSMITTANCE.
ALPHANUMERIC 20 CHARACTER 2 LINE L.C.D. DISPLAY.

APPLICATIONS

Reagent preparation for Pro-Nitro A.

FEATURES

Wavelength range: 400 to 800 nm, by using special filters.
Standard filter: 520 nm.
Expanded Absorption range: -0.3 to 3.5 O.D.
Transmission: 0 to 100 T %.
Photometric accuracy: >1 %. @ 1.000 A.
Photometric precision: ±1 %. @ 1.000 A.
Photometric stability: 0.004 A/hr. @ 0.000 A.
Light source: Long life tungsten lamp.
Detector: Solid state.
Sample chamber: 10 mm cuvettes.
Minimum volume: 1 ml.
Display: Alphanumeric LCD display of 2 lines of 20 characters.
Calculation functions: Transmission T %.
Absorbence, Concentration by factor or standard concentrations.
Calibration: Self adjusting by software.
RS-232 interface.

CONTROL PANEL

ON/OFF switch.
Interactive LCD display.
Numeric and function keypad.

SPARE

Lamp of 6 V / 6 mm.
Part No. 4512009

MODEL

Part No.	Built in printer	Height / Width / Depth cm			Power W	Weight Kg
4120029	NO	11	18	28	10	4.5