Kjeldahl digestion unit
Steam distillation unit kjeldahl “Pro-Nitro M”
Automatic NaOH dosage and temporized stop.
Steam distillation unit kjeldahl “Pro-Nitro S”
Automatic boracic and Naoh dosage, sample drainage and temporized stop.
Steam distillation unit kjeldahl “Pro-Nitro A”
Fully automatic operation. From reagent dosage to the titration
Extractor for fats and oils “Det-Gras N”
Extractor for determination of cellulose and fibre
Alcohol distillation
“DQO” and “DBO” water analysis
Flocculator and water distiller
**NUTRITIONAL AND WATER ANALYSIS APPARATUS**

**EXTRACTION**
- Organic nitrogen determination by Kjeldahl “BLOC-DIGEST”
- Steam distillation of protein, PRO-NITRO “M”
- Steam distillation of protein semiautomatic, PRO-NITRO “S”
- Kjeldahl distillation automatic PRO-NITRO “A”
- Extractor for the determination of cellulose and fibre, “DOSI-FIBER”
- Cold extraction unit, “EF-1425”
- Solvent extractor unit for the determination of residues, oils and fats in nutritional and other materials DET-GRAS “N”
- Sample Hydrolysis unit, “HI-1427”
- Wine (Alcohol), distillation unit “DE 1626”

**WATER ANALYSIS**
- Chemical Oxygen Demand in residual water “C.O.D.”
- Constant temperature refrigerated incubator cabinets, B.O.D. “MEDILOW S, M, L, LG”
- Flocculator for water analysis, laboratory “FLOCUMATIC”
- Flocculator for water analysis, portable “JARTEST”
- De-mineraliser “LAB-ION”
- Water Distillation unit, “AQUASEL”, “L-3” and “AC-L8”

**RECOMMENDED METHODS AND EQUIPMENT:** PRO-NITRO M, S and A, DOSI-FIBER, EF-1425, HI-1427, DET-GRAS N, BLOC-DIGEST, DE-1626 and C.O.D.*

<table>
<thead>
<tr>
<th>Analysis of Cereal and Derivatives</th>
<th>Reference</th>
<th>Pro-Nitro M.S and A</th>
<th>Dosi-Fiber</th>
<th>EF-1425</th>
<th>Det-Gras N</th>
<th>Bloc-Digest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determination index for cellulose</td>
<td>Method Wladesco</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insoluble fibre in food</td>
<td>Method Van Soest</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>Method Weende &amp; Wijkströn</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proteins</td>
<td>Method Kjeldahl</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soxhlet extraction for fat identification</td>
<td>Soxhlet Extraction</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude Fat</td>
<td>Soxhlet Extraction</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>Determination A. A.</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>Determination A. A.</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis of Milk and Derivatives</th>
<th>Reference</th>
<th>Pro-Nitro M.S and A</th>
<th>Dosi-Fiber</th>
<th>EF-1425</th>
<th>Det-Gras N</th>
<th>Bloc-Digest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Fat</td>
<td>Soxhlet Extraction</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude Protein</td>
<td>Method Kjeldahl</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casein</td>
<td>Method Kjeldahl through precipitation of casein</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis of Alcoholic Beverages</th>
<th>Reference</th>
<th>Pro-Nitro M.S and A</th>
<th>Dosi-Fiber</th>
<th>EF-1425</th>
<th>Det-Gras N</th>
<th>Bloc-Digest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of alcohol</td>
<td>Method Volumetric</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatile Acid</td>
<td>Method Volumetric</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>Method Volumetric</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis of Fodder and Raw Materials</th>
<th>Reference</th>
<th>Pro-Nitro M.S and A</th>
<th>Dosi-Fiber</th>
<th>EF-1425</th>
<th>Det-Gras N</th>
<th>Bloc-Digest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw Cellulose</td>
<td>Method Weende &amp; Wijkströn</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw Protein</td>
<td>Method Kjeldahl</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw Fat</td>
<td>Soxhlet extraction</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatile base nitrates</td>
<td>Distillation Kjeldahl</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soluble Raw Fat en hydrochloric acid and Pepsin</td>
<td>Method Kjeldahl</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casein total</td>
<td>Method Kjeldahl in casein precipitate</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosphorus</td>
<td>Method Photometric</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrocyanic Acid</td>
<td>Distillation in Silver Nitrate</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pure zolidine</td>
<td>Soxhlet Extraction</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis of Fruit Beverages and Derivatives</th>
<th>Reference</th>
<th>Pro-Nitro M.S and A</th>
<th>Dosi-Fiber</th>
<th>DE-1626</th>
<th>Bloc-Digest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen</td>
<td>Method Kjeldahl</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatile Acids</td>
<td>Distillation measurement</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>Dichromate Determination</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis of Waters</th>
<th>Reference</th>
<th>Pro-Nitro M.S and A</th>
<th>Dosi-Fiber</th>
<th>D.O.D./ECO-8/ECO16</th>
<th>Bloc-Digest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen</td>
<td>Method Kjeldahl</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>Method Photometric</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.O.D.</td>
<td>Determination by Dichromate</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reference: Methods are official publications issued by the MAPA (Ministry of Agriculture, Fisheries and Nutrition) 1993.
Dry block for Determination of Organic Nitrogen by the Kjeldahl method

Models Macro and Micro

THE EQUIPMENT FOR THE DETERMINATION OF ORGANIC NITROGEN IS MADE OF TWO BASIC ELEMENTS:
- BLOCK DIGESTER (MINERALISATION) WITH PROGRAMMABLE TEMPERATURE CONTROL AND GLASSWARE (MACRO 250 ml AND MICRO 100 ml).
- DISTILLATION UNIT “PRO-NITRO M”, “PRO-NITRO S” (SEMI AUTOMATIC) AND “PRO-NITRO A” (AUTOMATIC).

Digestion Block “Bloc-digest”

FEATURES
Minimal sample manipulation
Uniform heating.
Capacity to store 20 programs of 4 steps for temperature and time.
RS-232 port for temperature register and digestion programation from a PC.
Supplied complete with:
1 metal heater block.
1 programmer for time and temperature
1 tube support rack
1 gas collector
Digestion tubes.

Complete unit with: Dry-block connected to a programmable process unit, (time and temperature) rack support for tubes and fume extractor.

MODELS - COMPLETE UNIT MACRO

<table>
<thead>
<tr>
<th></th>
<th>Part No.</th>
<th>No. of positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloc Digest 6</td>
<td>4000629</td>
<td>6</td>
</tr>
<tr>
<td>Bloc Digest 12</td>
<td>4000630</td>
<td>12</td>
</tr>
<tr>
<td>Bloc Digest 20</td>
<td>4000631</td>
<td>20</td>
</tr>
</tbody>
</table>

MODELS - COMPLETE UNIT MICRO

<table>
<thead>
<tr>
<th></th>
<th>Part No.</th>
<th>No. of positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloc Digest m 12</td>
<td>4001047</td>
<td>12</td>
</tr>
<tr>
<td>Bloc Digest m 24</td>
<td>4001048</td>
<td>24</td>
</tr>
<tr>
<td>Bloc Digest m 40</td>
<td>4001049</td>
<td>40</td>
</tr>
</tbody>
</table>

ACCESSORIES: EXTRACTION SYSTEM AND NEUTRALIZATION OF ACID VAPOURS

Specially designed to absorb and neutralize vapours generated in the Kjeldahl digestion processes.
Composed of a “Scrubber unit” that blocks the passage and neutralizes the condensed acids, and a re-circulating water pump that produces sufficient vacuum to aspirate the vapours.
It is essential to put the “Scrubber” unit together with the neutralizer solution between the digestion block and the re-circulating pump. Digester “Bloc Digest 20” requires 2 “Scrubber” units for a proper neutralization of fumes. Note: Pump with part number 4001612 has 2 suction inlets.

“Scrubber” unit

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4001611</td>
<td>32 31 16</td>
<td>2</td>
</tr>
</tbody>
</table>

It is supplied with 3 Kg. acid vapours neutralizer solution.
Spare part:
3 Kg. acid vapours neutralizer solution.
Part No. 4001610

Water recirculation vacuum pump

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Vacuum level bar</th>
<th>Pump rate Litres/minute</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4001612</td>
<td>44 39 28</td>
<td>0.98</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
**Heating blocks**
To function correctly it is important to include in the purchase the controller unit for time and temperature RAT-2. The block should not be connected directly to the mains supply.

<table>
<thead>
<tr>
<th>Models</th>
<th>Part No.</th>
<th>No. of positions</th>
<th>Ø tube mm</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Temperature °C</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACRO</td>
<td>4000507</td>
<td>6</td>
<td>42</td>
<td>18 33 28</td>
<td>45 to 450</td>
<td>1500</td>
<td>18</td>
</tr>
<tr>
<td>MACRO</td>
<td>4000508</td>
<td>12</td>
<td>42</td>
<td>18 39 33</td>
<td>45 to 450</td>
<td>2100</td>
<td>25</td>
</tr>
<tr>
<td>MACRO</td>
<td>4000509</td>
<td>20</td>
<td>42</td>
<td>18 44 39</td>
<td>45 to 450</td>
<td>2500</td>
<td>31</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001050</td>
<td>12</td>
<td>26</td>
<td>18 33 28</td>
<td>45 to 450</td>
<td>1500</td>
<td>16</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001051</td>
<td>24</td>
<td>26</td>
<td>18 39 33</td>
<td>45 to 450</td>
<td>2100</td>
<td>22</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001052</td>
<td>40</td>
<td>26</td>
<td>18 44 39</td>
<td>45 to 450</td>
<td>2500</td>
<td>27</td>
</tr>
</tbody>
</table>

**Process programmer for time / temperature RAT-2.**
Part No. 4001538

**Features**
- Temperature range from 45 ºC to 450 ºC.
- Memory for 20-4 steps programs.
- Maximum time per step: 600 minutes.
- Acoustic indication for digestion end of program.
- Two selectable temperature gradients: kjeldahl/D.Q.O.
- Temperature sense breakage alarm.
- Independent control of safety maximum temperature.
- Bidirectional RS-232 serial connection. For temperature registration and digestion program edition with the RAT connected to a PC.
- Software included.

**Control Panel**
The control panel and the RAT-2 display allow the creation and execution of the digestion program. During the digestion, it shows the block temperature, the elapsed time in the program step.

**Tube support rack.**
Made of chemically treated no corrosive Dural, with handles and side panel that prevents heat loss.

<table>
<thead>
<tr>
<th>Models</th>
<th>Part No.</th>
<th>No. of places</th>
<th>Height / Width / Depth (exterior) cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACRO</td>
<td>4005071</td>
<td>6</td>
<td>15 17.5 12.5</td>
</tr>
<tr>
<td>MACRO</td>
<td>4005081</td>
<td>12</td>
<td>15 23 18</td>
</tr>
<tr>
<td>MACRO</td>
<td>4005091</td>
<td>20</td>
<td>15 28.5 23.5</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001053</td>
<td>12</td>
<td>15 17.5 12.5</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001054</td>
<td>24</td>
<td>15 23 18</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001055</td>
<td>40</td>
<td>15 28.5 23.5</td>
</tr>
</tbody>
</table>

**Fume extraction**
Unit for collecting fumes supplied with a support rack. Made of borosilicate glass and stainless steel.

<table>
<thead>
<tr>
<th>Models</th>
<th>Part No.</th>
<th>No. of places</th>
<th>Height / Width / Depth (exterior) cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACRO</td>
<td>4005072</td>
<td>6</td>
<td>15 18 12</td>
</tr>
<tr>
<td>MACRO</td>
<td>4005082</td>
<td>12</td>
<td>15 23 18</td>
</tr>
<tr>
<td>MACRO</td>
<td>4005092</td>
<td>20</td>
<td>15 29 23</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001056</td>
<td>12</td>
<td>15 18 12</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001057</td>
<td>24</td>
<td>15 23 18</td>
</tr>
<tr>
<td>MICRO</td>
<td>4001058</td>
<td>40</td>
<td>15 29 23</td>
</tr>
</tbody>
</table>

**Nutritional Analysis**
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 H2O 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 >99.9%
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

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4002827</td>
<td>75 50 50</td>
<td>1800</td>
<td>30</td>
</tr>
</tbody>
</table>

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

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.
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 H2O, NaOH and H3BO3 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 0.2 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 251and 252).

**MODEL**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height/cm</th>
<th>Width/cm</th>
<th>Depth/cm</th>
<th>Power/W</th>
<th>Weight/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4002851</td>
<td>75</td>
<td>50</td>
<td>50</td>
<td>1800</td>
<td>32</td>
</tr>
</tbody>
</table>

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.
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: 0.01 ml.

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

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth</th>
<th>Power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>4002430</td>
<td>75 50 50</td>
<td>1800</td>
<td>38</td>
</tr>
</tbody>
</table>

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

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
Solvent recovery extractor for fats and oils “Det-gras N”

FOR THE DETERMINATION OF FATS BY SOXHLET METHOD. 
SAFETY PROTECTION IP65.

Equipment for the extraction of fats and soluble substances that will dissolve in solvents. Based on the Soxhlet methods by Randall, the DET-GRAS-N extracts fats (and or other substances) from the sample by dissolving them in a solvent. If compared to the classic standard soxhlet method, a time saving of between 30-70% can be obtained due to a two stage extraction process and high speed in obtaining high temperatures.

APPLICATIONS
Practically all methods of classic soxhlet extraction can be substituted by the DET-GRAS-N. Typical fat determinations are: in meat products, animal fodder, pre-prepared foods, fish etc. Also suitable for the extraction of soluble components in paper paste, textile fibres etc.

FEATURES
Heating by protected electric heater, distributed throughout the radiator surface that provides homogeneous heating throughout the samples.
Electrical safety according to IP65.
Robust temperature control by a durable thermocouple.
Safety over temperature device.
Outer case made of solvents resistant epoxy coated steel.
Extractions can be completed using glass or cellulose thimbles.
Compatible with most common solvents: Petroleum ether. Diethyl ether, hexane, acetone acetonitrile etc.
Supplied complete with 2 sets of seals, adapters for different solvent types.
Typical extraction time (food fats) 50 minutes.

SPECIFICATIONS
Cellulose extraction thimbles Øext 26 x 60 mm.
Reusable glass thimbles Øext 34 x 80 mm.
Working temperature of 80 to 240 °C.
Solvent recovery 60 to 80 %.
Solvent volume (by sample): up to 50 ml.
Program memories: 16.
Extraction time <<boiling>>: from 0 to 99 minutes.
Extraction time <<rinsing>>: from 0 to 99 minutes.
Time to recuperate solvents: from 0 to 99 minutes.

CONTROL PANEL
LCD display of 2 lines of 20 characters.
Keypad with 4 push buttons to select temperature, time and programs.

MODELS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>No. of places</th>
<th>Height / Width / Depth cm</th>
<th>Water consumption litres/minute</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4002841</td>
<td>2</td>
<td>70 80 40</td>
<td>1</td>
<td>200</td>
<td>19</td>
</tr>
<tr>
<td>4002842</td>
<td>6</td>
<td>70 75 40</td>
<td>2</td>
<td>600</td>
<td>25</td>
</tr>
</tbody>
</table>

Accessories supplied with the 6 place model.
Extractor for the determination of cellulose and fibre “Dosi-fiber”

APPLICATIONS
Total Fibre (WEENDE, VAN SOEST or similar). Dietary fibre. Neutral detergent fibre. Acid detergent fibre. Other extraction processes which do not use acetic acid, acetic trichloric acid or nitric acid. Textile fibre. Wood and paper fibre.

EQUIPMENT DESCRIPTION
Integral extraction and filtration.
No sample transfer reduces the risk of sample loss, since the tubes, crucibles and filter are transferred with the samples in place.
Excellent results due to reproducible operating conditions.
Easy sample handling due to the special crucible support stand.
Versatile and precise test procedure that allows the samples to be weighed at various stages in the extraction process.

FEATURES
Rugged external case with a “RILSAN” protective coating. All equipment components; condenser, valves, heater, compressed air valves and controls are all protected within the main case. Infrared heating elements.

CONTROL PANEL
Mains illuminated ON/OFF switch.
Switch for compressed air pump.
Heating element with electronic control.

TECHNICAL DATA
Sample size: 0.5 to 3 g (Normally 1 g).
Reproducibility: approximately ±1 % for fibre level between 5-30 %.
Measuring range: 0.1 to 100 %.
Cooling water consumption: 1 litre/minute.

EQUIPMENT
Comes complete with: crucible with a porosity P-2, Crucible support rack, heater lid and holder manipulator.

MODELS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>No. of places</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000599</td>
<td>4</td>
<td>56 43 32</td>
<td>1000</td>
<td>19</td>
</tr>
<tr>
<td>4000623</td>
<td>6</td>
<td>56 57 32</td>
<td>1500</td>
<td>25</td>
</tr>
</tbody>
</table>

ACCESSORIES

<table>
<thead>
<tr>
<th>Double hotplate for reagents.</th>
<th>Power consumption 1750 W.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No. 4000634</td>
<td></td>
</tr>
<tr>
<td>Beaker for reagents.</td>
<td>Part No. 1000635</td>
</tr>
</tbody>
</table>

SPARES

<table>
<thead>
<tr>
<th>Support rack for 4 crucibles.</th>
<th>Support rack for 6 crucibles.</th>
<th>Crucibles with a P - 2 porosity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No. 4000600</td>
<td>Part No. 4000624</td>
<td>Part No. 4000601</td>
</tr>
</tbody>
</table>

EQUIPMENT FOR THE DETERMINATION OF TOTAL DIETARY FIBRE, ENZYMATIC METHOD

THE DETERMINATION OF TOTAL DIETARY FIBRE BY THE ENZYMATIC METHOD (AOAC, AACC) IS very different to the WEENDE and the DE VAN SOEST METHODS. THE EQUIPMENT FOR THIS ANALYSIS DEPENDS ON THE ENZYME KIT THAT YOU ARE GOING TO USE. ONCE THE TYPE OF ENZYME KIT IS SELECTED THE KIT INSTRUCTIONS WILL INDICATE THE NECESSARY EQUIPMENT TO COMPLETE THE ANALYSIS. THE COLD EXTRACTION UNIT EF-1425 PART NO 4001425 AND THE RECIPROCAL BATH PART NO 6032011 ARE FREQUENTLY USED (SEE PAGE 93).

Cold extraction unit “EF-1425”

DESCRIPTION
Specifically designed unit for cold extraction of up to 6 samples simultaneously, using acetone or other solvents. Complements the Dosi-Fiber for the analysis of crude fibre.
Components: 1 litre receptacle for solvent recovery, suction tube and 6 adapters to hold the filtration crucibles Part No. 4000601.
A pump or jet pump will be required to connect to the suction tube.
Comes complete with: blank stoppers in the case that not all of the 6 crucible places are used and a 1 litre solvent recovery vessel.

FEATURES
Stainless steel AISI 304, extractor, modular construction, easy to use and fast removal for efficient cleaning. Support and crucible rack, made from hardened glass.

MODEL

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4001425</td>
<td>45 20 34</td>
<td>3</td>
</tr>
</tbody>
</table>

ACCESSORY

<table>
<thead>
<tr>
<th>Jet pump.</th>
<th>Part No. 7000293</th>
</tr>
</thead>
</table>
Oenological Distillation unit “DE-1626”

APPLICATIONS
Degree of alcohol in wines, Degree of alcohol in spirits, Volatile acids and Sorbic acid.

FEATURES
Vapour distillation.
Designed especially to obtain the distillation of wines and spirits to determine the alcohol grade by volume, volatile acid, ascorbic acid and other components.
Distillation volume up to 400 ml.
Auto stop at the end of the distillation.
Simple operation with minimum service.
Vapour generator protection system.
- Tube Ø 42 mm for volatile acid samples.
- Tube Ø 52 mm for volatile acid samples and 100 ml proof alcohol.
- Tube Ø 80 mm for samples of 200 ml for proof alcohol.
- 200 ml Matrix flask to collect distillate.

TECHNICAL SPECIFICATIONS
Validated to the criteria of CEE No. 2676/90 and CEE No. 2870/2000
Distillation speed: 30-40 ml/min (Recover of 200 ml of distillate in 5/6 minutes).
Condenser coolant water rate: 80-100 l/hr.
Generator water consumption: 1 and 1.25 ml for each ml of distillate.
Vapour generator power: 2400 W.

CONTROL PANEL
Control Panel.
Electronic controller.
Mains switch.
START Push button.
STOP Push button.
ADD Push button.
By the use of the ADD button allows the distillate to set burette level, then, there is no need to fill up with water to a level of 200 ml.

VALIDATION
The oenological DE-1626 has been validated by the oenological laboratory INCAVI in Vilafranca del Penedès. This laboratory has completed analysis from the distillation unit DE-1626 for the determination of alcohol proof by volumetric analysis, following the criteria of CEE No 2676/90 and CEE 2870/2000. They have analysed samples of hydrated alcohol, different wines and spirits with a high alcohol content. The unit was successfully appraised by the laboratory.

MODEL
<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4001626</td>
<td>90 30 30</td>
<td>2400</td>
<td>20</td>
</tr>
</tbody>
</table>

Accompanied with tubes and flasks Ø 42, 52 and 80 mm and a 200 ml matrix flask.

ACCESSORIES

Glass tube adapters.
Part No. Dimensions
4042300 Ø 42 x 300 mm
1001422 Ø 52 x 300 mm
1000646 Ø 80 x 300 mm

Support rack for 6 tubes, made of stainless steel.
Part No. Suitable tubes dimensions
4000648 Ø 42 mm
4001473 Ø 52 mm
4001613 Ø 80 mm

Matrix flask 200 ml.
Part No. 1001636

Alcoholmeters, graduations in 0.1 grade alcohol.
Part No. Graduations
1001629 0 - 10
1001630 10 - 20
1001631 20 - 30
1001632 30 - 40
1001633 40 - 50
1001634 50 - 60
1001635 90 - 100

Alcoholmeters stand 6 places.
Part No. 1000015

Nutritional Analysis 259
**Oenological analyser photometer “M-3000”**

**APPLICATIONS**
With the oenological application photometer, the following determinations can be performed:
1. Wine colouring intensity (absorbances addition at: 420, 520 and 620 nm.)
2. Folin index (polyphenols).
4. Enzymatic analysis for grape juice, grape juice-wine and wine. Acids: acetic, malic, gluconic and lactic, glucose, fructose and glycerine.

**FEATURES**
- Wavelength range: from 340 to 750 nm, with interference filters with a 10 nm band pass.
- Supplied with filters: 340, 420, 520, 620 and 750nm.
- Other optional filters possible.
- ABS, T% and concentration reading.
- ABS reading range: from -0.3 to 3.5 OD.
- T% reading range from 0 to 100%.
- Concentration range: from 0.001 to 9.999
- Photometric accuracy: 1%.
- Precision: ±1 %.
- Photometric stability: better than 0.004 A/h.
- Cell holder for 10 mm. path length cuvettes.
- Internal calibration by software.

**ACCESSORIES**
- Glass cuvettes 10 mm. path length. 2 units pack. Part No. 5100021
- Glass cuvettes 1 mm. path length. 2 units pack. Part No. 4120034
- Polystyrene cuvette, semi-micro, 10 mm. path length. 100 units box. Part No. 5100023
- Cuvettes adapter of 1 mm. Part No. 4120033

**CONTROL PANEL**
- Filter change knob.
- Numeric keypad and for functions.
- Alphanumeric display with interactive messages.
- RS-232 interface for connection to printer or computer.

**MODEL**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height / Width / Depth</th>
<th>Power</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>4120019</td>
<td>11 x 18 x 28</td>
<td>35 W</td>
<td>3 Kg</td>
</tr>
</tbody>
</table>

**SPARE**
- Halogen lamp 6 V 12 W.
  Part No. 4313040

**Note:** A visible ultraviolet range spectrophotometer UV-2005 is needed for a total polyphenols index determination (absorbance 280 nm) and the Cromoenos® method exact and accurate measurement.

**Metallic thermostat dry block “Enobloc”**

**APPLICATIONS**
To use the enzymatic reagents performing at full capacity, it is recommended to incorporate the thermostat dry-block incubator for tubes/cuvettes at a fixed temperature of 35 °C.
- Part No. 7001570
- Capacity: 15 cuvettes pathlength 10 mm, which can be macro or semi-micro of 1,5 mL.
Thermo reactor for determining COD Chemical Oxygen Demand of waste water plants

STANDARD TO C.E.E. AND UNE 77-004.

REFLUX METHOD.

FEATURES
Composed of a Hot block for 6,12 or 20 samples, process programmer and lifting racks. Uniform heating throughout the block to all samples. Automatic temperature and time control during digestion.

C.O.D. unit comprises of:
- 1 metallic hot block.
- 1 Processor for temperature and time.
- 1 Support rack for tubes.
- 1 Support rack for condensers.
- C.O.D. tubes with an aperture of 29/32.
- Condensers for C.O.D.

MODELS - EQUIPMENT DESCRIPTION

<table>
<thead>
<tr>
<th></th>
<th>Part No.</th>
<th>No. of places</th>
</tr>
</thead>
<tbody>
<tr>
<td>DQO. - 6</td>
<td>4000638</td>
<td>6</td>
</tr>
<tr>
<td>DQO. - 12</td>
<td>4000639</td>
<td>12</td>
</tr>
<tr>
<td>DQO. - 20</td>
<td>4000640</td>
<td>20</td>
</tr>
</tbody>
</table>

INDIVIDUAL PARTS LIST AND SPARES

Hot block. This block cannot be used without the RAT controller of temperature and time.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>No. of places</th>
<th>Ø tube mm</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Temperature °C</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000507</td>
<td>6</td>
<td>42</td>
<td>18 33 28</td>
<td>45 - 450</td>
<td>1500</td>
<td>18</td>
</tr>
<tr>
<td>4000508</td>
<td>12</td>
<td>42</td>
<td>18 39 33</td>
<td>45 - 450</td>
<td>2100</td>
<td>25</td>
</tr>
<tr>
<td>4000509</td>
<td>20</td>
<td>42</td>
<td>18 44 39</td>
<td>45 - 450</td>
<td>2500</td>
<td>31</td>
</tr>
</tbody>
</table>

Condenser tube support.
Part No.
4000643 6 places.
4000644 12 places.
4000645 20 places.

Condenser tubes for C.O.D. process.
Part No. 1000642

Tube support rack.
Made of chemically treated dural sheet metal, with handles and removable panels that maintain the heat around the tubes and allow the user to examine the samples during the process.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>No. of places</th>
<th>Ø tube mm</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Temperature °C</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4005071</td>
<td>for C.O.D. 6 (block 4000507).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4005081</td>
<td>for C.O.D. 12 (block 4000508).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4005091</td>
<td>for C.O.D. 20 (block 400509).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

System programmer for temperature/time RAT-2.
Part No. 4001538

Features
Display of time, temperature and program. Selectable temperature from 45 to 450 °C. Memory capacity: 10 programs of 5 stages of each program. Maximum time per stage: 600 minutes. Visual and acoustic alarm at the end of the cycle. Alarm if the temperature probe fails.

Control Panel
Mains switch.
Temperature display.
Push button to select temperature.
Push button to increase value.
Push button to start.
Push button to stop.
Push button to decrease value.
Push button to select time.
Display time and program number.
Push button to select program.
Laboratory flocculator “Flocumatic”

FOR THE DETERMINATION OF THE NECESSARY AGENTS REQUIRED FOR SEDIMENTATION.
DIGITAL ELECTRONIC CONTROL OF SPEED AND TIME FUNCTIONS.

**APPLICATIONS**
Optimization of coagulant additives and poly-electrolytes for surface and residual water treatment.
Evaluation of the efficiency of an absorbent in toxic agents.
Polyvalent. Without transmissions by belt. Due to its powerful torque it allows stirring and mixing high viscosity substances.

**FEATURES**
Stirring equipment for 4 or 6 places that accommodates beakers up to 1000 ml tall shape or 2000 ml short shape.
Stirring speed from 15 to 200 r.p.m.
Silent running.
Adjustable timer from 1 to 999 minutes or continuous operation.
Easily adjusted height over head stir, bars made of AISI 304 stainless steel are easily fixed in position.
Two vertical and horizontal adjustable illumination units can be placed in the unit. This adjustable accessory allows the light angle to be varied according to the samples being run. An original Selecta design. See accessories part numbers 3000834 and 3000915, 4 and 6 place models that obtain simultaneous front and back lighting. The main case of the unit is made of epoxy coated steel, with AISI 304 stainless steel supports with anti slip rubber feet.

**CONTROL PANEL**
1. Alphanumeric display. Indicates rpm and time.
2. Parameter invalidate button.
3. Parameter value decrease button.
4. Parameter value increase button.
5. Parameter validation button.

**MODES**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>No. of places</th>
<th>Speed (r.p.m.)</th>
<th>Height/Width/Depth (exterior) cm</th>
<th>Illumination power W</th>
<th>Power W</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000833</td>
<td>4</td>
<td>15 - 200</td>
<td>52/70/23</td>
<td>40</td>
<td>160</td>
<td>24</td>
</tr>
<tr>
<td>3000914</td>
<td>6</td>
<td>15 - 200</td>
<td>52/99/23</td>
<td>50</td>
<td>170</td>
<td>36</td>
</tr>
</tbody>
</table>

**ACCESSORIES**
Illumination units, simultaneous lighting horizontal and vertical.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Model part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000834</td>
<td>3000833</td>
</tr>
<tr>
<td>3000915</td>
<td>3000914</td>
</tr>
</tbody>
</table>

**Portable flocculator “4P-M”**
FOUR POSITIONS. WITH ILLUMINATION.

**FEATURES**
Mains voltage or portable connection to a cigarette lighter within a car (12 V DC), for achieving analysis for a site chemical dose measurements of waste water treatment plants.
Head stirrers made of AISI 304 stainless steel with variable height.
Suitable for vessels up to 1 litre capacity.

**CONTROL PANEL**
1. Alphanumeric display. Indicates rpm and time.
2. Parameter invalidate button.
3. Parameter value decrease button.
4. Parameter value increase button.
5. Parameter validation button.

**MODEL**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Height/Width/Depth (exterior) cm</th>
<th>Power W</th>
<th>Power supply</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000835</td>
<td>37/25/27</td>
<td>20</td>
<td>220-240V/50-60Hz</td>
<td>6</td>
</tr>
</tbody>
</table>
**Water distiller “Aquasel”**

DISTILLATION CAPACITY: 4 AND 6 LITRES/HOUR.

**Made from stainless steel and glass, easy disassembly for cleaning and storage.**

**COMMON FEATURES**

- Easy to use, suitable for continuous distilled water requirements.
- Boiler unit and heater element made of AISI 304 stainless steel, with lid and condenser made of orosilicate glass. The glassware pressure seal connection is an original Selecta design.
- Safety system cuts off power to the heater element if there is not enough water. Distilled water produced is pyrogen free.

<table>
<thead>
<tr>
<th>MODELS</th>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Water consumption l/min</th>
<th>Conductivity at 20 °C µs/cm</th>
<th>Ø / Height (ext.) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquasel 4</td>
<td>4903004</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>18 / 43</td>
<td>2400</td>
<td>5</td>
</tr>
<tr>
<td>Aquasel 6</td>
<td>4903006</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>23 / 68</td>
<td>4800</td>
<td>8</td>
</tr>
</tbody>
</table>

Supplied complete with silicon seals.

**Distillation still “L-3”**

DISTILLATION CAPACITY: 3 LITRE PER HOUR.

**FEATURES**

- Made entirely of borosilicate glass, with protective case support, designed for functionality, that permits easy access to the quartz heater elements.
- Functions: automatic with continuous water production. Produces distilled water of a high purity, free of pyrogens and metal ions.
- Equipped with quartz heater elements and protection device using a safety thermostat that is activated in the case of low water pressure to the condenser or boiler unit. The unit automatically re-activates when the water pressure is restored.
- Suitable for wall mounting.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Water consumption l/min</th>
<th>Conductivity at 20 °C µs/cm</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4903000</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>34.5 / 28 / 28</td>
<td>2200</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Water distiller “D-4 Large”**

DISTILLATION CAPACITY: 4 LITRES/HOUR.

**FEATURES**

- Equipment entirely made of borosilicate glass, with protective case designed for functionality that allows an easy access to the glass and heating elements.
- Automatic operation.
- Continuous production of high purity distilled water, free of dissolved gases, metals, salts and pyrogens.
- Spiral heating system.
- Double safety system:
  1. By a presostat that turns the heater off in case of lack of water supply.
  2. Water level device that avoids the computer to function until the heating element is covered with water.

**CONTROL PANEL**

- Power switch.
- Lack of water flow indicator lamp.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Water consumption l/min</th>
<th>Conductivity at 20 °C µs/cm</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4903001</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>69 / 28 / 28</td>
<td>3000</td>
<td>6.3</td>
</tr>
</tbody>
</table>
**Water distiller, “AC-L4” and “AC-L8”**

**DISTILLATION CAPACITY: 3.5 AND 8 LITRES/HOUR.**

**FEATURES**
- Tank and heating element made from stainless steel.
- External case made from epoxy covered steel.
- Easily dismantled for cleaning and service. All seals made from silicon.
- In the case of over temperature or low water supply, a safety thermostat cuts power to the heater.
- Water supply tube Ø 10 to 11 mm.
- Distilled water tube connection Ø 12 mm.
- Voltage: 230 V / 50/60 Hz

**CONTROL PANEL**
- Illuminated power switch.
- Safety switch thermostat with rearm system.

**MODELS**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Water consumption l/min</th>
<th>Conductivity at 20 °C</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4903007</td>
<td>4</td>
<td>1</td>
<td>2.5 µs/cm</td>
<td>44 x 25 x 23</td>
<td>3000</td>
<td>12</td>
</tr>
<tr>
<td>4903008</td>
<td>8</td>
<td>1.4</td>
<td>2.5 µs/cm</td>
<td>61 x 26 x 26</td>
<td>6000</td>
<td>14</td>
</tr>
</tbody>
</table>

**Water distiller “R-4 Reser”**

**DISTILLATION CAPACITY: 4 LITRES/HOUR.**

**FEATURES**
- External case epoxy covered.
- Cooling and heating elements made of stainless steel.
- Easy to dismantle for cleaning.
- Thermostat that disconnects the heater when there’s lack of water supply.
- Monitoring function that disconnects the distiller when the storage tank is complete full, and resumes as it empties.
- Distilled water dispenser located in the front part.
- Distilled water and water supply raccords of 3/4 inch.

**CONTROL PANEL**
- Illuminated power switch.
- Lack of water flow indicator lamp.

**MODELS**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Water consumption l/min</th>
<th>Conductivity at 20 °C</th>
<th>Height / Width / Depth (exterior) cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4903005</td>
<td>4</td>
<td>1</td>
<td>2.5 µs/cm</td>
<td>47 x 54 x 31</td>
<td>3000</td>
<td>24</td>
</tr>
</tbody>
</table>

**Water distiller “L-4 Cabinet”**

**DISTILLATION CAPACITY: 4 LITRES/HOUR.**

**FEATURES**
- Equipment entirely made of borosilicate glass, with protective case with transparent plastic door that allows an easy access to the glass and heating elements.
- The water distiller incorporates a boiler, a large surface cooling and two heating elements with protective quartz.
- Desktop model with device to hang it on the wall.
- Continuous production of high purity distilled water free of dissolved gases, metals, salts and pyrogens.
- Easy to dismantle for a complete cleaning.
- Automatic operation.
- Totally automatic operation:
  1. The equipment disconnects when the distilled water tank is full.
  2. The equipment reconnects when emptied.
  3. Automatic operation of the distiller.
- Double safety system: 1. By a thermostat that turns the heater off in case of lack of water supply. 2. Water level device that avoids the computer to function until the heating element is covered with water.

**CONTROL PANEL**
- Start up main switch.
- Light indicators of heating, cleaning, of lack of water and tank full.

**Note on the outlet water:** Depending on the inlet water quality, it can be of type II or III (according to ASTM). All parameters have been tested under standard laboratory conditions.
Water double distillation “L-4B”
DISTILLATION CAPACITY: 4 LITRES/HOUR.

FEATURES
Made completely from borosilicate glass with protective case that has easy access to the heater elements and glass parts.
Automatic function and continuous production.
Produces high quality double distilled water free from pyrogen and metallic ions.
It functions through a dual distillation process:
The distilled water from the first stage is collected by the heater reservoir of the second stage, that starts the double distiller function when the water’s level is optimum, thus providing double distilled process.
Protection with a safety thermostat is activated if there is insufficient cooling water.
Reactivated automatically when the water supply is re-established.
Water flow stop if there is an electrical fault.
If it is required to store the distilled water and to prevent over filling, the system stops, switches off power and disconnects the water flow when is full.
Voltage: 400 V / III+N, 50/60 Hz = 8.67 A

MODEL

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Consumption U/min</th>
<th>Conductivity µS/cm</th>
<th>Ø Height/Width/Depth cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4903010</td>
<td>4</td>
<td>1,3</td>
<td>0.5 µS/cm</td>
<td>48 66 50</td>
<td>2x3000</td>
<td>25</td>
</tr>
</tbody>
</table>

Water distiller, specially for autoclaves “Dest-4”
DISTILLATION CAPACITY: 1.5 LITRES/HOUR. INTERNAL CAPACITY 4 LITRES.

FEATURES
Case made from thermo resistant plastic. Internal stainless steel. Cooling by forced air through a condenser. Without glass heater elements. Easy to use. Safety cut out if over temperature due to insufficient water.
Supplied complete with a 4 litres plastic bottle and three dispenser tap with filter.
Note: for daily use it is recommended to change the filter every 3 months.

MODEL

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Distillation capacity l/h</th>
<th>Conductivity µS/cm</th>
<th>Ø Height cm</th>
<th>Power W</th>
<th>Weight Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>4001729</td>
<td>1.5</td>
<td>5</td>
<td>29</td>
<td>39</td>
<td>750</td>
</tr>
</tbody>
</table>

Descaler “C-3”

APPLICATIONS
Pre-treated water that contains large quantities of CaCO3 (lime). For general laboratory use.
Recommended for use with distillation units where water hardness is above 25° french.

TECHNICAL SPECIFICATIONS
Metal container of AISI 304 stainless steel with regeneration of salt by using a two way reverse valve system.
Resin capacity: 12 litres. Regeneration salt: 2 Kg.
Regeneration cycle: 1200 litres to 60° french / 4800 litres to 35° french.
Regeneration cycle for distillation: 300 to 800 litres.
Maximum mains water pressure: 4.5 Kg/cm².
Maximum supplied permissible hardness: 60° french.
Out put hardness: 1° french.
External measurement: 62 cm high x 19 cm Ø.
Weight: 20 Kg.
Part No. 0703052

50 Litre distilled water reservoir

FEATURES
Recommended for the storage of distilled water. Made of high density polyethylene.
50 litre capacity, with handles and dispenser tap. 10cm Ø tap lid with stopper.
Dimensions: 62 cm high x 38 cm Ø.
Part No. 0106006

ACCESSORY
Water reservoir trolley. Robust steel trolley with epoxy coating.
Lockable wheels, inner section for holding jars and carboys etc.
Fits containers 38 cm Ø.
Height 48 cm.
Part No. 5903049

SPARE
Dispensing filter tip. Part No. 4001730

SPARES
Heater element made of quartz. Part No 4903011
Glass still, borosilicate glass (front-1). Part No. 4903012
Glass still, borosilicate glass (interior-2). Part No 4903013
Condenser, borosilicate glass (the equipment comes with 2 condensers. Price provided is for 1 spare condenser). Part No. 490301