Digestion apparatus for trace metal determination “TMB-12”, “TMB-20”.

DIGESTION SYSTEM FOR 12 SAMPLES (TMB-12) AND FOR 20 SAMPLES (TMB-20)

Fully automatic digestion process, with lifting and lowering of the sample rack.

Apparatus with epoxy enameled metal structure with automatic sample holder including the raising and lowering of the insertion frame and the exhaust manifold. Other components in stainless steel or with thermoplastic coating resistant to chemical agents.



APPLICATIONS

Digestion system to determine the acid-soluble parts of metals in sludge, sediments and soils according to DIN 38414.

CARACTERÍSTICAS COMUNES

Uniform heating.
Digestion block assembly that allows a temperature process with maximum precision, with an increased digestion yield of up to 12 or 20 samples.
Capacity to store 20 programs of 4 temperature and time steps.
RS-232 output for temperature recording and digestion programming from a computer.

Supplied complete with:
1 metal heating block.
1 automatic sample elevation system.
1 “Rat-2” programmer of time/temperature processes.
1 digestion tube rack with tube rack holder and 1 condensation tube rack with tube rack holder.
Tubes for digestion.
Condensation tubes.

MODELS - COMPLETE EQUIPMENT

MACRO	CODE	Number of seats	Height/Width/Depth Cm	Consumption W	Weight Kg
TMB-12	4002630	12	94 55 58	2152	61
TMB-20	4002631	20	94 55 58	2552	67

Time/temperature process programmer RAT-2.
Code 4001538

Features
Temperature range from 45 to 450 ºC.
Memory for 20 programs of 4 steps.
Maximum time per step: 600 minutes.
Acoustic indication of end of digestion program.
Two selectable temperature gradients:
Kjeldahl / D.Q.O.
Temperature sensor breakage alarm.
Independent temperature control.
Bidirectional RS-232 serial connection for temperature recording and editing of the digestion program with the RAT connected to a computer.
A software CD is included in the digestion unit.
Recirculation pump control connection.
Sample elevator control connection.

Control panel
The control panel and display of the RAT-2 allows the creation and execution of a digestion program.
During digestion it displays the block temperature, the elapsed time and the program step.



Racks with digestion tube rack holder
Thermoplastic coated, with handles and side plates to prevent heat loss.

Models	Code	Number of seats
TMB-12	4005011	12
TMB-20	4005013	20



Condensation tube racks with tube rack holders
Thermoplastic coated, with handles and side plates to prevent heat loss.

Models	Code	Number of seats
TMB-12	4005012	12
TMB-20	4005014	20



Metal heating blocks
For their correct operation it is essential to include the RAT-2 time/temperature process programmer, since they should not be connected directly to the mains.

Models	Code	Number of seats	Consumption W	Weight Kg
MACRO	4000508	12	2100	25
MACRO	4000509	20	2500	31



Digestion tubes. Code 4001030
250 ml capacity.

Lower coolant tubes. Code 4001031

Upper condenser tubes. Code 4001032

PARTS LIST AND ACCESSORIES

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.



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

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.

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.



Electronic controller RAT-2



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



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

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

Models	Part No.	No. of places	Height / Width / Depth (exterior) cm
MACRO	4005072	6	15 18 12
MACRO	4005082	12	15 23 18
MACRO	4005092	20	15 29 23
MICRO	4001056	12	15 18 12
MICRO	4001057	24	15 23 18
MICRO	4001058	40	15 29 23



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



Water jet pump for vacuum extraction. Made of PVC designed for the fume extraction of the 20 and 40 place models.
Part No. 4000633



Water Jet pump for vacuum extraction. Metallic, suitable for the extraction of fumes for the 6, 12 and 24 place models. Part No. 7000293

APPARATUS FOR WATER ANALYSIS

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

	Part No.	No. of places
DQO. - 6	4000638	6
DQO. - 12	4000639	12
DQO. - 20	4000640	20

INDIVIDUAL PARTS LIST AND SPARES

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

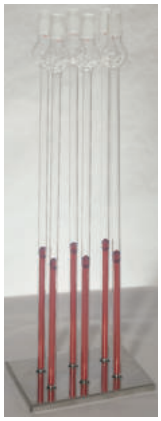


Part No.	No. of places	Ø tube mm	Height / Width / Depth (exterior) cm	Temperature °C	Power W	Weight Kg
4000507	6	42	18 33 28	45 - 450	1500	18
4000508	12	42	18 39 33	45 - 450	2100	25
4000509	20	42	18 44 39	45 - 450	2500	31



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

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



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.
Part No.
4005071 for C.O.D. 6 (block 4000507).
4005081 for C.O.D. 12 (block 4000508).
4005091 for C.O.D. 20 (block 4000509).



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.

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



Tubes for C.O.D.
Part No. 1000641

