

Thermomixer and Thermoblock

Introduction

Thermomixers are the basic equipment of each laboratory. But thermomixers might be very different. Therefore, we offer a wide portfolio making it easy to find the appropriate mixer for different applications. Aside high-end instruments of the BioShake series, which are specially suited for mixing small volumes in microtiter plates, there are also systems for daily routine. All of our thermomixers have a choice of several different blocks, so every requirement can be met.

The choice of the optimal mixing frequency for a microtiter plate or a reaction tube should be done on the basis of the well size and the filling volume. This way, optimal results can be achieved in shortest time, reproducible without any loss of sample.

BioShake Series

Ultra rapid mixer and thermomixer for small and smallest volumes in microtiter plates and reaction tubes

The BioShake series puts the traditional way of thinking upside down and defines completely new the requirements of a laboratory mixer – a category which, in the light of downsizing of reaction volumes and upsizing of the well numbers in microtiter plates, is faced permanent increasing demands.

The BioShake series meets exactly these new requirements: These instruments are mixing also smallest volumes in shortest time, offer a simple handling, outstanding comfort and a maximum of safety, advantages unknown by then. In contrast to that the required space is minimum.

Recommended mixing frequencies for reaction tubes

Filling volume	Recommended mixing frequencies [rpm] for tubes against filling volume [%] for aqueous substances			
	0.2 ml tube	0.5 ml tube	1.5 ml tube	2.0 ml tube
10 % – 50 %	1,400 – 1,800	1,200 – 1,600	1,000 – 1,300	1,000 – 1,300
50 % – 75 %	1,200 – 1,500	1,100 – 1,300	1,000 – 1,200	900 – 1,200
75 % – 100 %	1,000 – 1,300	1,000 – 1,200	900 – 1,100	900 – 1,100

Recommended mixing frequencies for microtiter plates

Filling volume	Recommended mixing frequencies [rpm] for microtiter plates against filling volume [%] for aqueous substances			
	96 well (Standard)	384 well (Standard)	384 well (Small volume)	1536 well (Standard)
10 %	1,800 – 2,200	2,200 – 2,600	2,800 – 3,000	2,800 – 3,000
25 %	1,600 – 2,000	2,000 – 2,400	2,400 – 3,000	2,600 – 3,000
50 %	1,400 – 1,800	1,800 – 2,200	2,200 – 2,600	2,400 – 2,600
75 %	1,200 – 1,600	1,600 – 2,000	2,000 – 2,400	2,200 – 2,600

Integrated 3D-Shake-Control and anti-vibration technology enable high-precise and effective shaking on even smallest benches.

Time consuming centrifugation steps after mixing can be cut down. Annoying vibration and noise are things of the past.

3D-Shake-Control

Rapid and gentle mixing in orbits up to 3,000 rpm for optimal results of even sensitive samples and liquids.

Anti-Spill-Technology

Controlled planar mixing avoids wetting of lids, sample spillage and sample contamination with close-by samples.

Anti-Vibration-Technology

Outstanding smooth running conditions without any vibration and any noise.



BioShake iQ



BioShake XP

ThermoShaker TS1 and TSC

Standard thermoshaker for reaction tubes up to 2 ml

Established product line for standard applications in research as well as in routine laboratories.

Perfect for applications with volumes of more than 100 μl . For smaller volumes the use of the BioShake series is recommended. ThermoShaker TSC offers both heating and active cooling function.

These instruments have a slightly larger footprint than the BioShake series, but are still smaller, less heavy and more compact than the majority of instruments on the market.



ThermoShaker TS1

ThermoShaker TSC

Thermoblock TB2

Dry block thermostat for all routine applications in a laboratory

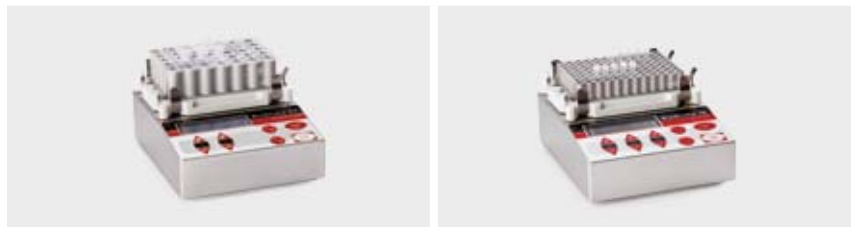
Reliable thermostat for tempering samples in small and larger tubes. The temperature range is up to 130 °C. The Thermoblock TB2 accepts 2 single or 1 combi block. By combination of different single blocks different tubes, i. e. 50 ml Falcon tubes and 0.2 ml tubes, can incubated at the same time and same temperature.



Thermomixer and Thermoblock

Overview

BioShake



	XP	iQ
Heating	-	+
Cooling	-	-
Mixing	+	+
Temperature range	-	RT to 99 °C
Temperature settings	-	0 °C to 99 °C
Block capacity	1 Adapter plate	
Number of removable blocks/modules	16 + customized	
Maximal vessel size	4 ml	
Mixing frequency	200 to 3,000 rpm	
Mixing orbit	2 mm	
Block types (vessel types and sizes)		
0.2 ml	+	+
0.5 ml	+	+
1.5 ml	+	+
2.0 ml	+	+
Lysis tubes 0.5 ml – 2.0 ml	+	+
Test tubes (Ø = 13 mm)	-	-
2.0 ml glass bottles (Ø = 12 mm)	+	+
4.0 ml glass bottles (Ø = 15 mm)	+	+
15 ml (Falcon tubes)	-	-
50 ml (Falcon tubes)	-	-
Microtiter plates (MTP)		
Flat bottom	+	+
96 well (deep well/v well/square well/u well)	(+ / + / + / +)	((+) / + / (+) / +)
384 well	+	+
1536 well	+	(+)
Microscope slide	-	-

TB2 Thermoblock



TS1 ThermoShaker



TSC ThermoShaker



Heating	+	+	+
Cooling	-	-	+
Mixing	-	+	+
Temperature range	RT + 5 °C to 130 °C	RT + 5 °C to 100 °C	RT - 15 °C to 100 °C
Temperature settings	15 °C to 130 °C	25 °C to 100 °C	4 °C to 100 °C
Block capacity	2 Single or 1 Combi Block	1 Block Module	
Number of removable blocks/modules	10	5	5
Maximal vessel size	50 ml	2 ml	2 ml
Mixing frequency	-	250 to 1,800 rpm	
Mixing orbit	-	2 mm	

Block types (vessel types and sizes)

0.2 ml	+	+	+
0.5 ml	+	+	+
1.5 ml	+	+	+
2.0 ml	+	+	+
Lysis tubes 0.5 ml – 2.0 ml	-	-	-
Test tubes (Ø = 13 mm)	+	-	-
2.0 ml glass bottles (Ø = 12 mm)	-	-	-
4.0 ml glass bottles (Ø = 15 mm)	-	-	-
15 ml (Falcon tubes)	+	-	-
50 ml (Falcon tubes)	+	-	-

Microtiter plates (MTP)

Flat bottom	+	-	-
96 well (deep well /v well /square well /u well)	(- / + / - / -)	(- / + / - / -)	(- / + / - / -)
384 well	-	-	-
1536 well	-	-	-
Microscope slide	+	-	-

BioShaker

Ultra Rapid Mixer and Thermomixer for Small and Smallest Volumes in Microtiter Plates and Reaction Tubes

- **3D-Shake-Control: rapid and gentle mixing in orbits for sensitive samples**
- **Anti-Spill-Technology: controlled planar mixing**
- **Anti-Vibration-Technology**
- **Outstanding smooth conditions without vibration and noise**
- **Vortex and Short-mix function**
- **For microtiter plates, PCR plates, deep well plates, tubes and glass vials**
- **Sample preparation for Next Generation sequencing (e.g. bead-technology)**
- **Compact lightweight aluminum design**

The **BioShake XP** allows for the first time high precise and efficient mixing in the microlitre scale for a wide range of applications. Assays in microtiterplates or reaction vessels can be realised fast and safe with using adjustable speed of 200 up to 3.000 rpm.

The BioShake mixing-technology is obviously more robust, vibration free and needs less maintenance compared to classical mixers. Programming the BioShake XP works via direct touch buttons.

In addition two buttons for start and storage of time and mixing modes enable the instrument to run complex applications. This opens new points of view on the daily laboratory work and optimises routine application enormously. The short mix button allows short and fast mixing in between. The two line LCD display guarantees simultaneous and safe reading of all programmed and measured parameters as time and mixing frequency.

The **BioShake iQ** is the high end Thermoshaker of the BioShake series. In addition to the technical specification of the model BioShake XP, the BioShake iQ comes with a new very accurate heating technology. This allows highly reproducible results. The temperature range from RT to 99 °C is adjustable in 0.1 °C steps. The temperature accuracy

is ± 0.1 °C, the temperature uniformity through all samples is about ± 1 °C. The BioShake series comes with a variety of standardised and specific adaptor plates and exchangeable blocks. The adaptors allow an optimal fit for standard tubes, microtiter plates, glass vials and other sample vessels. An excellent temperature uniformity and homogeneity is guaranteed.



Item

Item	Order No.
BioShake XP (100 – 240V, EU plug); without adapter plate	848-1808-0505
BioShake XP (100 – 240V, US plug); without adapter plate	848-1808-0555
BioShake XP (100 – 240V, Japan plug); without adapter plate	848-1808-0565
BioShake iQ (100 – 240V, EU plug); without adapter plate	848-1808-0506
BioShake iQ (100 – 240V, US plug); without adapter plate	848-1808-0556
BioShake iQ (100 – 240V, Japan plug); without adapter plate	848-1808-0566

Accessories

Adapter for microtiter plates – flat bottom	848-1808-1021
Adapter for microplates – flat bottom, high base	848-1808-1022
Adapter for microtiter plates – 96 well round bottom, universal	848-1808-1031
Adapter for microtiter plates – 96 well standard PCR plate	848-1808-1041
Adapter for microtiter plates – 384 well standard PCR plate	848-1808-1051
Adapter for deep well microtiter plates – 96 well, 1,000 µl (Eppendorf)	848-1808-1121
Adapter for deep well microtiter plates – 96 well, 500 µl (Eppendorf)	848-1808-1131
Adapter – 24 x 2.0 ml tubes and 15 x 0.5 ml tubes	848-1808-1061
Adapter – 24 x 1.5 ml tubes and 15 x 0.5 ml tubes	848-1808-1062
Adapter – 40 x 0.5 ml tubes and 28 x 0.2 ml tubes	848-1808-1063
Adapter – 96 x 0.2 ml tubes	848-1808-1064
Adapter – 35 x 2.0 ml tubes and 24 x 0.5 ml tubes	848-1808-1065
Adapter – 35 x 1.5 ml tubes and 24 x 0.5 ml tubes	848-1808-1066
Adapter – 35 x lysis tubes 0.5 – 2.0 ml	848-1808-1067
Adapter – 30 x 2.0 ml glass vials (Ø = 12 mm)	848-1808-1071
Adapter – 20 x 4.0 ml glass vials (Ø = 15 mm)	848-1808-1072
Customized adapters – for specifically shaped microplates, tubes or vials (on request)	848-1808-1000



Technical specifications	BioShake XP	BioShake iQ
Removable blocks		
Microtiter plates	96-, 384- and 1536-well microtiter-, deep well- and PCR plates	
Tubes	0.2 – 2.0 ml Standard and lysis tubes	
Glass vials	2.0 and 4.0 ml glass vials	
Others	Upon request	
Temperature control		
Temperature range	-	Ambient to 99 °C
Temperature settings	-	In steps of 0.1 °C adjustable from 0 °C to 99 °C
Temperature accuracy	-	± 0.1 °C
Temperature uniformity	-	± 0.5 °C to 45 °C ± 0.7 °C to 75 °C ± 1.0 °C to 95 °C
Heating rate	-	Approx. 7 °C/min Approx. 10 min from ambient to 95 °C
Mixing function		
Mixing frequency for microtiter plates	200 – 3,000 rpm	
Mixing frequency for tubes	200 – 1,800 rpm	
Mixing orbit	2 mm	
Mixing frequency settings	50 rpm steps	
Mixing frequency accuracy	± 25 rpm	
Short-Mix-Function	Yes	
Time functions		
Timer	1 min to 99 h; automatical Stand-By	
Timer settings	1 min steps	
Display	Minutes, seconds	
Continuous operation	Yes	
Acoustical alarm	Yes, at the end of program	
Program functions		
Program memory	2	
User defined program buttons	P1, P2	
Program capacity	3 Steps	
Display		
Display	LCD, double spaced	
Display set/ actual values	Time, mixing frequency	
Electrical properties		
Controller	Micro controller	
Main switch	Yes	
Current supply	24 V DC, 100 Watt	
Power supply	100 – 240 V AC, 50 – 60 Hz, 24 V DC (output)	
Characteristics		
Housing	Aluminium (anodised)	
Environmental operating range	+5 °C to 45 °C (80 % max. relative humidity)	
Dimensions (W x D x H)	142 mm x 170 mm x 80 mm	
Weight	2.7 kg	



TS1 ThermoShaker

Compact Benchtop Thermomixer for all Applications Requiring Heating and/or Shaking in Microtubes up to 2.0 ml

- **Interchangeable block modules for microtubes up to 2.0 ml**
- **Three instruments in one: thermomixer, mixer, incubator**
- **Temperature range: RT + 5 °C to 100 °C**

The **ThermoShaker TS1** is a variable speed and variable temperature microtube shaking incubator. Combining the incubation phase with mixing has multiple benefits: reduction of reaction process times, reduction of operator's workload and increasing efficiency of many procedures (e.g. transformation of bacterial cells).

Five interchangeable block modules are available to meet the needs of most laboratory procedures for 0.2 ml, 0.5 ml, 1.5 ml and 2.0 ml microtubes as well as 96-well microtiter plates (PCR-plates).

Choosing the temperature calibration function allows the user to calibrate the unit over a range of approx. $\pm 6\%$ of the selected temperature to compensate differences in the thermal behavior of tubes or MTP's from different manufacturers.

The variable shaking speed from 250 to 1,800 rpm combined with the 2 mm shaking orbit and the soft start function allows gentle to vigorous mixing. The high quality quiet motor ensures regulated and reproducible rotation throughout the speed range. Shaking can be configured for continuous or timed operation with buzzer and automatic switch-off.

The **ThermoShaker TS1** is designed for easy operation. Temperature, speed and time are indicated on the two-line display for both set and actual values. The apparatus is very compact, with a low profile and small footprint. Additionally the low voltage power supply enables safe cold room or incubator operation.



Technical specifications

Temperature control

Temperature range	Ambient + 5 °C up to 100 °C
Temperature settings	+ 25 °C to 100 °C
Temperature accuracy	± 0.5 °C (at 37 °C)
Uniformity within the block	± 0.1 °C (temperature range + 25 °C to + 40 °C) ± 1.0 °C (temperature range + 40 °C to + 80 °C) ± 2.0 °C (temperature range + 80 °C to + 100 °C)

Heating rate	Approx. 4 °C / min (7 min from ambient to 37 °C)
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Mixing function

Mixing frequency	250 rpm to 1,800 rpm
Mixing orbit	2 mm
Adjustment of mixing frequency	10 rpm steps

Display

Display	LCD, double spaced
Display set/actual values	Temperature, mixing frequency, time
Display resolution	0.1 °C

Removable blocks

Reaction tubes	0.2 ml, 0.5 ml, 1.5 ml, 2.0 ml
Microtiter plates	96-well microtiter plates
Capacity	1 Block module

Program functions

Timer	Yes (Count-Down, 1 min to 96 h)
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Electrical properties

Main switch	Yes
Electric power supply	100–240 VAC, 50/60 Hz, output DC 12 V, 3.5 A

Characteristics

Environmental operating range	+ 5 °C to 40 °C (80 % max. relative humidity to 31 °C, linear decreasing to 50 % relative humidity at 40 °C)
Dimensions (W x D x H)	205 mm x 230 mm x 130 mm
Weight	Approx. 4 kg

Ordering Information

see page 159



TSC ThermoShaker

Compact Benchtop Thermomixer with Cooling Feature

Thermomixer for all applications which need heating, cooling and/or mixing in microtubes up to 2 ml

- Removable block modules for microtubes up to 2 ml
- Three instruments in one: thermomixer, mixer, incubator
- Temperature range: RT -15 °C to 100 °C



The **ThermoShaker TSC** is a thermomixer with heating and cooling function, as well with a variable mixing speed from 250 rpm to 1,800 rpm. Active cooling with Peltier technology allows a temperature adjustment from + 4 °C to + 100 °C. Hereby, the application range is significantly enhanced compared to the ThermoShaker TS1.

Five removable block modules for 0.2 ml, 0.5 ml, 1.5 ml, 2.0 ml and 96-well microtiter plates (PCR-plates) meet the requirements of most laboratory applications.

Choosing the temperature calibration function allows the user to calibrate the unit over a range of approx. $\pm 6\%$ of the selected temperature to compensate differences in the thermal behavior of tubes or MTP's from different manufacturers.

The variable shaking speed from 250 rpm to 1,800 rpm combined with the 2 mm shaking orbit and the "Soft-Start" function allows gentle to vigorous shaking. The high-quality and extremely quiet motor guarantees controlled and reproducible shaking throughout the shaking range. A special counter weight technology serves for a stable stand (same with TS1). Shaking can be configured for continuous or timed operation with buzzer and automatic switch-off.

The **ThermoShaker TSC** has been designed for easy and optimal operation. Temperature, speed and time are indicated on the two-line display for set and actual values both. The TSC, as the TS1, is very compact, with low profile and small footprint. Additionally the low voltage power supply enables safe cold room or incubator operation.

Technical specifications

Temperature control

Temperature range	Ambient - 15 °C to 100 °C
Temperature settings	+ 4 °C to 100 °C
Temperature accuracy	± 0.5 °C (temperature range < 85 °C) ± 2.0 °C (temperature range > 85 °C)
Uniformity within the block	± 0.1 °C (temperature range + 25 °C to + 40 °C) ± 1.0 °C (temperature range + 40 °C to + 80 °C) ± 2.0 °C (temperature range + 80 °C to + 100 °C)
Heating rate	Approx. 5 °C/min (from + 25 °C to 100 °C in 15 min)
Cooling rate	Approx. 5 °C/min (temperature range 100 °C to RT) Approx. 1.8 °C/min (temperature range RT to 15 °C under RT)

Mixing function

Mixing frequency	250 rpm to 1,800 rpm
Mixing orbit	2 mm
Adjustment of mixing frequency	10 rpm steps

Display

Display	LCD, double spaced
Display set/actual values	Temperature, mixing frequency, time
Display resolution	0.1 °C

Removable blocks

Reaction tubes	0.2 ml, 0.5 ml, 1.5 ml, 2.0 ml
Microtiter plates	96-well microtiter plates
Capacity	1 Block module

Program functions

Timer	Yes (Count-Down, 1 min to 96 h)
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Electrical properties

Main switch on instrument	Yes
Electric power supply	100–240 VAC, 50/60 Hz, output DC 12 V, 4.5 A

Characteristics

Environmental operating range	+ 5 °C to 40 °C (80 % max. relative humidity to 31 °C, linear decreasing to 50 % relative humidity at 40 °C)
Dimensions (W x D x H)	205 mm x 230 mm x 130 mm
Weight	Approx. 4 kg

Ordering Information

see page 159



TB2 Thermoblock

Dry Block Heater for Incubation in Tubes up to 50 ml and up to 130 °C

- **Dual block system**
- **Removable heating blocks**
- **10 heating blocks for various reaction tubes**
- **Temperature range:**
RT + 5 °C to 130 °C

Precise temperature control

The **Thermoblock TB2** has been developed for incubation of reaction tubes at fixed temperatures. Temperature control is achieved by means of a Pt1000 microsensor in order to obtain outstanding block uniformity (± 0.1 °C at 37 °C).

Dual block design

Incubation of a variety of samples contained in different reaction tubes causes no problems for the Thermoblock. The TB2 has a capacity for two blocks, i. e. either two single blocks or one combi block can be heated. Combinations of different single blocks allow simultaneous incubation of e.g. 15 ml Falcon tubes in one block and 1.5 ml reaction tubes in the other block.

Multi Function Control

The ergonomic waterproof front panel facilitates data entry and temperature readings. It features a central multi-functional control knob for:

- Starting the block
- Selecting temperatures up to 130 °C
- Choosing the optional external temperature sensor
- Start the count down timer
- Activate the temperature deviation alarm
- Use the delay function for start or stop of the TB2
- Different calibration options



Technical specifications

Temperature control

Temperature range	Ambient +5 °C to 130 °C
Temperature settings	+ 15 °C to 130 °C
Temperature control accuracy	± 0.1 °C at 37 °C
Uniformity within the block	± 0.1 °C at 37 °C
Heating Rate	15 min from 25 °C to 100 °C

Display

Display	Digital, LED
Display resolution	0.1 °C

Removable blocks

Reaction tubes	0.2 ml, 0.5 ml, 1.5 ml, 2.0 ml
Other vessels	15 ml, 20 ml, test tubes, microscopic slides
Microtiter plates	96 well 0.2 ml, MTP with flat bottom
Single Block dimensions	100 mm x 70 mm x 62.5 mm
Combi Block dimensions	140 mm x 100 mm x 49 mm
Capacity	2 Single Blocks or 1 Combi Block

Program functions

Timer	Yes
Temperature deviation alarm	Yes (± 0.5 °C to ± 10 °C)
Offset	Yes (± 2 °C for single point calibration)
External temperature sensor	Yes (optional)
Delay start and stop	Yes
Calibration	Yes (± 3 °C of the original reading)
Reset	Yes

Electrical properties

Main switch on instrument	Yes
Electric power supply	220–240 V, 50–60 Hz, 300 W

Characteristics

Environmental operating range	10 °C to 35 °C (80 % max. relative humidity)
Dimensions (W x D x H)	200 mm x 280 mm x 100 mm
Weight (incl. blocks)	5.8 kg

Ordering Information

➤ see page 159



TB2 Thermoblock, TS1 and TSC ThermoShaker

Order Information

Item	Order No.
Thermoblock TB2 , 230 V; constant temperature incubation system with positions for two single blocks or one combi block; without blocks	051-300
dto., 115 V	051-390
TB2 Blocks	
Note: Blocks for TB2 are not compatible with predecessor model TB1	
Single block 30 x 0.5 ml tubes conical wells incl. tube cover plate and block lifter	051-310
Single block 70 x 0.2 ml tubes conical wells incl. tube cover plate and block lifter	051-311
Single block 24 x 1.5 ml tubes conical wells incl. tube cover plate and block lifter	051-312
Single block 24 x 2.0 ml tubes cylindrical wells incl. tube cover plate and block lifter	051-313
Single block 20 x 1.3 cm deep wells cylindrical wells incl. block lifter	051-315
Single block 8 x 15 ml vessels (Falcon tubes) conical wells incl. block lifter	051-316
Single block 5 x 50 ml vessels (Falcon tubes) conical wells incl. block lifter	051-317
Single block without wells incl. block lifter	051-319
Combi block (full size) 96-well microtiter plate or 96 x 0.2 ml tubes incl. block lifter	051-320
Combi block (full size) microscopic slides or microtiter plates with flat bottom incl. block lifter	051-321
Accessories	
Block lifter for TB1 and TB2	051-230
Tube cover plate for TB2	051-331
External temperature sensor for TB2 (for tubes > 0.5 ml volume)	051-350
TB1 Blocks	
Note: Blocks for TB1 are not compatible with TB2. TB1 blocks and accessories are still available. For details have a look to our actual price list or Biometra homepage.	
TS1 ThermoShaker , 115/230V; without block module	051-500
dto., 115/230V (Flat blade attachment plug)	051-590
Interchangeable block modules for TS1	
Block module for 20 x 0.2 ml + 12 x 1.5 ml tubes	051-512
Block module for 20 x 0.5 ml + 12 x 1.5 ml tubes	051-513
Block module for TS1, 96 well microtiter plates or 96 x 0.2 ml tubes	051-514
Block module for 24 x 1.5 ml tubes	051-515
Block module for 24 x 2.0 ml tubes	051-516
TSC ThermoShaker , 115/230 V, without block modules	051-600
dto., 115/230 V, with flat blade attachment plug, without block modules	051-690
Interchangeable block modules for TSC	
Block module for TSC, 20 x 0.2 ml + 12 x 1.5 ml tubes	051-612
Block module for TSC, 20 x 0.5 ml + 12 x 1.5 ml tubes	051-613
Block module for TSC, 96 well microtiter plates or 96 x 0.2 ml tubes	051-614
Block module for TSC, 24 x 1.5 ml tubes	051-615
Block module for TSC, 24 x 2.0 ml tubes	051-616



