

**Shaking Incubators  
Mini Incubators  
Hybridisation Incubator**

**GFL®**



■ State-of-the-art technique and first-class materials secure a top position in the market for our internationally renowned Incubators.



# Quality built on Tradition

Users in research labs, standard and special labs for medicine, science and industry throughout the world have been profiting from the precision and dependability of our products for more than 40 years, all of which comply with valid European standards and bear the CE mark.

In the future, the success of a product spectrum of laboratory devices that meet the toughest demands on material, functioning and design will continue to be ensured by experience of every-day use in detail, ongoing technical advances and an excellent quality approach.

The phrase „Quality built on Tradition“ encompasses more than just the sum of impressive product innovations. It is also an expression of our corporate policy, which includes a high degree of ready-and-waiting service as our primary customer-friendly service goal.

This applies to all of the GFL laboratory products that are produced exclusively at our plant in Germany - Deep Freezers, Shakers, Shaking Water Baths, Water Baths, Water Stills or Incubators alike.



## Secure future

A vested quality demand in accordance with international standards is documented for all GFL laboratory products with the certification to DIN EN ISO 9001:2008, promoting more trust in the permanent high quality level of our products.

In addition to the continuous optimisation of ongoing production processes, the ISO obligation also calls for the commitment to quality awareness of our employees and the continuous development and rapid implementation of preventive measures to ensure quality assurance at a high level.

# GFL - PC remote control



GFL Shaking Incubators models 3031 - 3033 operate with state-of-the-art microprocessor technique and dispose of an interface module for comfortable remote control of measuring, controlling and regulating tasks via PC.

The built-in serial interface RS 232 ensures smooth and easy data transfer, at the same time providing compatibility of our Shaking Incubators

with the PC software programme labworldsoft®.

Among other features, this comprehensive software programme enables independent PC control and data analysis of up to 64 laboratory appliances. Set and actual values are available as output signals.

Data input is made online and can be displayed either graphically or numerically. Complete measurement configurations can be memorized with all

necessary parameters for optimum reproducibility. Ready-to-use measuring procedures for various applications are pre-configured and easily retrievable.

## System requirements:

### Hardware

- Pentium 90 with at least 16 MB RAM, 8 MB free mainboard memory, mouse
- VGA display: monochrome with at least 16 grey shades or colour

### Software

- Windows 95/98/2000/NT/ME/XP...



The most progressive technique and first-class quality materials are used to secure GFL Incubators a top position in the market.






Three different product ranges cover the most versatile applications in laboratories: Shaking Incubators (3), Mini Incubators (2) and a Hybridisation Incubator.

Our Incubators bear the CE sign, are maintenance-free and can be equipped with numerous accessories. Their stable and durable mechanism ensures an especially silent operation and reliability in continuous mode. The microprocessor-controlled electronics regulates the gentle start-up and exact shaking frequency.

If not expressly stated, the accessories shown in the product pictures in this brochure are not part of the standard scope of supply.

The right of constructional modifications remains reserved. Special makes are possible.

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7601	 Hybridisation Incubator	5 kg	8	9
4010	Mini Incubator	5 kg	10	–
4020	 Mini Tube Roller Incubator	3 kg	10	11

# Shaking Incubators

## Heavy-duty Specialists

In every-day laboratory use GFL Shaking Incubators are renowned as being extremely reliable and suitable for heavy-duty use. Model 3031, with lift-up acrylic glass cover, is made of an outer housing of heavy-duty ABS and powder-coated, electrolytically galvanised sheet steel.

The shaking platform, made of aluminium, disposes of four plastic pins to accept a shaking tray or a universal mount (accessories).

The outer housings of models 3032 and 3033 are made of powder-coated, electrolytically galvanised sheet steel. Interior cabinet, the insides of the doors and the shaking platform are made of stainless steel.

The frame, permitting the use of two shaking trays, is part of the standard scope of supply. Shaking trays are accessories. A fluorescent lamp for interior illumination is separated from the cabinet by a diffusing screen.



## 3031

### Technical Data

Shaking frequency: 10 - max. 250 rpm

Shaking amplitude: 30 mm

Load: up to 12 kg max.

Volume / capacity:  
approx. 46 l / 1 shaking tray

Interior dimensions (W x D x H):  
450 x 450 x 280 mm

Exterior dimensions (W x D x H):  
525 x 665 x 570 mm

Electrical connection:  
230 V / 50...60 Hz / 0.8 kW \*  
\* Other voltages on request

Net / gross weight: 38.5 kg / 50 kg

Packing volume (cardboard box):  
approx. 0.51 m<sup>3</sup>

## Order No. 3031

## Specifications and Features

- ▶ Fast and exact temperature setting, exact reproducibility of set values, such as temperature, shaking frequency and incubation time, due to microprocessor-technique.
- ▶ Optimum temperature distribution throughout the cabinet interior.
- ▶ Serial cooling coil for applications below ambient temperature.
- ▶ Electronic monitoring of the temperature regulators triggers visual and acoustic alarms in case of fault. The heating is switched off, the cause of the fault is shown on the LED display.
- ▶ Silent and robust shaking mechanism with gentle start-up and even orbital motion, independent of load, set shaking frequency and incubation time.
- ▶ Microprocessor-controlled timer for continuous display of the current remaining running time of the incubation period, with acoustic expiry signal.
- ▶ Soft-touch keys with clear symbols. Adjustable over- and under-temperature cut-out up to max 9.9 °C.

## Applications

Specialised in gentle mixing as well as vigorous shaking, GFL Shaking Incubators are used for applications that require exactly reproducible orbital motions and temperatures of up to +70 °C (temperature constancy  $\pm 0.2$  °C, temporal).

They are preferred by standard and research laboratories for incubations, fermentations, homogenisations, chemical and biochemical reactions, enzyme and tissue studies, as well as for cultivating bacteria cultures.

### Further technical data of models 3031 / 3032 / 3033

Temperature range:	from 8 °C above ambient temperature to +70 °C, serial cooling coil for operation below ambient temperature to connect to the water mains or to an external recirculating chiller
Temperature range (Operation with cooling coil):	+20 °C to +70 °C ** ** dependent on cooling media and ambient temperature
Temperature constancy (temporal):	±0.2 °C
Temperature regulation:	microprocessor-controlled, PID type
Temperature setting and display:	digital - LED, in 0.1 °C increments
Over-temperature cut-out:	electronical / dependent on the set value, to protect the test substances, and electro-mechanically, to protect the unit
Under-temperature cut-out:	electronical, max. 9.9 °C below set temperature
Shaking motion:	orbital, can be switched on and off
Shaking frequency regulation:	microprocessor-controlled
Shaking frequency display and setting:	digital - LED
Incubation time:	microprocessor-controlled, 1 minute to 999:59 hours
Time display and setting:	digital - LED
Serial interface:	RS 232

## 3032

### Technical Data

Shaking frequency:	10 - max. 250 rpm
Shaking amplitude:	25 mm
Load:	up to 12 kg max.
Volume / capacity:	approx. 45 l / 2 shaking trays, for vessel height of more than 150 mm 1 shaking tray
Interior dimensions (W x D x H):	450 x 300 x 320 mm
Exterior dimensions (W x D x H):	710 x 650 x 710 mm
Electrical connection:	230 V / 50...60 Hz / 0.8 kW *
	* Other voltages on request
Net / gross weight:	70 kg / 80 kg
Packing volume (cardboard box):	approx. 0.86 m <sup>3</sup>

■ Order No. 3032



## 3033

### Technical Data

Shaking frequency:	10 - max. 250 rpm if only bottom tray is loaded; 10 - max. 200 rpm if both trays are loaded
Shaking amplitude:	25 mm
Load:	up to 20 kg max.
Volume / capacity:	approx. 150 l / 2 shaking trays, for vessel height of more than 180 mm 1 shaking tray
Interior dimensions (W x D x H):	674 x 540 x 430 mm
Exterior dimensions (W x D x H):	930 x 890 x 820 mm
Electrical connection:	230 V / 50...60 Hz / 0.8 kW *
	* Other voltages on request
Net / gross weight:	135 kg / 270 kg
Packing volume (wooden crate):	approx. 1.74 m <sup>3</sup>

■ Order No. 3033



# Accessories



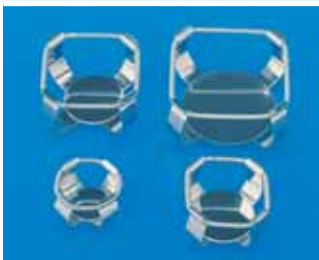
**3031**



## Shaking Tray

made of stainless steel, 450 x 450 mm, with holes to accept clamps for Erlenmeyer flasks, test tube racks and holding frames for test plates.

Order No. 3966



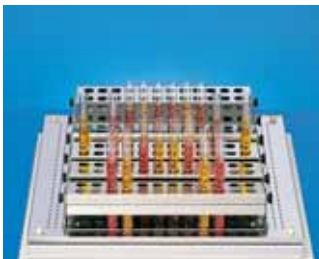
## Flask Clamps

made of stainless steel, for Erlenmeyer flasks, to be screwed onto shaking tray 3966, complete with fixing material.

- Order No. 3983 for 25 ml flasks ( 79\* )
- Order No. 3984 for 50 ml flasks ( 49\* )
- Order No. 3985 for 100 ml flasks ( 36\* )
- Order No. 3986 for 200 ml flasks ( 22\* )
- Order No. 3987 for 250-300 ml flasks ( 16\* )
- Order No. 3988 for 500 ml flasks ( 12\* )
- Order No. 3989 for 1000 ml flasks ( 9\* )

Other clamps on request.

\* Maximum quantity of flask clamps per shaking tray



## Test Tube Rack

made of stainless steel, for test tubes, perforated part can be tilted by 90°, with clamping springs for secure hold and silent shaking of the tubes, to be screwed onto shaking tray 3966.

Order No. 3953

for max. 24 tubes: 12-17 mm Ø  
capacity of the shaking tray: 6 test tube racks

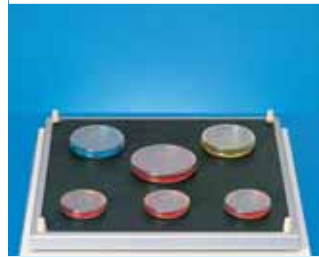


## Holding Frame

made of stainless steel, for attachment of a test plate, for screwing on to shaking tray 3966, complete with attachment materials

Order No. 3910

Capacity of shaking tray: 6 test plates



## Non-slip Rubber Mat

for the shaking platform, 420 x 420 mm, for slow moving of e.g. of nutrients in Petri dishes.

Order No. 3965



## Universal Mount

for secure fixing of different shaking objects between the six rubber-coated bars.

Order No. 3967



**3032**



**3033**



**Shaking Tray**  
made of stainless steel, 450 x 300 mm, with holes to accept clamps for Erlenmeyer flasks, test tube racks and holding frames for test plates.

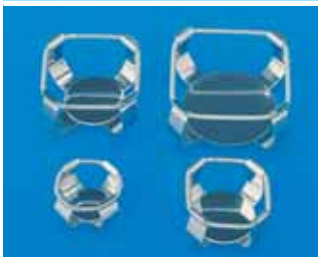
**Order No. 3970**  
Capacity of the frame: 2 shaking trays



**Shaking Tray**  
made of anodised aluminium, 670 x 537 mm, with 99 holes to accept clamps for Erlenmeyer flasks, test tube racks and holding frames for test plates.

**Order No. 3980**  
Capacity of the frame: 2 shaking trays

## 3032 and 3033



**Flask Clamps**  
made of stainless steel, for Erlenmeyer flasks, to be screwed onto shaking trays 3970 and 3980, complete with fixing material.

		3032	3033
		Tray 3970	Tray 3980
<b>Order No. 3983</b> for	25 ml flasks	(52)	(99)
<b>Order No. 3984</b> for	50 ml flasks	(33)	(99)
<b>Order No. 3985</b> for	100 ml flasks	(22)	(50)
<b>Order No. 3986</b> for	200 ml flasks	(15)	(26)
<b>Order No. 3987</b> for	250-300 ml flasks	(13)*	(26)
<b>Order No. 3988</b> for	500 ml flasks	(10)*	(26)
<b>Order No. 3989</b> for	1000 ml flasks	( 6)*	(12)*
<b>Order No. 3990</b> for	2000 ml flasks	( 3)*	( 9)*

Other clamps on request.

Quantities stated: Maximum quantity of flask clamps per shaking tray  
\* 3032 (Shaking tray 3970): From clamps 300 ml only 1 tray applicable  
\* 3033 (Shaking tray 3980): From clamps 1000 ml only 1 tray applicable



**Test Tube Rack**  
made of stainless steel, for test tubes, perforated part can be tilted by 90°, with clamping springs for secure hold and silent shaking of the tubes, to be screwed onto shaking trays 3970 and 3980.

**Order No. 3953**  
for max. 24 tubes: 12 - 17 mm Ø  
capacity of shaking tray 3970 (3032): 3 test tube racks  
capacity of shaking tray 3980 (3033): 9 test tube racks



**Holding Frame**  
made of stainless steel, for attachment of a test plate, for screwing on to shaking trays 3970 and 3980, complete with attachment materials

**Order No. 3910**  
Capacity of shaking tray 3970 (3032): 6 test plates  
Capacity of shaking tray 3980 (3033): 15 test plates

# Hybridisation Incubator

## 7601

### Technical data

**Temperature regulation:**  
microprocessor-controlled

**Temperature range:**  
approx. 8 °C above ambient to +99.9 °C

**Temperature constancy (temporal):** ±0.5 °C

**Temperature setting and display:**  
digital - LED, in 0.1 °C increments

**Over-temperature cut-out:**  
electronical / dependent on the set value,  
with visual alarm at 4 °C above the set  
temperature, and electro-mechanical > 130 °C

**Rotations of the rotating rack:**  
10 per minute, fixed

**Cabinet illumination:**  
2 lamps at 15 Watt each

**Interior dimensions (W x D x H):**  
400 x 330 x 380 mm

**Exterior dimensions (W x D x H):**  
585 x 630 x 650 mm

**Electrical connection:**  
230 V / 50...60 Hz / 0.55 kW \*  
\* Other voltages on request

**Net /gross weight:** 45 kg / 54 kg

**Packing volume (cardboard box):**  
approx. 0.51 m<sup>3</sup>

■ **Order No. 7601**

### ■ Ideally suited for special cases

The GFL Hybridisation Incubator 7601 is a specialist for individual cases. The small quantity of hybridisation liquid that is required enables the user to work with high concentrations of probes or antibodies.

Other applications are also possible. Instead of the rotating rack, the Incubator's interior can be equipped with up to five non-tilt and pull-out trays (accessories).

The rotating rack to accept the hybridisation vessels is driven by a geared motor via a sliding clutch. It is easily removable and can be loaded outside the Incubator.



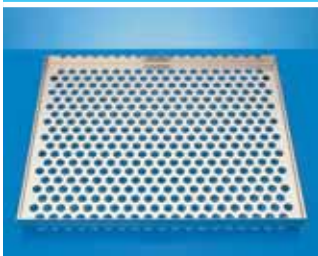
### Specifications and Features

- ▶ The ventilator ensures optimum temperature distribution throughout the cabinet interior.
- ▶ Electronical monitoring of the temperature controller triggers a visual alarm in case of fault, i.e. if the set value is exceeded by 4 °C. The heating is switched off, the cause of the fault is shown on the LED display
- ▶ Thermostatic over-temperature cut-out to protect the heating element.
- ▶ High resolutions of the detections and even results due to the constancy of 10 rpm.
- ▶ Soft-touch keys with clear symbols. Protection against unintended alterations by two-finger-operation.
- ▶ Clear view of the interior cabinet through a large 16 mm thick heat-insulating acrylic glass window. Keys to switch on two cabinet lamps.
- ▶ The interior parts of the unit, such as cabinet walls, air baffle plate, interior door frame, rotating rack and the removable drip tray under the rotating rack are made of stainless steel, the robust housing is made of electrolytically galvanised sheet steel.





**7601**



**Order No. 7914**

### Perforated Tray

made of stainless steel, can only be used instead of the rotating rack; max. five trays.

### Applications

In every-day laboratory use our Hybridisation Incubator is successfully employed as an ideal appliance for exact hybridisations of DNA and RNA probes with nucleic acid on filter paper (Southern / Northern Blots) and for incubations of protein blots with antibodies (Western Blots).



### Clip Wheel

made of stainless steel, with holes for spring clips. Two more clip wheels can be inserted to double the capacity of shorter vessels. Two clip wheels are required for safe and horizontal fixing.

**Order No. 7940**

**Two clip wheels are in the standard scope of supply.**



### Special Hybridisation Bottles

made of borosilicate glass, plastic screw cap with 0.5 mm bore hole in the middle for pressure compensation (also available without bore holes on request).

**Order No. 7943** for Ø 32 mm, 273 mm length ( 16\*)

**Order No. 7944** for Ø 38 mm, 273 mm length ( 8\*)

**Order No. 7945** for Ø 51 mm, 273 mm length ( 8\*)

\* Capacity of the rotating rack (quantity of bottles)

**Four bottles 7945 are in the standard scope of supply.**



### Spring Clips

to fix the hybridisation bottles on the clip wheels. Two spring clips are required for each bottle. The required fixing material is supplied with each clip.

**Order No. 7935** for Ø 32 mm, (16/32)\*

**Order No. 7936** for Ø 38 mm, ( 8/16)\*

**Order No. 7937** for Ø 51 mm, ( 8/16)\*

\* maximum quantity of clips per clip wheel / required quantity of clips

**Eight spring clips 7937 are in the standard scope of supply.**

# Mini / Tube Roller Incubator

## ■ Proven and space-saving

In standard and research laboratories, our **Mini Incubator 4010** and the **Tube Roller Incubator 4020** have meanwhile become indispensable. Due to their compact build, both models require only little space and are, therefore, very well suited for versatile applications directly on the workbench. Furthermore, their lift-up, see-through acrylic glass covers permit a clear view of the cultures in the interior cabinet.



## 4020

### Technical Data

Temperature regulation:  
microprocessor-controlled

Temperature range:  
approx. 8 °C above ambient to +60 °C

Temperature constancy (temporal):  $\pm 0.2$  °C

Temperature setting and display:  
digital - LED, in 0.1 °C increments

Over-temperature cut-out:  
electronical / dependent on the set value,  
with visual alarm at 4 °C above the set  
value, and electro-mechanical > 130 °C

Volume: approx. 10 l

Motion: rotating

Frequency: 12 rpm fixed

Maximum load: 3 kg

Interior dimensions (W x D x H):  
230 x 300 x 140 mm

Exterior dimensions (W x D x H):  
280 x 510 x 280 mm

Electrical connection:  
230 V / 50...60 Hz / 0.3 kW \*  
\* Other voltages on request

Net / gross weight: 11.8 kg / 13.7 kg

Packing volume (cardboard box):  
approx. 0.11 m<sup>3</sup>

■ Order No. 4020

## 4010

### Technical Data

Temperature regulation:  
microprocessor-controlled

Temperature range:  
approx. 8 °C above ambient to +60 °C

Temperature constancy (temporal):  $\pm 0.2$  °C

Temperature setting and display:  
digital - LED, in 0.1 °C increments

Over-temperature cut-out:  
electronical / dependent on the set value,  
with visual alarm at 4 °C above the set  
value, and electro-mechanical > 130 °C

Volume: 12 l

Maximum load: 5 kg

Interior dimensions (W x D x H)  
230 x 310 x 170 mm

Exterior dimensions (W x D x H):  
280 x 510 x 280 mm

Electrical connection:  
230 V / 50...60 Hz / 0.3 kW \*  
\* Other voltages on request

Net / gross weight: 9.9 kg / 11.8 kg

Packing volume (cardboard box):  
approx. 0.11 m<sup>3</sup>

■ Order No. 4010



## Mini Tube Roller Incubator 4020

disposes of a removable bottle rotating device, consisting of four parallel rotating axes each with two rubber rollers that can be moved along the axle.

Hybridisation bottles with Ø 32 mm to Ø 76 mm can be placed individually or in pairs (even with different diameters) between the rubber rollers; the use of two roller bottles for cell cultures with Ø 110 mm and 285 mm length is possible.

To place bottles of different diameters, the outer axes can be placed into pre-fabricated seats without the use of tools.



4020



## Special Hybridisation Bottles

made of borosilicate glass, to place between the rubber rollers. Plastic screw cap with 0.5 mm bore hole in the middle for pressure compensation (also available without bore holes on request).

**Order No. 7943** for Ø 32 mm, 273 mm length

**Order No. 7944** for Ø 38 mm, 273 mm length

**Order No. 7945** for Ø 51 mm, 273 mm length

## Specifications and Features

- ▶ The ventilator ensures optimum temperature distribution throughout the cabinet interior.
- ▶ Electronical monitoring of the temperature controller triggers a visual alarm in case of fault, i.e. if the set value is exceeded by 4 °C. The heating is switched off, the cause of the fault is shown on the LED display.
- ▶ Thermostatic over-temperature cut-out to protect the heating element.
- ▶ Soft-touch keys with clear symbols. Protection against unintended alterations by two-finger-operation.
- ▶ Microprocessor-controlled temperature regulation ensures fast reaching of set temperatures and high temperature constancy. Exact reproducibility of the set value by fast and exact temperature setting.
- ▶ Perforated tray, bottom tray (4010) and removable flask rotating device (4020) are made of stainless steel.

## Applications

The Mini Incubator is very well suited for incubations that require exactly reproducible temperatures, also for tempering, warming and drying of samples.

The Mini Tube Roller Incubator is universally applicable for incubations and hybridisations. It is equipped with a variable, removable flask rotating device, and provides even results and high resolutions of the detections even when in continuous use due to its constant frequency of 12 rpm.



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