Live On Stage

– Live Cell Microscopy –

Environmental Equipment for Leica Inverted Microscopy

Living up to Life

Leica
MICROSYSTEMS

Live on Stage **Status: February 2012**

Leica Microscope Stages – Leica Incubation Systems – Leica Cell Cultivation

The best you can get for your living cells

Contents: Page

Motivated by rapid advances in medicine and biology, where research scientists are continuously making breakthroughs, demands on routine and research microscopes grows at breathtaking speed. The users of inverted microscopes expect more from their equipment, as the increasing complexity of daily routine observations and research experiments relies on optimum measuring conditions and reproducible results. Beside highest optical performance, microscope components such as stages, specimen holders and environmental conditions for live cells are key factors for the success of many experiments. The better the good system integration minimizes the influence on cellular processes, the better the results can be interpreted and reproduced.

A huge choice of accessories and the modular microscope design allows researchers to economically configure the system needed – whether for scanning cell or tissue cultures in the routine laboratory or for experimental cell research, patch clamping, micromanipulation, micro-injection, or confocal microscopy.

The incubation systems for Leica microscopes provide temperature control and stabilization of cells in cytobiological and physiological experiments. Even routine work on single cells, cell populations and tissue complexes in vital immunocytochemistry, molecular biology, physiology, biotechnology, medicine and pharmacology often requires environmental control.

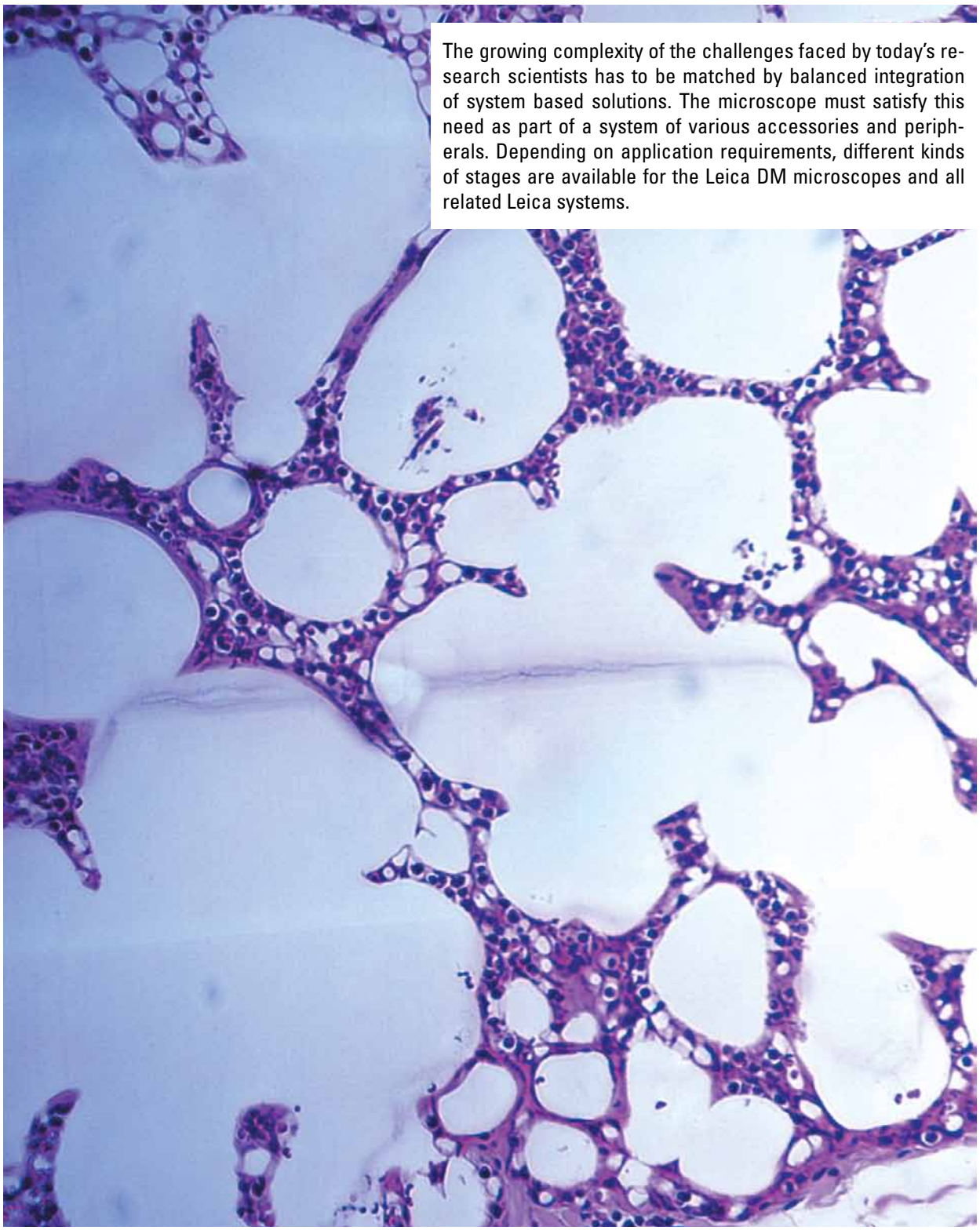
State-of-the-art methods in biotechnology, molecular biology, vital immunocytochemistry, and physiology, combined with a wide variety of microscopic techniques, offer scientists many different options for qualitative and quantitative analysis. For example, it is often possible to carry out complex functional analysis of cell structures and biologically relevant substances and molecules in single cells or in tissue complexes. Test methods in pharmacology, *in vitro* fertilization and other routine techniques are also often performed on inverted microscopes.

Typical parameters, which influence cell biological processes are

- temperature (heating and cooling), humidity
- pH-value, CO_2 concentration
- O_2 concentration and
- ion concentration

Maintaining control of these parameters allows for reproducible experiments. It is an important precondition for demanding experiments in life sciences.

Fixed, manual, motorized Stages



The growing complexity of the challenges faced by today's research scientists has to be matched by balanced integration of system based solutions. The microscope must satisfy this need as part of a system of various accessories and peripherals. Depending on application requirements, different kinds of stages are available for the Leica DM microscopes and all related Leica systems.

Stages without Temperature Control (A1-A9)

A1 Regular Fixed Stage (248 x 204 mm) for DMI-Series **11522078**

The features of the regular fixed stage

- high-quality aluminum
- ceramic-coated
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions. The regular fixed stage is supplied with a round 88 mm insert with a 10 mm opening. Additional inserts with different openings see A3 in this brochure. The regular fixed stage is prepared for the right-handed and left-handed adaptation of a mechanical object guide (see B5).

Regular Fixed Stage	
Material:	Aluminum, black, anodized
Inserts:	Round 88 mm inserts (see A3)
Options:	on both sides attachable Object guide
Dimensions:	(L x W x H) in mm: 248 x 204 x 20
Includes:	88 mm insert ring with an opening of 10 mm
Weight:	1.45 kg

A1
Regular Fixed Stage (248 x 204 mm) for DMI-Series
Art.-No.: **11522078**

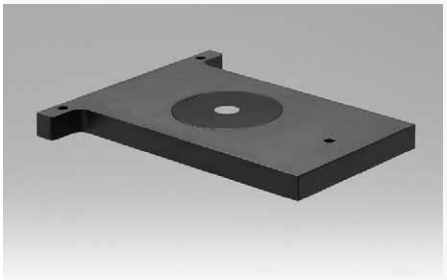
A2 Slim Fixed Stage (248 x 112 mm) for DMI-Series **11522015**

The features of the slim fixed stage for micromanipulation

- high-quality aluminum
- ceramic-coated
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions. The slim fixed stage is supplied with a round 88 mm insert with a 10 mm opening. Additional inserts with different openings see A3 in this brochure. The slim fixed stage is prepared for the right-handed adaptation of a mechanical object guide (see B1)

Slim Fixed Stage	
Material:	Aluminum, black, anodized
Inserts:	Round 88 mm inserts (see A3)
Options:	right handed side attachable Object guide
Dimensions:	(L x W x H) in mm: 248 x 112 x 20
Includes:	88 mm insert ring with an opening of 10 mm
Weight:	0.90 kg



A2
Slim Fixed Stage (248 x 112 mm) for DMI-Series
Art.-No.: **11522015**

A3 88 mm Inserts with different openings for fixed stages, slim 3-plates stages and 160 x 110 mm plates

Insert with 5 mm opening	11522083
Insert with 10 mm opening	11522084
Insert with 20 mm opening	11522085
Insert with 40 mm opening	11522086

A3
88 mm Inserts with different opening
Art.-No.: **11522083-86**

A4
Regular manual 3-plate with rack and pinion and TR 127 x 83 mm
Art.-No.: **11522076**

A5
Slim manual 3-plate with rack and pinion and TR 40 x 40 mm
Art.-No.: **11522077**

A4 Regular manual 3-plate-stage for DMI-Series with rack and pinion and travel range 127 x 83 mm 11522076

Fast and accurate access to interesting areas of the sample is achieved by the adaptation of the regular manual 3-plate-stage onto a Leica DMI-Microscope. It allows ultra rapid and vibration free scanning even at highest microscope magnifications.
The features of the regular manual 3-plate-stage

- positioning range 127 x 83 mm
- for 160 x 110 mm inserts
- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions. The ergonomic operating arm with low position coaxial x/y controls does not interfere with microscope controls or camera ports. Adjustable torque extremely precise and sensitive.
The regular manual 3-plate-stage comes without a 160 x 110 mm insert.
Inserts for different vessels and applications (see Chapter: C).

Regular manual 3-plate-stage

Material:	Aluminum, black, anodized
Inserts:	Rectangular 160 x 110 mm (see Chapter C)
Positioning range:	127 x 83 mm
Dimensions:	(L x W x H) in mm: 365 x 335 x 27
Includes:	Without insert
Weight:	1.90 kg

A5 Slim manual 3-plate-stage for DMI-Series with rack and pinion and travel range 40 x 40 mm 11522077

Fast and accurate access to interesting areas of the sample is achieved by the adaptation of the slim manual 3-plate-stage onto a Leica DMI-Microscope. It allows ultra rapid and vibration free scanning even in combination with micromanipulation.
The features of the slim manual 3-plate-stage

- positioning range 40 x 40 mm
- including one 88 mm round insert with 10 mm opening
- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions. The ergonomic operating arm with low position coaxial x/y controls does not interfere with microscope controls or camera ports. Adjustable torque extremely precise and sensitive.
The slim manual 3-plate-stage is supplied with a round 88 mm insert with a 10 mm opening. Additional inserts with different openings see A3 in this brochure.

Slim manual 3-plate-stage

Material:	Aluminum, black, anodized
Inserts:	Round 88 mm inserts (see A3)
Positioning range:	40 x 40 mm
Dimensions:	(L x W x H) in mm: 235 x 325 x 27
Includes:	88 mm insert ring with an opening of 10 mm
Weight:	1.40 kg

A6 Regular motorized 3-plate-stage for DMI-Series with rack and pinion and travel range 127 x 83 mm **11522068**

Fast and accurate access to interesting areas of the sample is achieved by the adaptation of the regular motorized 3-plate-stage onto a Leica DMI-Microscope. It allows a predefined vibration free scanning even at highest microscope magnifications.
The features of the regular motorized 3-plate-stage

- positioning range 127 x 83 mm
- for 160 x 110 mm inserts
- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions. The regular motorized 3-plate-stage comes without insert. Inserts for different vessels and applications (see Chapter: C).

Regular motorized 3-plate stage	
Material:	Aluminum, black, anodized
Inserts:	Rectangular 160 x 110 mm (see Chapter C)
Positioning range:	127 x 83 mm
Resolution:	0,7 µm
Accuracy:	< 20 µm
Dimensions:	L x W x H) in mm: 375 x 330 x 27
Includes:	Without insert
Material:	Aluminum, black, anodized
Weight:	2.90 kg

A6
Regular motorized 3-plate with rack and pinion and TR 127 x 83 mm
Art.-No.: **11522068**

A7 Slim motorized 3-plate-stage for DMI-Series with rack and pinion and travel range 40 x 40 mm **11522069**

Fast and accurate access to interesting areas of the sample is achieved by the adaptation of the slim motorized 3-plate-stage onto a Leica DMI-Microscope. It allows vibration free scanning even in combination with micromanipulation.
The features of the slim motorized 3-plate-stage

- positioning range 40 x 40 mm
- including one 88 mm round insert with 10 mm opening
- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting

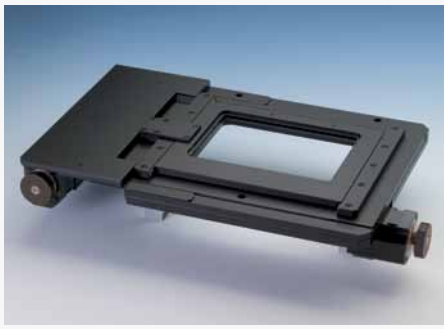
guarantee long-term stability regardless of environmental conditions. The slim motorized 3-plate-stage is supplied with a round 88 mm insert with a 10 mm opening. Additional inserts with different openings see A3.

Slim motorized 3-plate-stage for round 88 mm inserts	
Material:	Aluminum, black, anodized
Inserts:	Round 88 mm inserts (see A3)
Positioning range:	40 x 40 mm
Resolution:	0,7 µm
Accuracy:	< 20 µm
Dimensions:	(L x W x H) in mm: 240 x 330 x 27
Includes:	88 mm insert ring with an opening of 10 mm
Weight:	2.40 kg

A7
Slim motorized 3-plate with rack and pinion and TR 40 x 40 mm
Art.-No.: **11522069**

Note:
To control motorized 3-plate-stages with rack and pinion at least the CTR6000 Electronic Box is required. The CTR6500 works as well. In addition a Leica SmartMove is required. For both see Page 35 in this brochure.

Motorized scanning stages have been designed for applications where high stage accuracy and repeatability is required in combination with smooth and quiet running. The use of top quality materials and manufacturing with tight tolerances guarantees the optimum performance even after long periods of operation. Depending on the application, scanning stages with different lead screw pitches (1 mm, 2 mm or 4 mm) and thus different travel speed are utilized (smaller lead screw pitch ensures higher precision and lower speed). Leica offers the 1 mm lead screw pitch as standard.



A8
Leica Scanning Stage 127 x 83
Art.-No.: **11522100**

A8 Leica Scanning Stage 127x83 **11522100**

The main features of the Leica Scanning stage

- positioning range 127 x 83 mm
- for 160 x 110 mm inserts
- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting
- both motors on the bottom

guarantee long-term stability regardless of environmental conditions. A brand new safety concept ensures no clamping and minimizes the risk of injury.
The Leica Scanning stage 127 x 83 is delivered without insert. For more information about cabling/operation see “Modular Brochure of DMI-Series”. Inserts for different vessels and applications see Chapter: C or “Modular Brochure of DMI-Series” as well.

Leica Scanning stage 127x83	
Material:	Aluminum, black, anodized
Inserts:	Rectangular 160 x 110 mm (see Chapter C)
Positioning range:	127 x 83 mm
Max. Travel speed:	60 mm/sec
Resolution:	0.02 µm
Accuracy:	+/– 3 µm
Reproducibility:	< 1 µm
Dimensions:	(L x W x H) in mm: 450 x 270 x 20
Includes:	Without insert
Weight:	4.90 kg

A8a
SCAN^{plus} IM 130x85
Art.-No.: **11522100**

A8a SCAN^{plus} IM 130x85 **11522129**

like A8.
Scanning stage IM with encoder for inverted microscopes Leica DMI3000-6000 B Tango 2 Desktop-Control, 2-Axis, 1,25 A, ROHS-conform, including documentation and Software, with USB interface.

- without Joystick
- with stage cables
- with SmartMove-Y-cable
- with USB cable

SCAN^{plus} IM 130x85	
Material:	Aluminum, black, anodized
Inserts:	Rectangular 160 x 110 mm (see Chapter C)
Positioning range:	130 x 85 mm
Max. Travel speed:	120 mm/sec
Resolution:	0.05 µm
Accuracy:	+/– 1 µm
Reproducibility:	< 0.5 µm
Includes:	Without insert
Weight:	4.90 kg

A9 Prior Scanning stage H117N1DM (114 x 76) ProScanTMII **11532536**

The main features of the Prior Scanning stage

- positioning range 114 x 76 mm
- for 160 x 110 mm inserts
- load capacity 10 kg
- 4 phase stepper motor (1 amp per phase micro stepping)
- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting
- both motors on the bottom

guarantee long-term stability regardless of environmental conditions. The H117N1DM scanning stage combines practical design with high precision and stability. The flat top design facilitates the use of micromanipulators as well as environmental chambers. It also allows easy, unrestricted access to the specimen.

The H117 can be configured to accept the ProScan™II range of sample holders (see: www.prior.com) as well as those listed in Chapter C of this brochure.

A brand new safety concept ensures no clamping and minimizes the risk of injury.

The Prior Scanning stage H117 ProScanTMII is delivered without insert.

For more information about cabling/operation see “Modular Brochure of DMI-Series”

Inserts for different vessels and applications see Chapter: C or “Modular Brochure of DMI-Series” as well.

Prior Scanning stage H117 ProScanTMII

Material:	Aluminum, black, anodized
Inserts:	Rectangular 160 x 110 mm (see Chapter C)
Positioning range:	114 x 76 mm
Max. Travel speed:	60 mm/sec
Resolution:	0.01 µm
Accuracy: over full stage travel	+/– 3.5 µm (without 4 number correction)
Reproducibility:	< 1 µm
Dimensions:	(L x W x H) in mm: 492 x 270 x 20
Includes:	With insert
Weight:	3.50 kg

Note:

To control motorized Scanning stages with lead screw pitch (spindle) the CTR6500 Electronic Box is required. In addition a Leica SmartMove is required. For both see Chapter J in this brochure.

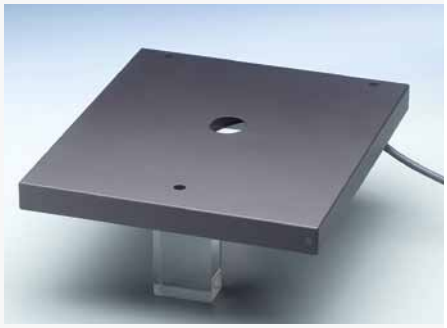
A9
Prior Scanning stage 114 x 76
Art.-No.: **11532536**

Stages with Temperature Control – Heating (A10-A11)

Replace the standard fixed stages to enable heating. The heating stages themselves are one solid piece (without inserts) which guarantees homogeneous temperature distribution without any interruptions caused by inserts. The object guide (see B1 or B5) and/or other accessories can be attached. All commonly used cultivation vessels can be put onto this stage. The heating stage is ideal for electrophysiological experiments as well, because no disturbing switching pulses are emitted. Solid design with high thermal capacity: therefore the stage has high temperature stability. The opening for the objective is as small as possible to optimize the heat transfer. To additionally reduce the loss of heat through airflow at the observation opening the supplied foam sleeves can be used. Temperature control is carried out with the TempControl 37 or TempControl 37-2 digital (see F2 and F3).
The features of the fixed heating stage

- high-quality aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions.

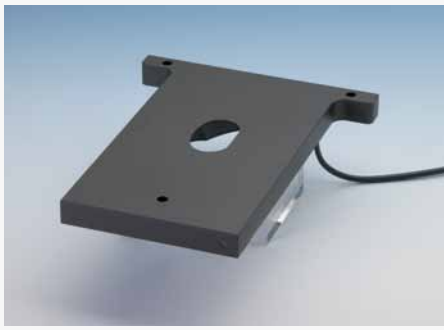


A10
Regular Fixed Heating Stage
(248 x 212 mm) for DMI-Series
Art.-No.: **11522012**

A10 Regular Fixed Heating Stage (248 x 212 mm) for DMI-Series **11522012**

The regular fixed heating stage is prepared for the right-handed and lefthanded adaptation of a mechanical object guide (see B5).
The regular fixed heating stage is fully compatible with both the “Incubator L” and the “Incubator BLX”.

Regular Fixed Heating Stage	
Material:	Aluminum, black, anodized
Object guide:	Attachable on both sides
Dimensions:	(L x W x H) in mm: 248 x 212 x 20
Oval stage opening:	20 x 30 mm
Operating voltage/power:	20 V DC, 2.2 A max
Heating:	Transistor lost heat
Temp. Control accuracy:	+/- 0.1°C
Control Range:	3°C above ambient temperature up to 60°C
Control Unit:	TempControl 37 or TempControl 37-2 digital
Weight:	2.40 kg



A11
Slim Fixed Heating Stage
(248x112mm) for DMI-Series
Art.-No.: **11522016**

A11 Slim Fixed Heating Stage (248 x 112 mm) for DMI-Series **11522016**

The slim fixed heating stage is prepared for the right-handed adaptation of a mechanical object guide. (see B1)
The slim fixed heating stage is fully compatible with the “Incubator BLX”.

Slim Fixed Stage	
Material:	Aluminum, black, anodized
Object guide:	Attachable on the right hand side
Dimensions:	(L x W x H) in mm: 248 x 112 x 20
Oval stage opening:	20 x 30 mm
Operating voltage/power:	20 V DC, 2.2 A max
Heating:	Transistor lost heat
Temp. Control accuracy:	+/- 0,1°C
Control Range:	3°C above ambient temperature up to 60°C
Control Unit:	TempControl 37 or TempControl 37-2 digital
Weight:	1.60 kg

Stages with Temperature Control – Cooling (A12-A13)

Replace the standard fixed stages to enable cooling. The cooling stages themselves are one solid piece (without inserts) which guarantees homogeneous temperature distribution without any interruptions caused by inserts. The object guide (see B1 or B5) and/or other accessories can be attached. All commonly used cultivation vessels can be put onto this stage. The cooling stage is ideal for electrophysiological experiments as well, because no disturbing switching pulses are emitted using circulated water or liquids. Solid design with high thermal capacity: therefore the stage has high temperature stability. The opening for the objective is as small as possible to optimize the temperature transfer. To additionally reduce the loss of temperature through airflow at the observation opening the supplied foam sleeves can be used. In case of temperatures below approx. +10°C the use of a dehumidifier and/or of dried air (to prevent condensation) is recommended.
Temperature control is carried out with the cooling thermostat RE106 (see F4).
The features of the fixed heating stage

- high-quality Aluminum
- extremely scratchproof
- precisely plane-parallel
- three point mounting

guarantee long-term stability regardless of environmental conditions.

A12 Regular Fixed Cooling Stage (248 x 212 mm) for DMI-Series 11522013

The regular fixed cooling stage is prepared for the right-handed and lefthanded adaptation of a mechanical object guide. (see B5)
The regular fixed cooling stage is fully compatible with both the “Incubator L-2” and the “Incubator BLX”.

Regular Fixed cooling Stage

Material:	Aluminum, black, anodized
Object guide:	Attachable on the right hand side
Dimensions:	(L x W x H) in mm: 248 x 212 x 20
Oval stage opening:	20 x 30 mm
Cooling:	Inlet and outlet openings for liquids
Control Range:	0°C above ambient temperature up to 65°C
Control Unit:	RE106
Weight:	2.30 kg

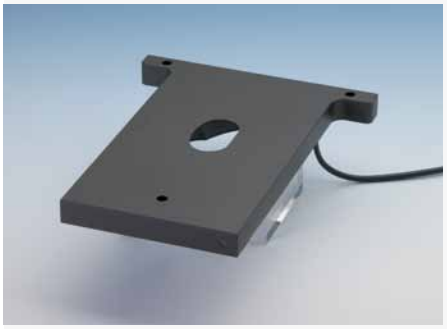
A12
Regular Fixed Cooling Stage
(248 x 212 mm) for DMI-Series
Art.-No.: **11522013**

A13 Slim Fixed Cooling Stage (248 x 112 mm) for DMI-Series 11522017

The slim fixed cooling stage is prepared for the right-handed adaptation of a mechanical object guide (see B1).
The slim fixed cooling stage is fully compatible with the “Incubator BLX”.

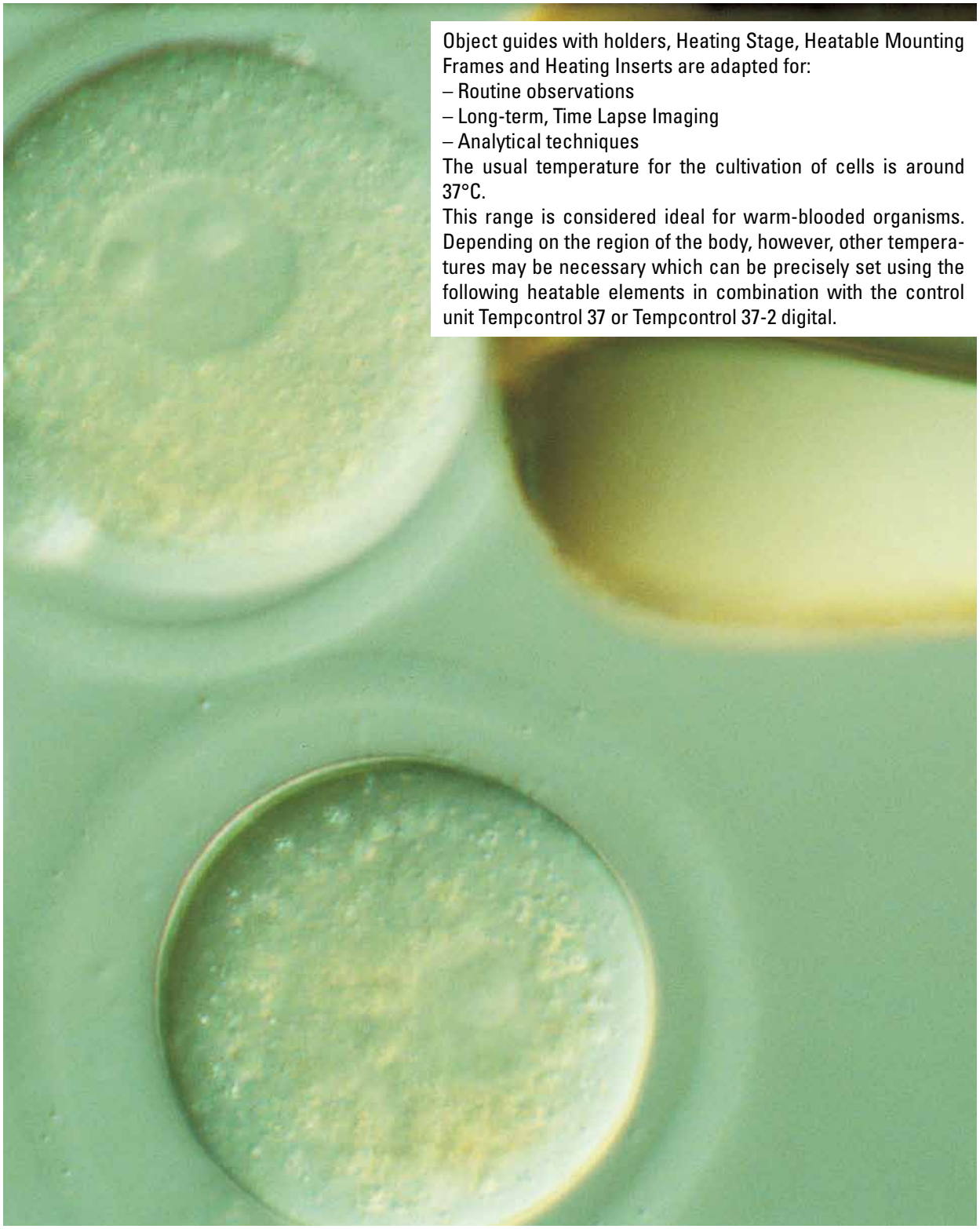
Slim Fixed cooling Stage

Material:	Aluminum, black, anodized
Object guide:	Attachable on both sides
Dimensions:	(L x W x H) in mm: 248 x 112 x 20
Oval stage opening:	20 x 30 mm
Cooling:	Inlet and outlet openings for liquids
Control Range:	0°C above ambient temperature up to 65°C
Control Unit:	RE106
Weight:	1.60 kg



A13
Slim Fixed Cooling Stage
(248 x 112 mm) for DMI-Series
Art.-No.: **11522017**

Object Guides for Fixed Stages with Holding Frames



Object guides with holders, Heating Stage, Heatable Mounting Frames and Heating Inserts are adapted for:
– Routine observations
– Long-term, Time Lapse Imaging
– Analytical techniques
The usual temperature for the cultivation of cells is around 37°C.
This range is considered ideal for warm-blooded organisms. Depending on the region of the body, however, other temperatures may be necessary which can be precisely set using the following heatable elements in combination with the control unit Tempcontrol 37 or Tempcontrol 37-2 digital.

Object guides are an ideal adaptation for fixed, heated or even cooled stages. With only 2 fixing screws the object guide can be easily and securely adapted to the fixed stage for right-handed or in case of regular sized stages even for left-handed use. The ergonomic, low-lying coaxial control drives with universal joint is extremely accurate and sensitive.
For precise positioning measurement, different measuring inserts can be fixed onto the objective guide.

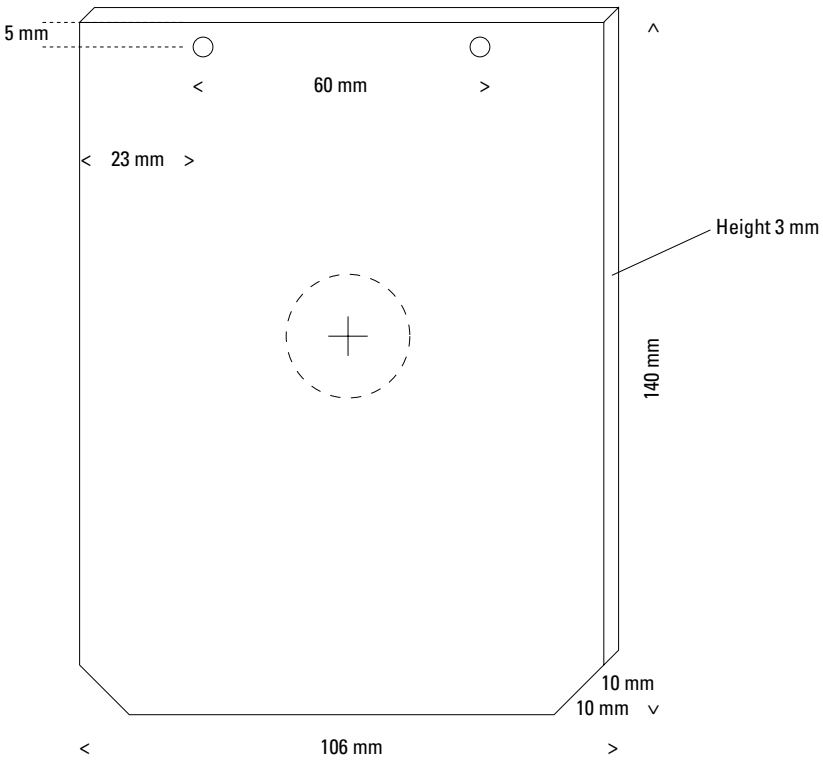
B1 Object guide for slim fixed stages as 11522015, 11522016 or 11522017 **11522018**

A flexible mechanical device for the fixed slim stages for micromanipulation to accommodate a variety of application inserts.
Positioning range: 35 x 35 mm.
Ergonomic operating arm, angled forward: low position, does not interfere with microscope controls or camera ports, with coaxial drive for x and y.
Adjustable torque, extremely precise and sensitive.
Ceramic bearing surface in x and y.
The object guide for fixed slim stages is fully compatible with the Leica “Incubator BLX”.

Holding frames for Object guide for slim stage 11522018

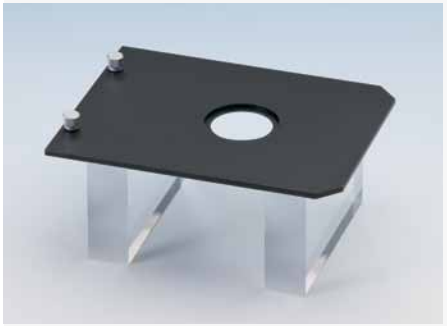
The holding frames for this object guide are positioned and held by 2 locking screws.
Material: aluminum, black anodized.

B2 Holding frame for Petri dishes with Ø 30 mm **11522042**
B3 Holding frame for Petri dishes with Ø 50 mm **11522043**
B4 Holding frame for glass slides 76 mm x 26 mm **11522044**

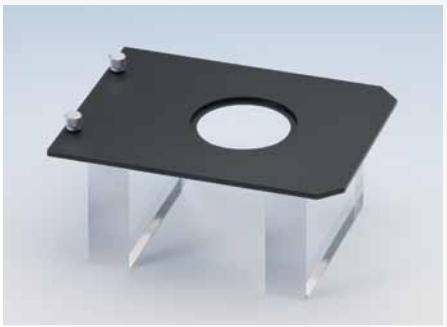


Dimensions:
Length 140 mm, Width 106 mm, Height 3 mm
2x M3 threaded holes (5 mm /23 mm from the edges and 60 mm apart)

B1
Object guide for Slim Fixed Stages
Art.-No.: **11522018**



B2
Holding frame for Petri dishes Ø 30
Art.-No.: **11522042**



B3
Holding frame for Petri dishes Ø 50
Art.-No.: **11522043**

B4
Holding frame for glass slides 76 x 26
Art.-No.: **11522044**

B5
Object guide for Regular Fixed Stages
Art.-No.: **11522014**

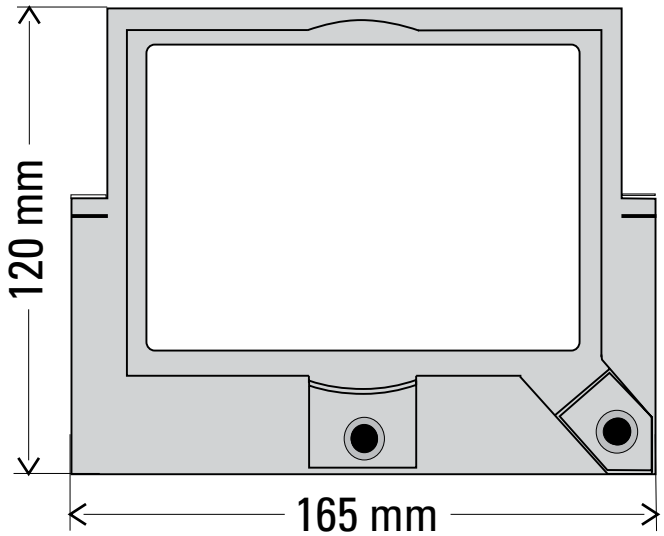
"Snap-in" mechanism

B5 Object guide for fixed regular stages as 11522011, 11522012 or 11522013 **11522014**

A flexible mechanical device for the fixed regular stages to accommodate a variety of application inserts.
Positioning range: 127 x 83 mm.
z-positioning precision adjustable over the positioning range.
Ergonomic operating arm, angled forward: low position, does not interfere with microscope controls or camera ports, with coaxial drive for x and y.
Adjustable torque, extremely precise and sensitive.
Ceramic bearing surface in x and y.
The precise snap-in mechanism for a variety of inserts ensures precise fixing of each of the holders.
Integrated scaling x and y (optional for a number of inserts)
The object guide for fixed regular stages is fully compatible with both the Leica "Incubator L-2" and the Leica "Incubator BLX".

Holding frames for Object guide for regular stage

The holding frames for this object guide are fixed with a precise snap-in mechanism. The outer dimensions are: 165 x 100 x 5 mm. There are holders for special vessels available, as well as universal holders with 2 or 4 smooth running moveable brackets with a variable clamping range allowing an easy an quick fixation of different sized dishes or slides. Universal holders are available in heated and non-heated versions.
Material: aluminum, black anodized.



B6 Holder for tissue culture plates (e.g. 384 wells) **11520583**

The one piece holder for culture plates and trays clicks into the object guide

- For vessel size: 136 x 92 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.09 kg
- Type of vessels: Trays, culture chambers, flasks

B7 Holder for tissue culture plates (e.g. 24 wells) **11520584**

The one-piece holder for culture plates and trays clicks into the object guide

- For vessel size: 133.5 x 88.5 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.09 kg
- Type of vessels: Trays, culture chambers, flasks

B8 Holder for Terasaki Plates **11520585**

The one-piece holder for Terasaki 60 well or 72 well plates with a footprint of 82 mm x 56 mm

- For vessel size: 56 x 82 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.10 kg
- Type of vessels: Terasaki Trays

B9 Holder for flasks, bottles or plankton chambers Type1 **11520586**

The one-piece holder for different types of flasks, bottles or plankton chambers

- For vessel size: 125 x 77 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.09 kg
- Type of vessels: Flasks, bottles, plankton chambers

B10 Holder for flasks, bottles or plankton chambers Type2 **11520587**

The one-piece holder for different types of flasks, bottles or plankton chambers

- For vessel size: 104 x 29,5 – 52 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.10 kg
- Type of vessels: Flasks, bottles, plankton chambers

B11 Holder for flasks, bottles or plankton chambers Type3 **11520595**

The two-piece holder with a moveable bracket (to adjust width) for different types of flasks, bottles or plankton chambers

- For vessel size: 102.5 x 28-50.5 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.11 kg
- Type of vessels: Flasks, bottles, plankton chambers

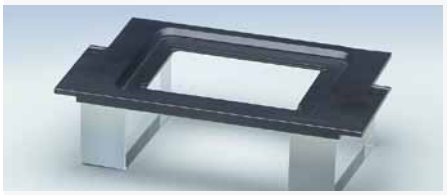
B12 Holder-Titer Trays **11520589**

The one-piece insert for 96-well or 120-well Micro-Titer Trays with a common footprint of 127 x 85 mm. X and Y scaling bars are part of the holder and can be fixed onto the object guide. Easy finding of desired well is ensured.

- For vessel size: 127 x 85 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.09 kg
- Type of vessels: Micro-Titer Trays

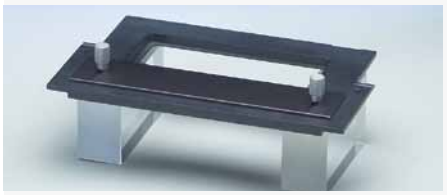
B6 Holder for tissue culture plates (384)
Art.-No.: **11520583**

B7 Holder for tissue culture plates(24)
Art.-No.: **11520584**

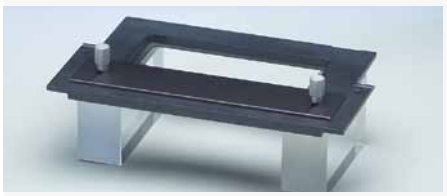


B8 Holder for Terasaki Plates
Art.-No.: **11520585**

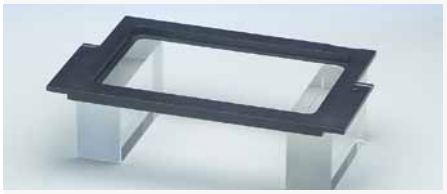
B9 Holder for flasks, bottles, plankton chambers (1)
Art.-No.: **11520586**



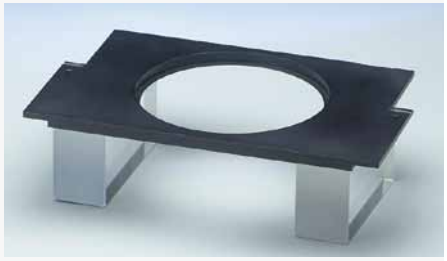
B10 Holder for flasks, bottles, plankton chambers (2)
Art.-No.: **11520587**



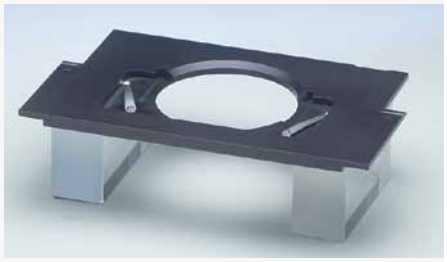
B11 Holder for flasks, bottles, plankton chambers (3)
Art.-No.: **11520595**



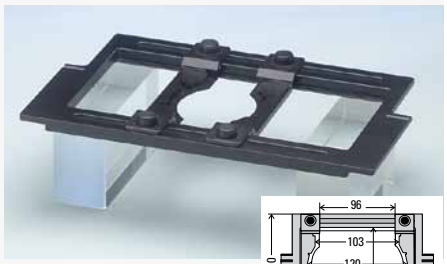
B12 Holder for Micro-Titer Trays
Art.-No.: **11520589**



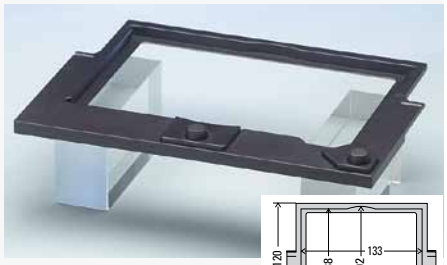
B13
Holder for Petri dishes (88,54,36)
Art.-No.: **11520590**, **11520591**, **11520592**



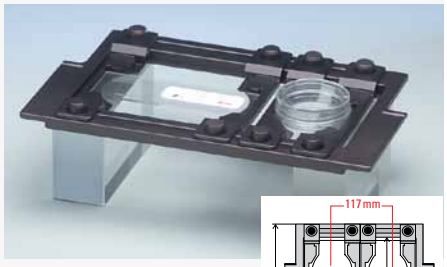
B14
Holder for glass slides
Art.-No.: **11520593**



B15
Universal Holding Frame M
Art.-No.: **11520688**, **11532494**



B16
Universal Holding Frame MX
Art.-No.: **11520689**



B17
Universal Holding Frame M-Duo
Art.-No.: **11531798**

B13 Holder for Petri Dish Ø 88 mm **11520590**
Holder for Petri Dish Ø 54 mm **11520591**
Holder for Petri Dish Ø 36 mm **11520592**

The one-piece holder for different sizes of Petri dishes

- For vessel size: Ø 88 mm, Ø 54 mm, Ø 36 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.12 kg
- Type of vessels: Petri dishes

B14 Holder for slides **11520593**

The one-piece holder for glass slides with max. dimension up to 76 x 26 mm.
Two clamps will hold and fix the slides in this frame.

- For vessel size: 76 x 26 mm (3 x 1 inches)
- Outer dimension: 165 x 100 mm
- Weight: 0.13 kg
- Type of vessels: Glass slides

B15 Universal Holding frame M
for Petri dishes (24–68 mm) or glass slides **11520688**
for Uthermol™ Counting chambers **11532494**

Frame to fix different cultivation vessels and slides. Two smooth running moveable brackets with a variable clamping range allow an easy and quick fixation of the vessel.

- For vessel size: 24–120 mm length or Ø 24–68 mm
  (UthermolTM: 120 x 43 mm)
- Outer dimension: 165 x 100 mm
- Weight: 0.10 kg
- Type of vessels: Petri dishes, glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)
  (Uthermol™: 120 x 43 mm)

B15a Universal Mounting Frame MS **11532775**

Frame to hold 76 x 26 mm slides, insertion in y-direction (turned by 90° as regular)

- For vessel size: 76 x 26 mm (3 x 1 inch)
- Outer dimension: 165 x 120 mm
- Weight: 0.100 kg
- Type of vessels: All slides with dimension of approx. 76 x 26 mm (3 x 1 inch)

B16 Universal Holding frame MX
for large Petri dishes (87-92 mm) and multiwells **11520689**

Frame to fix different cultivation vessels and slides. Two lateral clamps allow an easy and quick fixation.

- For vessel size: 125-133 x 82–88 mm or Ø 87–92 mm
- Outer dimension: 165 x 120 mm
- Weight: 0.1 kg
- Type of vessels: Multiwell plates, Petri dishes or Cooling Insert X (see C27)

B17 Universal Holding frame M-Duo
for 1or 2 Petri dishes and/or 1 glass slides **11531798**

Frame to fix different cultivation vessels and slides. This enables the microscopic controlled transfer of selected cells from a Petri dish to a slide.

- For vessel size: 1 vessel: 26 x 90 mm or Ø 24–68 mm
  2 dishes: Ø 24–56 mm
  1 slide 1 dish: 76 x 26 mm/Ø 24–40 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.14 kg
- Type of vessels: Petri dishes, Glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)

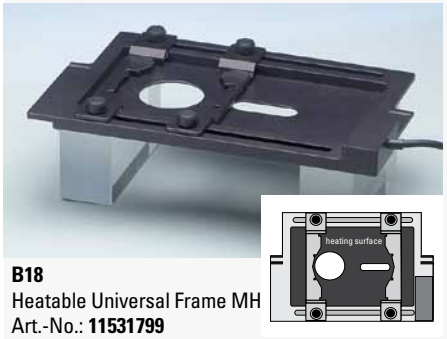
Heatable holding frames for Object guide for regular stage 11522014

Frame to fix different cultivation vessels and slides. Two smooth running moveable brackets with a variable clamping range allow an easy and quick fixation of the vessel. The aluminum frame has a heated aluminum base plate with laminated printed circuit board. The base plate has a circular and/or a rectangular opening. Temperature control is carried out with the TempControl 37 or TempControl 37-2 digital. (see F2/F3)

B18 Heatable Universal Holding frame MH
for various dishes (24–68 mm) or microscopy-slides **11531799**

The base plate of the frame has a circular (Ø 30 mm) and a rectangular (30 x 10 mm) opening. If this frame is used together with the CO_2-Cover MH (see G4) for CO_2-incubation inside the Incubator BLX (see G8) the non-used opening must be covered with tape to prevent the loss of CO_2.

- For vessel size: 24–120 mm length or Ø 24–68 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: Ø 30 mm and 30 x 10 mm
- Type of vessels: Petri dishes and Glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)



B18
Heatable Universal Frame MH
Art.-No.: **11531799**

B19 Heatable Universal Holding frame MH-L
for microscopy-slide sized vessels **11531817**

This base plate of the frame has a single rectangular opening (47 x 21 mm). This frame can be used together with the CO_2-Cover MH (see G4) for CO_2-incubation inside the Incubator BLX (see G8)

- For vessel size: 24–120 mm length
- Outer dimension: 165 x 100 mm
- Weight: 0.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: 47 x 21 mm
- Type of vessels: Petri dishes and Glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)

B19
Heatable Universal
Frame MH-L
Art.-No.: **11531817**

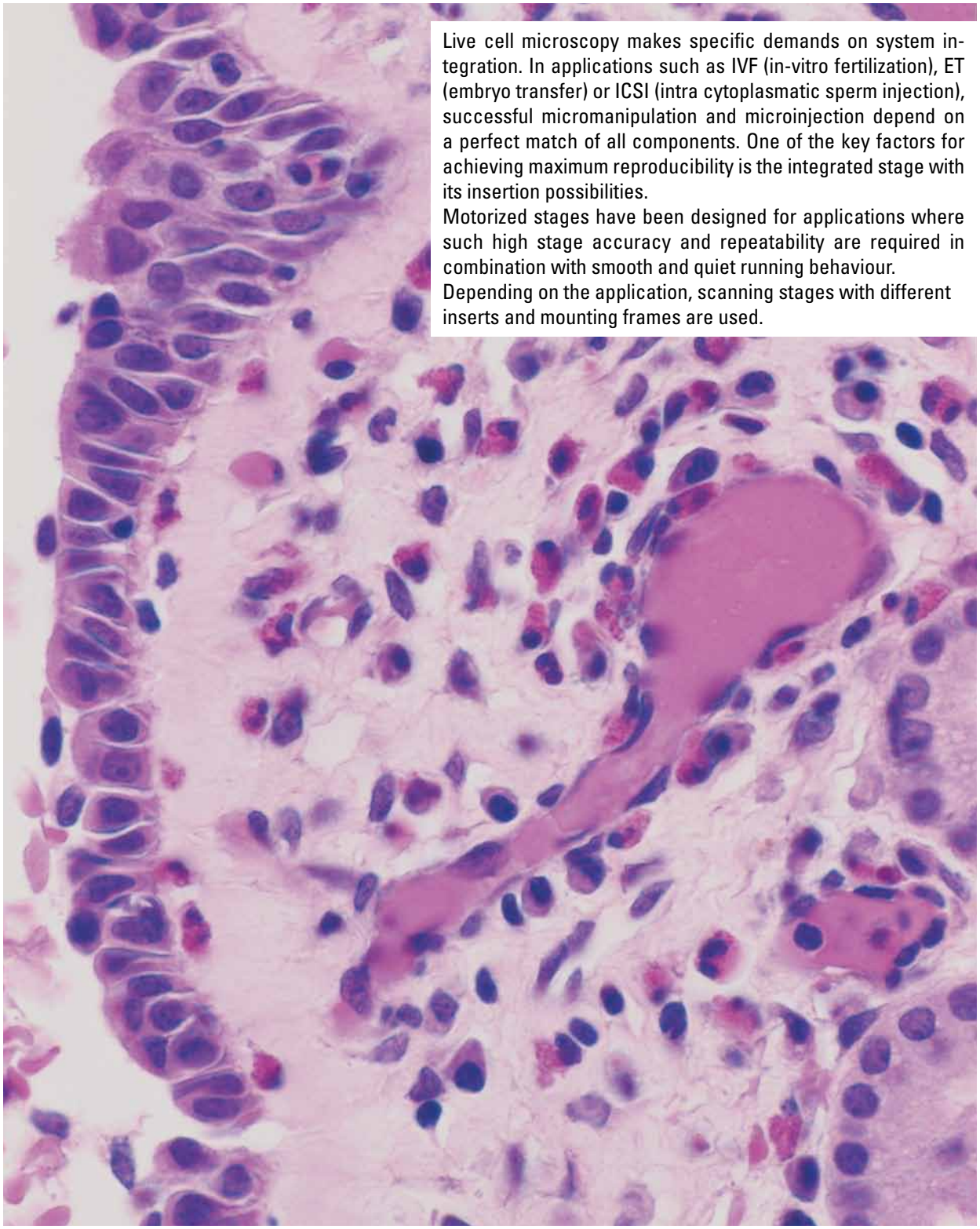
B20 Heatable Universal Holding frame MH-R
for round dishes (24-68 mm) **11532439**

This base plate of the frame has a single round opening (Ø 30 mm). This frame can be used together with the CO_2-Cover MH (see G4) for CO_2-incubation inside the Incubator BLX (see G8)

- For vessel size: Ø 24–68 mm
- Outer dimension: 165 x 100 mm
- Weight: 0.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: Ø 30 mm
- Type of vessels: Petri dishes
  POC-R or POCmini cell cultivation systems

B20
Heatable Universal
Frame MH-R
Art.-No.: **11532439**

160 x 110 mm Inserts



Live cell microscopy makes specific demands on system integration. In applications such as IVF (in-vitro fertilization), ET (embryo transfer) or ICSI (intra cytoplasmatic sperm injection), successful micromanipulation and microinjection depend on a perfect match of all components. One of the key factors for achieving maximum reproducibility is the integrated stage with its insertion possibilities.

Motorized stages have been designed for applications where such high stage accuracy and repeatability are required in combination with smooth and quiet running behaviour.

Depending on the application, scanning stages with different inserts and mounting frames are used.

Non heatable inserts
for the manual regular 3-Plate stage 11522019
for the motorized regular 3-Plate stage 11522068
for the Scanning stage 11522023

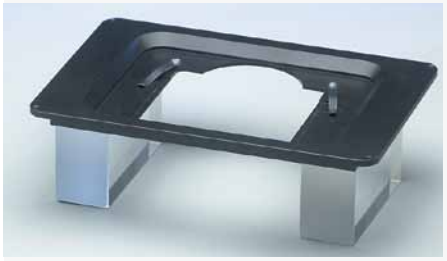
The inserts or holders for the moveable stages are fixed with a spring snapin mechanism into the rectangular opening. The outer dimensions of the inserts are: 160 x 110 x 5 mm. There are inserts for special vessels available, as well as universal inserts with 2 or 4 smooth running moveable brackets with a variable clamping range, allowing an easy an quick fixation of different sized dishes or slides. Universal inserts are available in heated and non-heated versions. Alignment screws guarantee plan-parallel adjustment in z-direction.
Material: aluminum, black anodized.

C1 Holder for slides 3"x1" (76 x 26 mm) 11531433
The one-piece holder for glass slides with max. dimension up to 76 x 26 mm. Two clamps will hold and fix the slides in this frame.

- For vessel size: 76 x 26 mm (3x1 inches)
- Outer dimension: 160 x 110 mm
- Weight: 0.10 kg
- Type of vessels: Glass slides

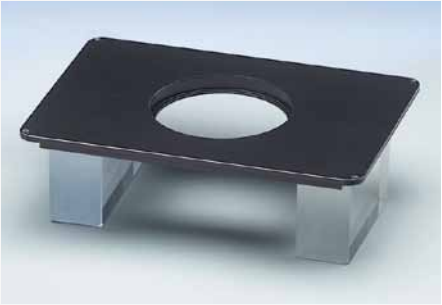
C2 Holder for Micro-Titer trays 11531434
The one-piece insert for 96-well or 120-well Micro-Titer Trays with a common footprint of 126 x 85 mm. Firm and secure clamping of the trays is achieved with an integrated clamping device at the right hand side of the insert.

- For vessel size: 127 x 85 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.13 kg
- Type of vessels: Micro-Titer Trays, T75-flasks

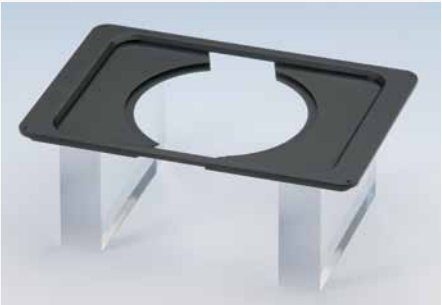


C1
Holder for slides
Art.-No.: **11531433**

C2
Holder for Micro-Titer Tray
Art.-No.: **11531434**

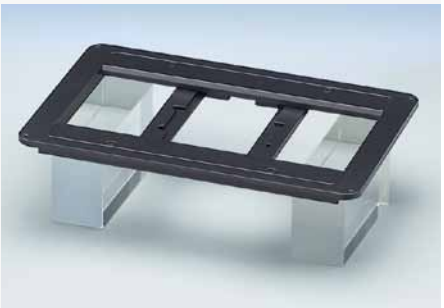


C5
Holder for Petri dish (36, 54, 88.5)
Art.-No.: **11531437**, **11531438**, **11531440**



C6
Metal Plate for 88 mm Inserts lowered by 4 mm
Art.-No.: **11600237**

C7
Glass stage plate
Art.-No.: **11522045**



C8
Universal Holding Frame K
Art.-No.: **11531441**

C5 Holder for Petri Dish Ø 36 mm **11531437**
Holder for Petri Dish Ø 54 mm **11531438**
Holder for Petri Dish Ø 88.5 mm **11531440**

The one-piece holder for different sizes of Petri dishes

- For vessel size: Ø 88.5, Ø 65, Ø 54 and Ø 36 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.13–0.10 kg
- Type of vessels: Petri dishes

C6 Metal Plate for 88 mm inserts lowered by 4 mm **11600237**

The one-piece aluminum plate with a round opening for the 88 mm inserts with different holes (5 mm, 10 mm, 20 mm, 40 mm). The plate comes without inserts. For 88 mm inserts with different holes see A3 in this brochure.

- For vessel size: no limitation
- Outer dimension: 160 x 110 mm
- Weight: 0.10 kg
- Type of vessels: All types

C7 Glass stage plate **11522045**

The one-piece glass plate with a round opening (Ø 20 mm) for all sizes of dishes and slides.

- For vessel size: no limitation
- Outer dimension: 160 x 110 mm
- Weight: 0.10 kg
- Type of vessels: All types

C8 Adjustable Universal Holder
for Petri dishes (20-68 mm) or glass slides **11531441**

Frame to fix different sized Petri dishes or slides. Two smooth running moveable brackets with a variable clamping range allow an easy and quick fixation of the vessel.

- For vessel size: 26–76 mm length or Ø 20–68 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.10 kg
- Type of vessels: Petri dishes, glass slides

C9 Universal Holding frame K
for Petri dishes (24–68 mm) or glass slides **11600234**
for Uthermol™ Counting chambers **11532775**

Frame to fix different cultivation vessels and slides. Two smooth running moveable brackets with a variable clamping range allow an easy and quick fixation of the vessel. The sides of the frame are depressed for better use in micromanipulation and a flat injection angle.

- For vessel size: 24–120 mm length or Ø 24–68 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.10 kg
- Type of vessels: Petri dishes, glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)
  (Uthermol™: 120 x 43 mm)

C10 Universal Mounting frame KP-Set (with 4 bottom covers) for Petri dishes, Terasaki Trays, Ibidi plates and Lab-Tek slides **11532635**

Frame to fix different cultivation vessels or slides. This is a combination of C9 and C14/15 frame. The set includes the frame and 4 exchangeable not heated bottom plates either with a round 30 mm opening or rectangular 47 x 21 mm or 75 x 50 mm cut-out. The side of the frame are depressed for better use in micromanipulation and a flat injection angle. This frame may be used in combination with the Incubator BLX (see G8), the CO_2-Controller (H3) and CO_2-Cover KH-P (G3B).

- For vessel size: 24–120 mm length or Ø 24–68 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.10 kg
- Type of vessels: Petri dishes, glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)

C11 Universal Mounting frame K-Duo for 1or 2 Petri dishes and/or 1 glass slide **11532514**

Frame to fix different cultivation vessels and slides. This enables the microscopic controlled transfer of selected cells from a Petri dish to a slide, for example. Four smooth running moveable brackets with a variable clamping range allow an easy and quick fixation of the vessel.

- For vessel size: 1 vessel: 26 x 90 mm or Ø 24–68 mm
  2 dishes: Ø 2–56 mm
  1 slide 1 dish: 76 x 26 mm/Ø 24–40 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.14 kg
- Type of vessels: Petri dishes, Glass slides
  POC-R or POCmini cell cultivation systems
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)

C12 Universal Mounting frame KM for multi-wells with glass bottom **11532338**

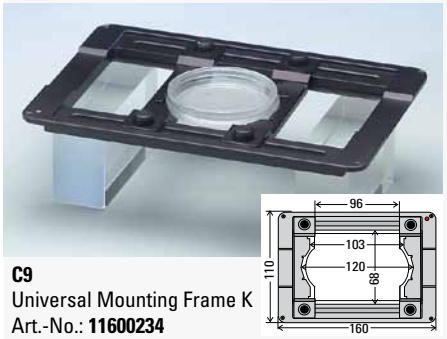
Frame to fix multi-wells with a glass bottom. Adjustable spring clips allow an adaptation to several multiwell sizes. This frame is especially suited to control temperature and CO_2-concentration in combination with the Incubator BLX (see G8), the CO_2-Cover HM (see G1) and the CO_2-Controller (see H3).

- For vessel size: 125-128 x 83-86 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.20 kg
- Type of vessels: Multi-well plates with glass bottom
  e.g. Greiner Bio-One Sensoplate™
  BD Falcon™ Glass-Bottom Imaging Plate

C29 Mounting frame Slide Holder (quad) **11532700**

The Slide Holder (quad) for the insertion of 4 slides has been especially designed for chambered slides (besides conventional slides). It features horizontal handling of slides when they are filled with a solution. It is not necessary to insert the slides in a tilted way with the danger of spilling some of the liquid. The slides are fixed in the holder and neet not to be touched directly during transport, medium exchange, incubation etc.

- For vessel size: 4 x 76 x 26 mm (3 x 1 inch)
- Outer dimension: 160 x 110 mm
- Weight: 0.180 kg
- Type of vessels: Glass slides of approx. 76 x 26 mm (3 x 1 inch),
  µ-slides (Ibidi)
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)

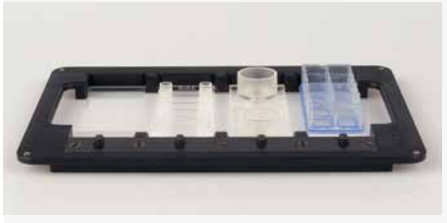


C9
Universal Mounting Frame K
Art.-No.: **11600234**

C10
Universal Mounting
Frame KP-Set
Art.-No.: **11532635**

C11
Universal Mounting
Frame K-Duo
Art.-No.: **11532514**

C12
Universal Mounting Frame KM
Art.-No.: **11532338**



C29
Mounting Frame Slide Holder (quad)
Art.-No.: **11532700**

Heatable inserts
for the manual regular 3-Plate stage
for the motorized regular 3-Plate stage
for the Scanning stage

Frames to fix different cultivation vessels and slides. The aluminum frame has a heated aluminum base plate with laminated printed circuit board. Temperature control is carried out with the TempControl 37 or TempControl 37-2 digital. (see F2/F3)

C13
Heatable Univ. Holding Frame KH
Art.-No.: **11531821**

C13 Heatable Universal Holding frame KH
for various dishes (24-68 mm) or microscopy-slides **11531821**

The base plate of the frame has a circular (Ø 30 mm) and a rectangular (30 x 10 mm) opening. This frame is suited to control temperature and CO_2-concentration in combination with the Incubator BLX (see G8), the CO_2-Cover KH (see G3) and the CO_2-Controller (see H3).
If this frame is used for CO_2-incubation inside the Incubator the non-used opening must be covered with tape to prevent the loss of CO_2.

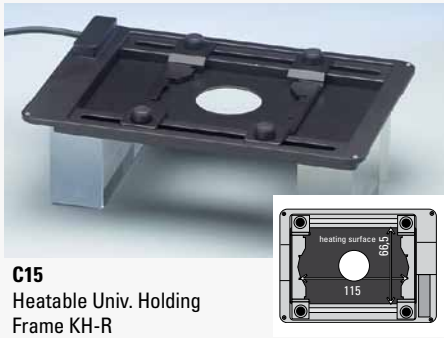
- For vessel size: 24–120 mm length or Ø 24–68 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: Ø 30 mm and 30 x 10 mm
- Type of vessels: Petri dishes and Glass slides
  POC-R or POCmini cell cultivation systems

C14
Heatable Univ. Holding Frame KH-L
Art.-No.: **11531645**

C14 Heatable Universal Holding frame KH-L
for microscopy-slide sized vessels **11531645**

This base plate of the frame has a single rectangular opening (47 x 21 mm). This frame is suited to control temperature and CO_2-concentration in combination with the "Incubator BLX" (see G8), the CO_2-Cover KH (see G3) and the CO_2-Controller (see H3).

- For vessel size: 24–120 mm length
- Outer dimension: 160 x 110 mm
- Weight: 0.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: 47 x 21 mm
- Type of vessels: Petri dishes and Glass slides
  Labtek™ (Nunc®)
  Chambered slides (BD Falcon™)



C15
Heatable Univ. Holding Frame KH-R
Art.-No.: **11532438**

C15 Heatable Universal Holding frame KH-R
for round dishes (24–68 mm) **11532438**

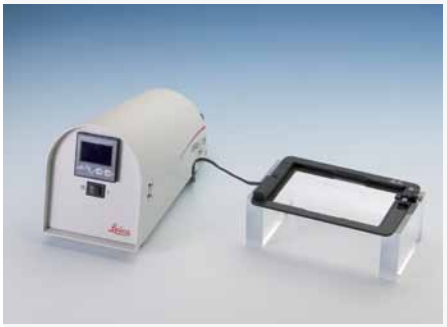
This base plate of the frame has a round opening (Ø 30 mm). This frame is suited to control temperature and CO_2-concentration in combination with the "Incubator BLX" (see G8), the CO_2-Cover KH (see G3) and the CO_2-Controller (see H3).

- For vessel size: Ø 24–68 mm
- Outer dimension: 160 x 110 mm
- Weight: 0.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: Ø 30 mm
- Type of vessels: Petri dishes
  POC-R or POCmini cell cultivation system

C16 Tokaihit, MATS, (Heating Frame, Glass) **11532370**

Frame with glass. When MATS is installed to microscope stage, the heating plate becomes flush with the stage surface to ensure the easy handling of the specimens and easy operation of manipulator. This model features a thin area (0.5 mm) in the plate center (50 x 50 mm area), which allows its application with Differential Interference Contrast, Modulation Contrast and high magnification objective lenses.
Main uses: Temperature control of the specimen in cell engineering, neuroscience, and genetic engineering, or pre-treatment of ova by means of IVF, where handling by a manipulator is required.
Including: Power Supply

- For vessel size: no limitation (within 150 x 100 mm)
- Outer dimension: 160 x 110 mm
- Weight: 0.3 kg (+ 1.8 kg Power supply)
- Temperature stability: ± 0.3°C
- Control range: 3°C above ambient up to 50°C
- Observation Opening: 150 x 100 mm
- Type of vessels: all types

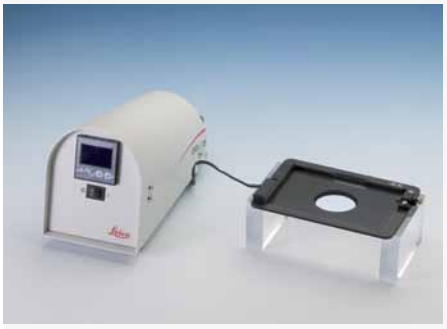


C16
Tokaihit, MATS Glass
Art.-No.: **11532370**

C17 Tokaihit, MATS, (Heating Frame, Metal) **11532455**

Metal heating frame. When MATS is installed to microscope stage, the heating plate becomes flush with the stage surface to ensure the easy handling of the specimens and easy operation of manipulator. This model features a round 20 mm opening in the plate center.
Main uses: Temperature control of the specimen in cell engineering, neuroscience, and genetic engineering, or pre-treatment of ova by means of IVF where handling by a manipulator is required.
Including: Power Supply

- For vessel size: no limitation (within 150 x 100 mm)
- Outer dimension: 160 x 110 mm
- Weight: 0.3 kg (+ 1.8 kg Power supply)
- Temperature stability: ± 0.3°C
- Control range: 3°C above ambient up to 50°C
- Observation Opening: Ø 20 mm
- Type of vessels: all types



C17
Tokaihit, MATS Metal
Art.-No.: **11532455**

C18 Tokaihit, MATS Dish fixing block **11532371**

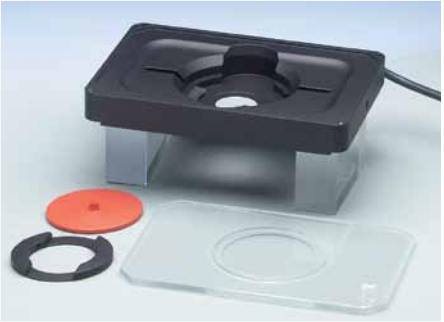
To fix the sample on the MATS-Glass or MATS-Metal, the accessory dish fixing block (DFB-3550) is recommended.

C18a Tokaihit, Glass Heating Insert 88 mm Thermoplate® **11532456**

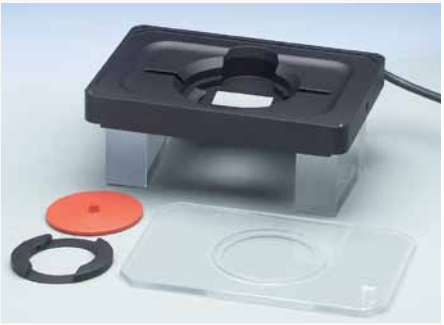
Microscope-stage Automatic Thermocontrol System: THERMOPLATE®.
THERMOPLATE® is an optical clear glass heating device that provides consistent temperature control of specimen from directly beneath during microscopic observation.

- For vessel size: < 60 mm
- Outer dimension: Ø 88 mm
- Weight: 0.2 kg (+ 1.8 kg Power supply)
- Temperature stability: ± 0.3°C
- Control range: 3°C above ambient up to 50°C
- Observation Opening: Ø 60 mm
- Type of vessels: all types

C18
Tokaihit, Dish fixing block
Art.-No.: **11532371**



C19
Heating Insert P
Art.-No.: **11531172**



C20
Heating Insert P Labtek™ type
Art.-No.: **11532226**

Foam covers for temperature protection

Heating Inserts P

C19 Heating Insert P for round dishes (24-68 mm) **11531172**
C20 Heating Insert P for LabtekTM type **11532226**

The heating Inserts P have been developed for use in combination with regular sized 3-plate stages and scanning stages. The solid heating element is made of one piece of aluminum with uniform heat distribution and a high thermal conductivity. Best solution for work with high magnification, precise positioning, Laser-Scanning-Microscopy applications and live cell imaging. An oval or rectangular observation opening ensure both access for objectives and maximum heat transfer. Lateral ducts on the left and right side through the inserts permit the installation of perfusion tubes, for example with the POCmini or POC-R camber. In order to reduce the heat and CO_2 losses, the supplied coverslips are used to close the opening.
Compatible to many different cell cultivation vessels or chambered slides. The supplied red insert is used to close the observation opening when no cultivation vessel is inserted to maintain environmental conditions during incubation. A cover with a glass insert ensures full DIC compatibility. Temperature control is carried out with a Temp-Control unit. CO_2 control is possible with the incubator S-2 or in combination with the Incubator BLX, the CO_2-Cover HP and the CO_2-Controller. (see F/G/H)

11531172:

- For vessel size: Ø 35 mm type fixed with an annular insert
  Ø 60 mm type fixed with clip clamping
- Outer dimension: 160 x 110 mm
- Weight: 0.8 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: oval 32 x 30 mm
- Type of vessels: Petri dishes
  POC-R or POCmini cell cultivation systems

1153226:

- For vessel size: 76 x 26 mm fixed with clip clamping
- Outer dimension: 160 x 110 mm
- Weight: 0.8 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: 46 x 21 mm
- Type of vessels: Labtek™ (Nunc®), Microscope Slides
  Chambered slides (BD Falcon™)

Remark: Both the Heating Inserts P are available as non heated versions:

C19a Insert N for round dishes (24–68 mm) **11640403**

- For vessel size: Ø 25 mm type fixed with an annular insert
  Ø 60 mm type fixed with clip clamping
- Outer dimension: 160 x 110 mm
- Weight: 0.7 kg
- Observation Opening: oval 32 x 30 mm
- Type of vessels: Petri dishes
  POC-R or POCmini cell cultivation systems

C20a Insert N for Labtek™ type **11102061**

- For vessel size: 76 x 26 fixed with clip clamping
- Outer dimension: 160 x 110 mm
- Weight: 0.7 kg
- Observation Opening: 46 x 21 mm
- Type of vessels: Labtek™ (Nunc®), Microscope Slides
  Chambered slides (BD Falcon™)

Heating Inserts M

Heating Inserts for Multiwells

C21	**Heating Insert M06**	**11531590**
C22	**Heating Insert M12**	**11531823**
C23	**Heating Insert M24**	**11531591**
C24	**Heating Insert M96**	**11531644**

The Heating Inserts in combination with the Incubator SSM or Incubator BLX are used for simultaneous monitoring and imaging of multiple, time-dependent events or for capturing time-lapse sequences.

The Heating Inserts, which are fully compatible with Falcon® multi-wells, are fixed onto the regular 3-plate stage or scanning stage of an inverted microscope of the Leica DMI-Series.

Due to the high precision of scanning stages the configuration is ideal for computer-controlled observation using multi-well dishes. The Heating Inserts are positioned into the 160x110 mm rectangular opening of the stages where they are held by a special clamping device. Using setscrews, an optimum seating of the Heating Insert in the stage is permitted.

Solid aluminum frame with an aluminum base plate with laminated printed circuit board with circular openings of defined diameter. Optimized thermal contact between the heated aluminum plate and the multiwell plate, therefore only compatible to specific multiwell dishes from BD Falcon™. A large lateral PA-screw allows the fixation of the multiwell dish.

CO_2 control is possible with the Incubator SSM or with the Incubator BLX in combination with the CO_2-Cover MH. The supplied red insert is used to close the observation openings when no cultivation vessel is inserted to maintain environmental conditions during incubation.

For precise temperature control of the Heating Inserts the use of TempControl units is recommended. Temperature control is carried out with a Temp-Control unit. Input: 24V protective low voltage. CO_2 control is possible with the Incubator S-2 or in combination with the Incubator BLX, the CO_2-Cover HM and the CO_2-Controller. (see G/H)

- For vessel size: Insert M06: BD Falcon™ 06-well multiplate
  Insert M12: BD Falcon™ 12-well multiplate
  Insert M24: BD Falcon™ 24-well multiplate
  Insert M96: BD Falcon™ 96-well multiplate
- Outer dimension: 160 x 110 mm
- Weight: 0.4 kg
- Heating: Al-plate with laminated printed board
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Observation Opening: M06: = 22.0 mm M12: = 22.0 mm
  M24: = 15.5 mm M96: = 6.0 mm
- Type of vessels: Insert M06: BD Falcon™ 06-well multiplate
  Insert M12: BD Falcon™ 12-well multiplate
  Insert M24: BD Falcon™ 24-well multiplate
  Insert M96: BD Falcon™ 96-well multiplate

C21
Heating Insert M06
Art.-No.: **11531590**

C22
Heating Insert M12
Art.-No.: **11531823**

C23
Heating Insert M24
Art.-No.: **11531591**

C24
Heating Insert M96
Art.-No.: **11531644**

C25
Cooling Insert P
Art.-No.: **11531824**

C26
Cooling Insert P LabtekTM type
Art.-No.: **11102162**

Cooling and Temperable Inserts respectively

C25 Cooling/Temperable Insert P for rd. dishes (24–68 mm) 11531824
C26 Cooling/Temperable Insert P for LabtekTM type 11102162

The Cooling/Temperable Inserts P have been developed for use in combination with regular sized 3-plate stages and/or scanning stages. The solid temperable element is made of one piece of aluminum with uniform heat distribution and a high thermal conductivity. Best solution for work with high magnification, precise positioning, Laser-Scanning-Microscopy applications and live cell imaging. Specimens are firmly seated in the Cooling Insert P. An oval or rectangular observation opening ensures both access for objectives and maximum temperature transfer.
Ideal for electrophysiological experiments, because no disturbing switching pulses are emitted. Compatible to many different cell cultivation vessels or chambered slides. The insert can be leveled in the stage by 4 screws. The supplied red insert is used to close the observation opening when no cultivation vessel is inserted to maintain environmental conditions during incubation. A cover with a glass insert ensures full DIC compatibility. Temperature control is carried out with a Cooling Thermostat (see F4). CO_2 control (heating only) is possible with the Incubator S-2 or in combination with Incubator BLX, CO_2-Cover HM and CO_2-Controller (see G/H).

11531824:

- For vessel size: Ø 35 mm type fixed with an annular insert
  Ø 60 mm type fixed with clip clamping
- Outer dimension: 160 x 110 mm
- Weight: 0.8 kg
- Heating/Cooling: liquid
- Temp. stability/range: see Cooling Thermostat
- Observation Opening: oval 32 x 30 mm
- Type of vessels: Petri dishes
  POC-R or POCmini cell cultivation systems

11102162:

- For vessel size: 76 x 26 mm fixed with clip clamping
- Outer dimension: 160 x 110 mm
- Weight: 0.8 kg
- Heating/Cooling: liquid
- Temp. stability/range: see Cooling Thermostat
- Observation Opening: 46 x 21 mm
- Type of vessels: Labtek™ (Nunc®), Microscope Slides
  Chambered slides (BD Falcon™)

Alternative:

C27 Cooling Insert X for Universal Mounting Frames **11532510**

The Cooling Insert X has been developed for use in combination with regular sized 3-plate stages and scanning stages plus the Universal Mounting Frame KX. The solid cooling (resp. temperable) element is made of one piece of aluminum with uniform heat distribution and a high thermal conductivity.
Because of its low mass it allows a rapid temperature change. A circular observation opening (Ø 8 mm) ensures both access for objectives and maximum temperature transfer. The outer dimensions are like a multi-plate. Due to its low profile it is especially suited for micromanipulation with a flat angle.
Recommended for electrophysiological experiments, because no disturbing switching pulses are emitted.

The Cooling Insert X is compatible to

Universal Mounting Frame MX	(11520689)	see B16
Universal Mounting Frame KM	(11532338)	see C12

- For vessel size: Ø 35 mm or 76 x 26 mm
- Outer dimension: 127 x 86 mm
- Weight: 0.2 kg
- Heating/Cooling: liquid
- Temp. stability/range: see Cooling Thermostat
- Observation Opening: Ø 8 mm
- Type of vessels: Labtek™ (Nunc®), Microscope Slides Chambered slides (BD Falcon™), Petri dishes Ø 35 mm

C28 Temperable Insert R, 88 **11532808**

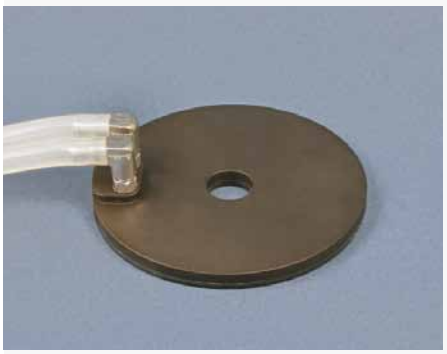
The round cooling insert R has been developed for use in combination with the Regular Fixed Stage and Slim Fixed Stage for DMI-Series 11522015 or as well for the 160x 110 mm inserts for 3-plate stage like Metal Plate for 88 mm inserts. The Cooling Insert R includes 2 x 1 m Silicon hose, 2 x 2m fabric hose and 4 auto-stop hose couplings. Recommended for electrophysiological experiments, because no disturbing switching pulses are emitted.

The Cooling Insert R,88 is compatible to

Regular Fixed Stage (248 x 204 mm)	(11522011)	see A1
Slim Fixed Stage (248 x 112 mm)	(11522015)	see A2
Metal Plate for 88 mm inserts lowered by 4 mm	(11600237)	see C6

- For vessel size: Ø 35 mm or 76 x 26 mm
- Outer dimension: 88 mm
- Height: 6.5 mm
- Weight: 0.1 kg
- Heating/Cooling: liquid
- Temp. stability/range: see Cooling Thermostat
- Observation Opening: Ø 15 mm

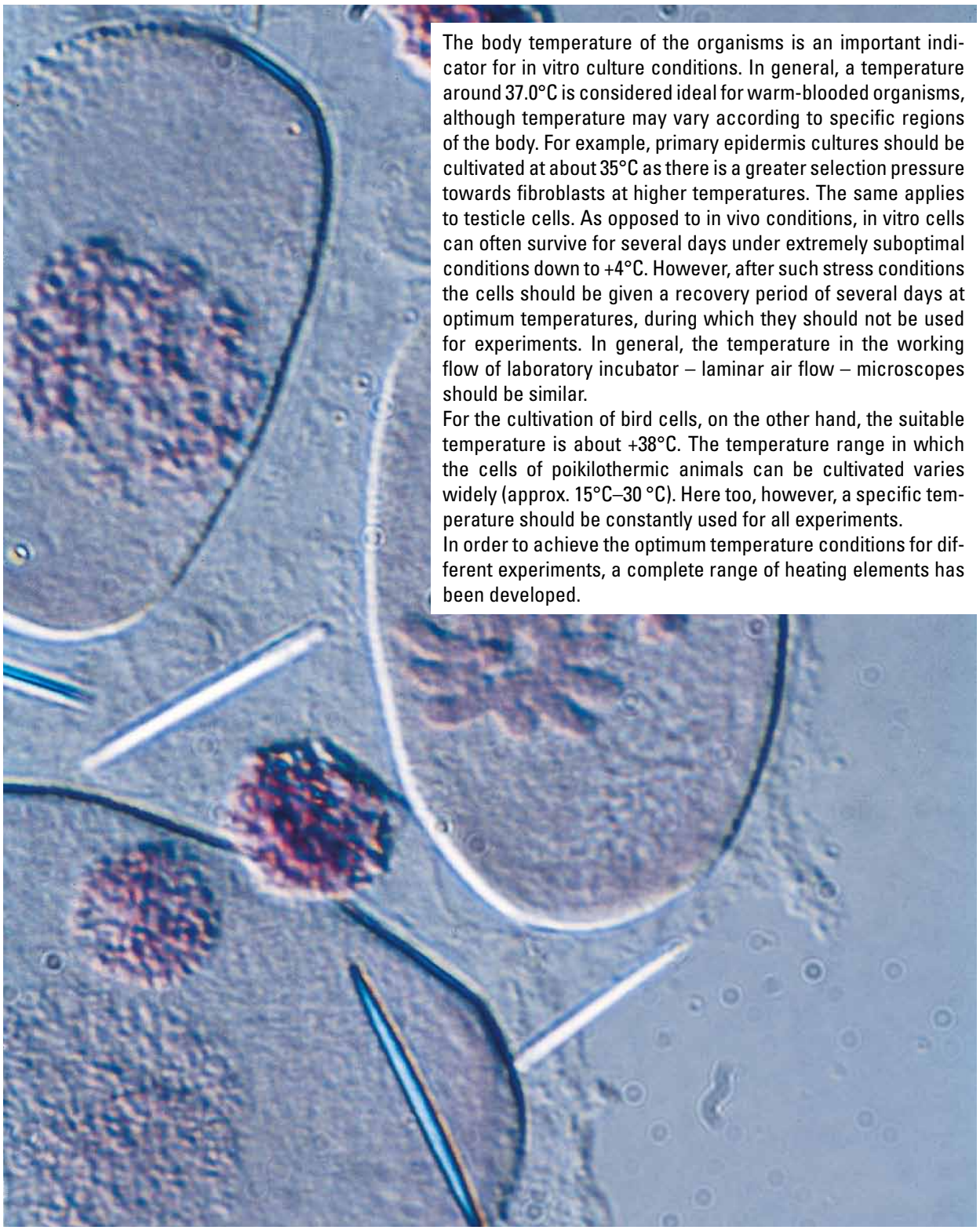
C27
Cooling Insert X
Art.-No.: **11532510**



C28
Temperable Insert R, 88
Art.-No.: **11532808**

Pre-Heating and Pre-Cooling Stages

Temperature Control of Specimens close to the microscope



The body temperature of the organisms is an important indicator for in vitro culture conditions. In general, a temperature around 37.0°C is considered ideal for warm-blooded organisms, although temperature may vary according to specific regions of the body. For example, primary epidermis cultures should be cultivated at about 35°C as there is a greater selection pressure towards fibroblasts at higher temperatures. The same applies to testicle cells. As opposed to in vivo conditions, in vitro cells can often survive for several days under extremely suboptimal conditions down to +4°C. However, after such stress conditions the cells should be given a recovery period of several days at optimum temperatures, during which they should not be used for experiments. In general, the temperature in the working flow of laboratory incubator – laminar air flow – microscopes should be similar.

For the cultivation of bird cells, on the other hand, the suitable temperature is about +38°C. The temperature range in which the cells of poikilothermic animals can be cultivated varies widely (approx. 15°C–30 °C). Here too, however, a specific temperature should be constantly used for all experiments.

In order to achieve the optimum temperature conditions for different experiments, a complete range of heating elements has been developed.

Pre-heating plates and pre-cooling plates

During experiments it is often necessary to put specimens in the direct vicinity of the microscope. However, even in this case the temperature of these specimens has to be controlled. For example if cell cultivation vessels must be observed sequentially the non-used vessels can be kept at optimal conditions (37°C) in the mean time.
For these requirements different Pre-Heating plates are used: the Pre-Heating Plate S and the Pre-Heating Plate M. Whilst the Heating Plate S has dimensions 210 x 160 mm, the Heating Plate M with its dimensions of 400 x 250 mm offers three different inserts (1 x 57, 4 x 16, 9 x 12 mm Ø) the possibility to heat up small bottles, centrifuge tubes and reaction vessels. Sensitive cells can also be kept at ideal temperature conditions during handling under the laminar airflow. No disturbing switching pulses are emitted (important for electrophysiological experiments). A pre-heating stage is a recommendable completion of every incubation system.
The temperature control of both heating plates is carried out with the TempControl 37 or TempControl 37-2 digital. Detailed information about the Controls is given in F2-F3.

D1 Pre-Heating Plate S **11531829**

- For vessel size: no limitation (within 210 x 160 mm)
- Material: Aluminum, black anodized
- Outer dimension: 210 x 160 x 15 mm
- Weight: 1.2 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Type of vessels: all types

D2 Pre-Heating Plate M with 3 inserts **11531830**

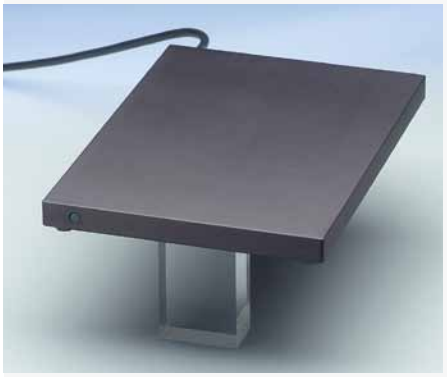
- For vessel size: no limitation (within 400 x 250 mm)
- Material: Aluminum, black anodized
- Outer dimension: 400 x 250 x 16 mm
- Weight: 4 kg
- Temperature stability: ± 0.1°C
- Control range: 3°C above ambient up to 60°C
- Type of vessels: all types plus
  Nutrition Medium flasks or centrifuge tubes
  With diameters 57 mm 16 mm or 12.5 mm

D3 Pre-Temperable Plate **11531831**

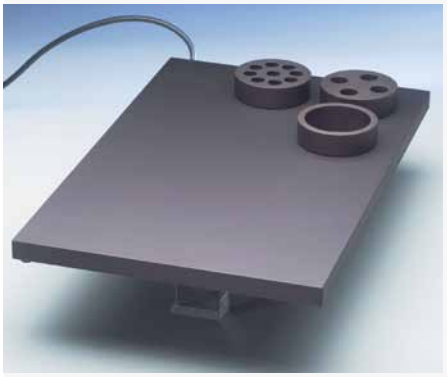
The pre-temperable plate is used for both cooling and heating of specimens, which must be kept at a specific constant temperature next to the microscope or under the laminar airflow. Keeps important reagents at cool temperature (e.g. 4°C) during experiments or liquid handling. No electrical components, therefore the pre-temperable plate can be recommended for electrophysiological experiments. The temperature control of the plate is carried out with a cooling thermostat. Detailed Information is given under F4.

- For vessel size: no limitation (within 210 x 160 mm)
- Material: Aluminum, black anodized
- Outer dimension: 210 x 160 x 15 mm
- Weight: 1.2 kg
- Heating/Cooling: liquid
- Temperature stability: see Cooling Thermostat
- Type of vessels: all types

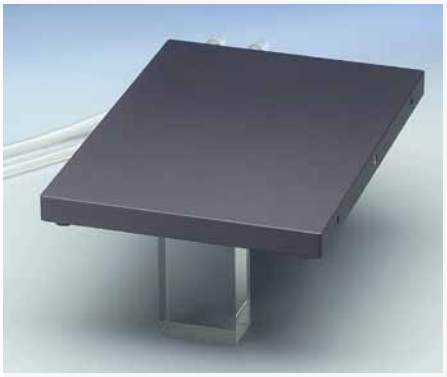
Accessories: Fabric-tube, clear (Ø 5 mm) 2 m, 2 pieces
Silicone-tube, clear (Ø 5 mm) 1 m, 2 pieces



D1
Pre-Heating Plate S
Art.-No.: **11531829**



D2
Pre-Heating Plate M
Art.-No.: **11531830**



D3
Pre-Temperable Plate
Art.-No.: **11531831**

Objective Heaters

Particularly when using oil immersion objectives, heat dissipates through the objectives which act like a heat sink. To overcome this problem an Objective Heater is used which minimizes temperature gradients in the observation area.
Objective Heaters consist of a black, anodized aluminum ring with a lateral housing containing the heating elements (transistors) and the temperature sensor. The heating of the objective occurs slowly. Due to this slow heat transfer any damages to the objectives are prevented.
Tempcontrol-mini has been specifically designed for the low power consumption of Objective Heaters and provides both electrical supply and control in the range of 35°C–40°C.

A substantial amount of heat is lost from the cultivation vessel through the observation opening and the objective. Especially when oil immersion objectives are used this heat transfer could generate a lower temperature at the cells under observation. To minimize the loss of heat and even to support the specimen heating an objective heater is used. It is made out of one solid piece of aluminum and has a 5 mm thick ring around the objective and a small "backpack". The large ring ensures a uniform heat distribution without damaging the objective and encloses the temperature sensor. The "backpack" contains the heating elements and electronics. Unfortunately not all objectives can be equipped with an Objective Heater.

An optimized low power consumption of the Objective Heater ensures a slow heat-up of the objective. Combined with the high thermal conductivity of the aluminum ring this prevents damage caused by temperature gradients across the objective. Please note the maximum operational temperature of the objective used, in most cases this is 40°C. Use the TempControl-mini for a cost-efficient temperature control of the Objective Heater, if all channels at other TempControl devices are used. (see F1–F2)

E1 Objective Heater Ø 29.0 mm **11531825**

Suitable for the objectives without Correction Ring
e.g.

• N PLAN 100x/1.25-60	Oil	11506207
• N PLAN 100x/1.25	Oil	11506158
• HC PL APO 10x/0.40	IMM CS	11506293
• HCX PL APO 40x/1.30	Oil CS	11506331
• HCX PL FLUOTAR 63x/1.25	Oil	11506185
• HCX PL APO 63x/1.40-0.60	Oil CS	11506188
• HCX PL FLUOTAR 100x/1.30	Oil	11506195
• HCX PL APO 100x/1.40-0.70	Oil CS	11506210
• HCX PL APO 63x/1.40-0.60	Oil	11506187

E2 Objective Heater Ø 30.5 mm **11521738**

Suitable for the objectives with Correction Ring
e.g.

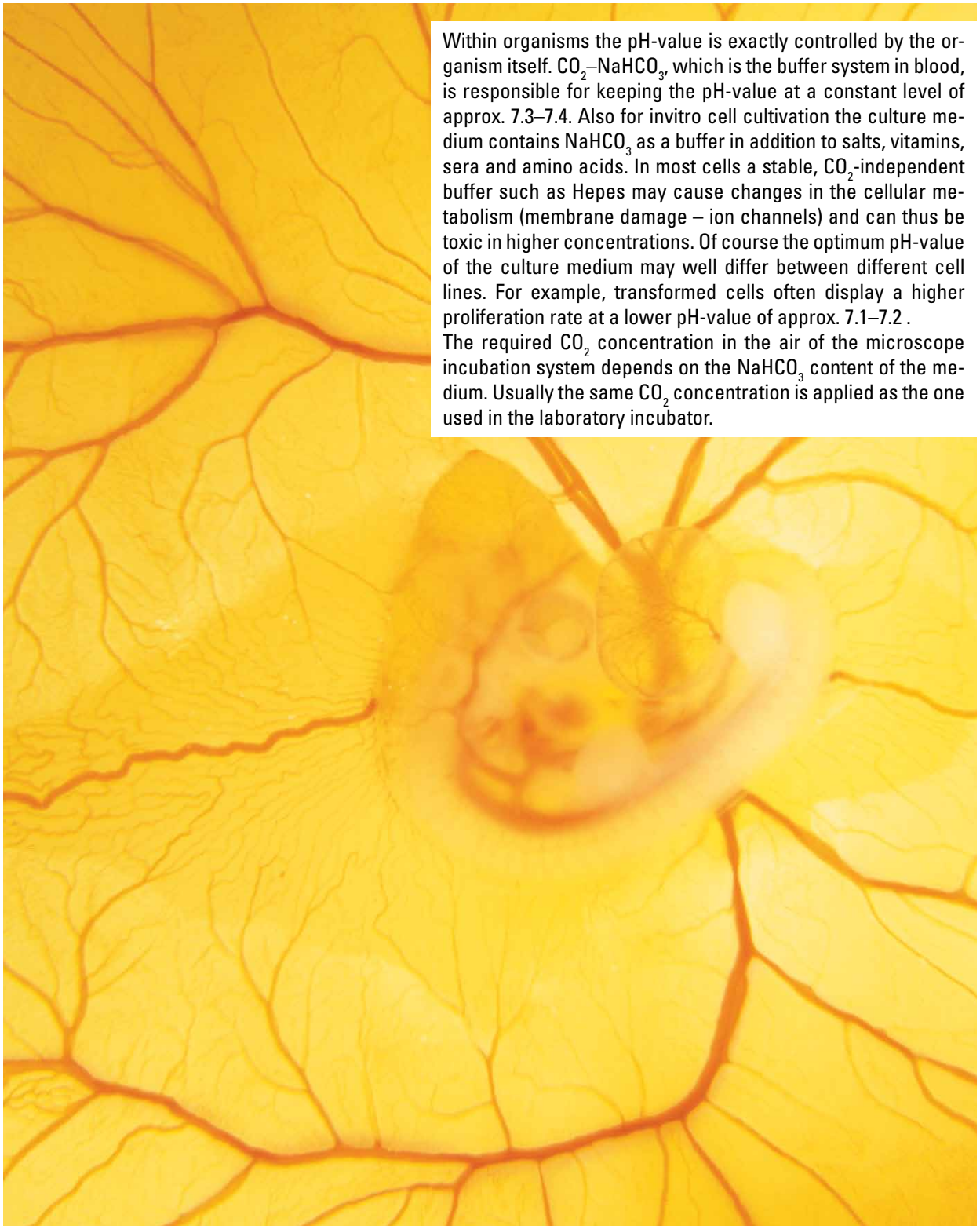
• HCX PL FLUOTAR L 20x/0.40 CORR	11506242
• HC PL APO 20x/0.70 IMM/CORR	11506178
• N PLAN L 40x/0.55 CORR	11506297
• HCX PL FL L 40x/0.60 CORR	11506201
• HCX PL APO 40x/0.85 CORR	11506294
• HCX PL FLUOTAR L 63x/0.70 CORR	11506216
• HCX PL FLUOTAR 63x/0.90 CORR	11506223
• HCX PL APO 63x/1.20 W/CORR CS Lbd BI	11506280
• HCX PL APO 63x/1.30 CORR Glyc CS	11506194
• HCX PL APO 63x/1.30 CORR Glyc 37°	11506193

Note:
The objective heater is used for the Phase Contrast, POL, XT or LMC variants of the above mentioned objectives as well. Objective Heaters for objectives not listed or with different diameters are available on request.

E1
Objective Heater Ø 29.0 mm
Art.-No.: **11531825**

E2
Objective Heater Ø 30,5 mm
Art.-No.: **11521738**

Temperature Controller and Thermostats



Within organisms the pH-value is exactly controlled by the organism itself. CO_2–$NaHCO_3$, which is the buffer system in blood, is responsible for keeping the pH-value at a constant level of approx. 7.3–7.4. Also for invitro cell cultivation the culture medium contains $NaHCO_3$ as a buffer in addition to salts, vitamins, sera and amino acids. In most cells a stable, CO_2-independent buffer such as Hepes may cause changes in the cellular metabolism (membrane damage – ion channels) and can thus be toxic in higher concentrations. Of course the optimum pH-value of the culture medium may well differ between different cell lines. For example, transformed cells often display a higher proliferation rate at a lower pH-value of approx. 7.1–7.2 .

The required CO_2 concentration in the air of the microscope incubation system depends on the $NaHCO_3$ content of the medium. Usually the same CO_2 concentration is applied as the one used in the laboratory incubator.

Heating

F1 TempControl-37 (1-channel) 230 Volt 11521721
TempControl-37 (1-channel) 115 Volt 11532309

For exact setting and control of required temperature range, TempControl 37 is used. This temperature regulator with one channel is used for all of our heated components, except the Heating Unit (see below: F3). The actual temperature of the unit connected is displayed at the front panel. An analogue PID closed loop control compares the real temperature with the set-point value and regulates the heating intensity of the heated unit. The front display shows the set-point value after the activation of a switch. This temperature regulator is recommended, if only one heated component is used.

- For: all heated components, except Heating Unit
- Outer dimension: 175 x 135 x 200 mm
- Weight: 3.8 kg
- Control range: 3°C above ambient up to 60°C
- Control tolerance: 0.1°C
- Set-point range: 10–60°C
- Voltage/Power : 115/230 V, 50..60Hz, 90VA max.

F2 TempControl-37-2 (2-channels) 230 Volt 11521719
TempControl-37-2 (2-channels) 115 Volt 11532308

A temperature regulator with 2 independent channels that is universally used for all of our heated components. The actual temperatures of both units connected are displayed simultaneously at the front panel. A digital PID closed loop control compares the real temperatures with the set-point values and regulates the heating intensity of the respective unit. Each channel can be individually switched on or off. Different parameter sets allow the change of PID closed loop control parameters to adapt different heating components, e.g. Heating Unit (see below: F3). A serial RS232-interface and the supplied software enables the remote control of the unit by a PC.

- For: all heated components
- Outer dimension: 175 x 135 x 270 mm
- Weight: 5.0 kg
- Control range: 3°C above ambient up to 60°C
- Control tolerance: 0.1°C
- Set-point range: 10–60°C
- Voltage/Power : 115/230 V, 50..60Hz, 200VA max.

F1
TempControl 37 (1-channel)
230 Volt Art.-No.: **11521721**
115 Volt Art.-No.: **11532309**

F2
TempControl 37-2 (2-channels)
230 Volt Art.-No.: **11521719**
115 Volt Art.-No.: **11532308**

F3
Cooling Thermostat RE 206
230 Volt Art.-No.: **11531834**
115 Volt Art.-No.: **11531835**

Cooling

F3 Cooling Thermostat 230 Volt **11531834**
Cooling Thermostat 115 Volt **11531835**

For the precise control of the cooling "Temperable Stage", the cooling "Pre-Temperable Plate" or the cooling "Temperable Insert P" a cooling thermostat is used. We recommend the RE 206 Cooling thermostat

Article description:
A thermostatic bath/circulator with microprocessor technology and integrated cooling system

With a 2-line LCD display for simultaneous display of actual and set temperature and with clear text messages of operating states

User-friendly menu guidance with ease of use 3-key operation

Fully electronic continuous controller with PID action

Low-level and adjustable over-temperature protection with acoustic alarm for use with flammable and non-flammable liquid

Vario pump with 5 selectable output steps

RS 232 and RS 485 interfaces

Basic programmer

Bath from stainless steel (insulated, with carrying handles and drain tap)

Automatic compressor on/off control

• For:	all cooling temperable components
• Control range:	–20 °C ... 200 °C
• Control tolerance:	± 0.01 °C
• Heater power:	2.25 kW
• Cooling capacity at 20 °C:	0.20 kW
• Outer dimension:	200 x 400 x 557 mm
• Technical data:	according to DIN 12876
• Pressure pump:	- max. pressure 0.4 bar
- max. flow 17 L/min	
• Bath volume:	max. 6 l
• Standard accessories:	1 closing plug
1 bath cover	

Accessories: CTR-Boxes, SmartMove, STP6000

Leica CTR6000 Electronic Box **11888821**
To control the motorized 3-plate-stages with rack and pinion at least the Leica CTR6000 Electronic Box is required. The CTR6500 works as well.
More information about the electronic boxes see “Modular Brochure of DMI-Series”

Leica CTR6500 Electronic Box **11888822**
To control motorized scanning stages with lead screw pitch (spindle) the Leica CTR6500 Electronic Box is required.
More information about the electronic boxes see “Modular Brochure of DMI-Series”

Leica SmartMove **11505180**
The remote control function of the Leica SmartMove (an XYZ – ergonomic control panel) permits remote operation of the main electronic elements as:

- motor stages (x/y) for the entire Leica DMI-Series,
- focus(z) for Leica DMI6000 B only,
- 4 freely programmable function keys for Leica DMI4000 B and DMI6000 B.

The Leica Smart Move connected to the CTR Electronic Box with a 2 meter cable can be place anywhere around the microscope.

It can:

- Accommodate left handed and right handed operation of the Leica DMI-Microscopes,
- Be positioned for the most comfortable operation no matter what accessories are mounted to the DMI-Microscope.
-

Leica STP6000 Smart Touch Panel **11501255**
The remote control function of the Leica Smart Touch Panel (an XYZ – ergonomic control panel with integrated color-touch screen / display) permits remote operation of the main electronic elements as:

- motor stages (x/y) for the entire Leica DMI-Series,
- focus(z) for Leica DMI6000 B only,
- DIC, objectives and fluorescence for Leica DMI4000 B and DMI6000 B,
- 11 freely programmable function keys for Leica DMI4000 B and DMI6000 B.

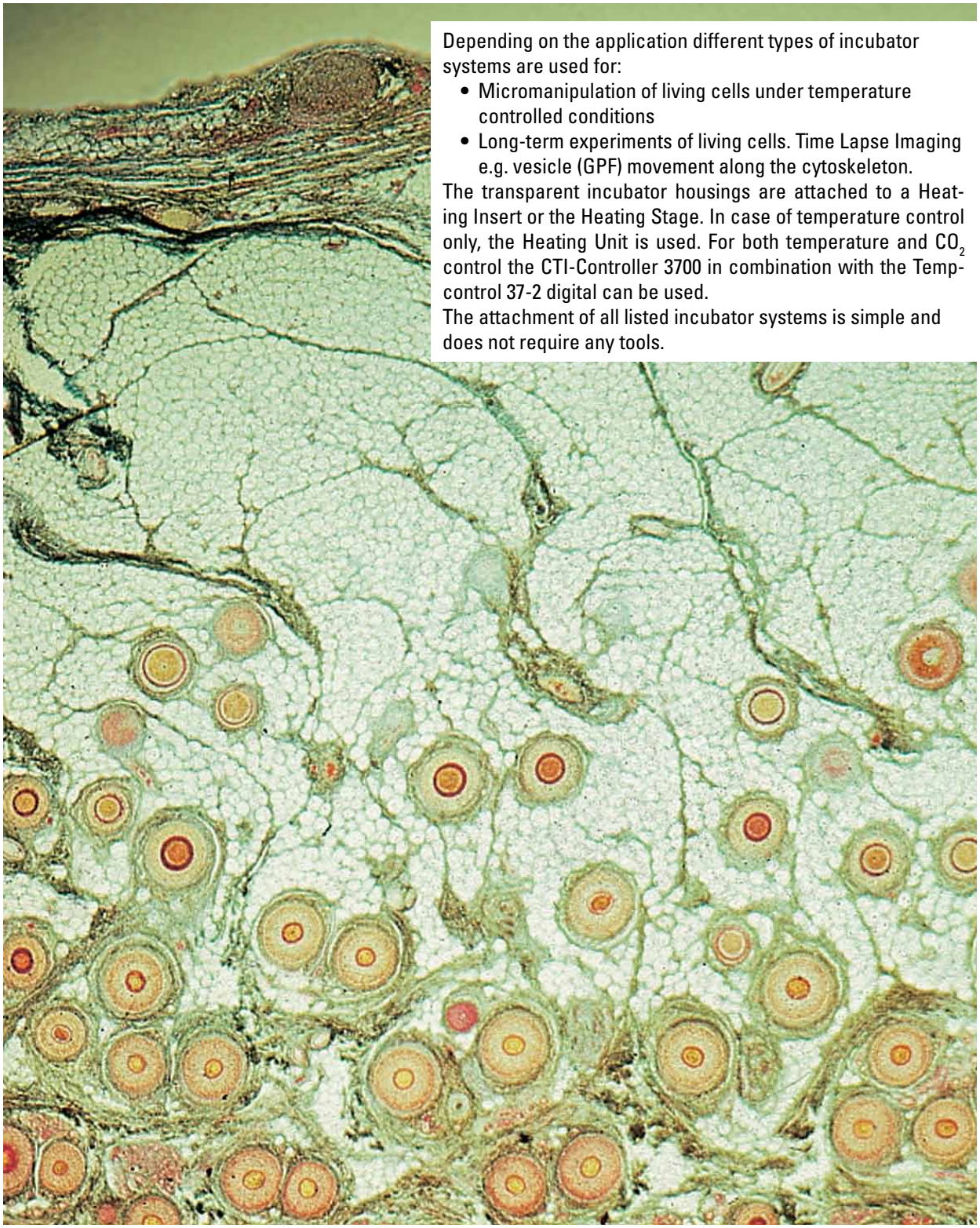
CTR6000 Electronic Box
Art.-No.: **11888821**

CTR6500 Electronic Box
Art.-No.: **11888822**

Leica Smart Move
Art.-No.: **11505180**

Leica STP6000
Art.-No.: **11505180**

Covers and Incubators
Evaporation Reduction



Depending on the application different types of incubator systems are used for:

- Micromanipulation of living cells under temperature controlled conditions
- Long-term experiments of living cells. Time Lapse Imaging e.g. vesicle (GPF) movement along the cytoskeleton.

The transparent incubator housings are attached to a Heating Insert or the Heating Stage. In case of temperature control only, the Heating Unit is used. For both temperature and CO_2 control the CTI-Controller 3700 in combination with the Tempcontrol 37-2 digital can be used.

The attachment of all listed incubator systems is simple and does not require any tools.

Covers

G1 CO_2 Cover HM for Heating Inserts M06, M12, M24, M96 and Universal Mounting Frame KM 11521735

This CO_2-Cover fits onto the Heating Inserts M06, M12, M24, and M96 (see C21–C24) which are fully compatible with Falcon® multiwells and fits onto the Universal Mounting Frame KM as well (see C12) and permits local CO_2-control in a completely closed environment in the large Incubator BLX. The cover is made out of transparent acrylic glass.

G2 CO_2 Cover HP for Heating Insert P 11521734

This CO_2-Cover fits onto the Heating Insert P (see C19–C20) and permits local CO_2-control in a completely closed environment in the large Incubator BLX. The cover is made out of opaque acrylic glass with a glass insert to permit DIC.

G3 CO_2 Cover KH for Heatable Mounting frame KH, KH-L, and KH-R 11521737

This CO_2-Cover fits onto the Universal Mounting Frames KH-L and KH-R (see C13–C15) and permits local CO_2-control in a completely closed environment in the large Incubator BLX. The cover is made out of transparent acrylic glass with a glass insert to permit DIC. Any openings in the base plate of the Universal Mounting Frame that are not covered by the cultivation vessel must be sealed by tape to prevent loss of CO_2. Therefore we recommend the usage of the Heatable Universal Mounting Frame KH-L or KH-R for CO_2-incubation. (see C14–C15).

G3a CO_2 Cover Micromanipulation K for Heatable Mounting frame KH, KH-L, and KH-R 11532553

This Cover fits onto the Universal Mounting Frames KH, KH-L and KH-R (see C13–C15) and permits local CO_2-control in a completely closed environment in the large Incubator BLX. The cover is made out of transparent acrylic glass with two inserted glass sliders (1 mm) over the observation area to permit DIC. The cover has a tube adapter for CO_2/air mixture and two self-closing, red inserts for perfusion tubes. The special feature of the cover is the possibility of micromanipulation. The two glass sliders can be opened and closed by 25 x 65 mm. As tested, the pH-value of the nutrient medium in dishes and chambers is stable during micromanipulation at an open space of up to 5 mm between the two glass sliders. It is sufficient to adjust a very soft CO_2/air stream. The observation holes in the frames must be covered by the culture vessels. Working in the "Incubator BLX", it is recommend to switch off the heating of the Mounting Frame.

G3b CO_2 Cover KH-P for Universal Mounting Frame KP-Set 11532636

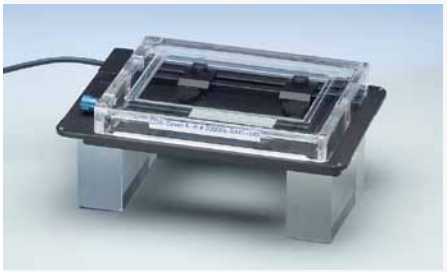
This CO_2-Cover fits onto the Universal Mounting Frames KP-Set (see C10) and permits local CO_2-control in a completely closed environment in the large Incubator BLX. The cover is made out of transparent acrylic glass with a glass insert to permit DIC.

G4 CO_2 Cover MH for Heatable Mounting frame MH, MH-L, and MH-R 11521736

The CO_2-Cover fits on the Universal Mounting Frames MH, MH-L and MH-R (see B18–B20) and permits local CO_2-control in a completely closed environment in an "Incubator L-2" or "Incubator BLX". The cover is made out of transparent acrylic glass with a glass insert to permit DIC. Any openings in the base plate of the Universal Mounting Frame that are not covered by the cultivation vessel must be sealed by tape to prevent loss of CO_2. Therefore we recommend the usage of the Heatable Universal Mounting Frame MH-L or MH-R for CO_2-incubation. (see B19–B20).
Besides the inserts an "Incubator L-2" or "Incubator BLX" and a CO_2-Controller are mandatory.

G1
CO_2 Cover HM with Heating Insert M06
Art.-No.: **11521735**

G2
CO_2 Cover HP with Heating Insert P
Art.-No.: **11521734**



G3/G3a/G3b
CO_2 Cover KH – Art.-No.: **11521737**
CO_2 Cover Manipulator – Art.-No.: **11532553**
CO_2 Cover KH-P – Art.-No.: **11532636**

G4
CO2 Cover MH with frame MH
Art.-No.: **11521736**

Note:
All incubation solutions with CO_2-Covers need an "Incubator L-2" or "Incubator BLX" to prevent condensation inside the cover (cold ambient temperature). Although the Universal Mounting Frames are less expensive, they are not as good as Heating Insert P, for example.

G5
Incubator S-2 with Heating Insert P
Art.-No.: **11600206**

C19
Heating Insert P
Art.-No.: **11531172**

Small Incubators

G5 Incubator S-2 for Heating Insert P — 11600206

The small size incubator S-2 with low-volume for warm air incubation and/or CO_2-control mounted on top of the Heating Insert P (see C19–C20) or Temperable Insert P (see C25–C26) which are fixed in a scanning stage or regular 3-plate-stage is used for the incubation of Petri dishes, POC-R or POCmini cell cultivation systems, or Lab-Tek® (Nunc®) microscope slides or chambered slides (BD Falcon®).
Warm air incubation is needed to reduce condensation at the cultivation vessel lid, which is significantly colder when it has direct contact to ambient air. Heating and CO_2-control is both possible with the CTI-Controller (see H2). The transparent acrylic housing is mounted onto the Heating Insert P and is fixed by a screw. This incubation system can be mounted to and removed from the microscope very quickly.
Access to the specimen is possible by an opening (size 80 x 90 mm) on top of the incubator. The opening can be closed either by an acrylic glass insert or an acrylic glass insert with a glass plate (DIC observation). To retain the air composition during opening of the cover the conditioned air can be routed through an integrated bypass channel. A valve allows an easy change between operation mode and bypass mode. The incubator is compatible to the condensers S28 and S70. An integrated temperature sensor measures the actual air temperature inside the incubator and is used to control the heating device.
Temperature control is carried out with the TempControl 37-2 digital (see F3). One channel of this controller is used for Heating Insert P, the second channel is directly connected to the CTI-Controller 3700 (H2). The system has been designed for an incubation time up of to 6 hours. After this, water may evaporate and the ion concentration in the nutrition medium may rise. Using the humidifier system (see G9) in combination with the FoilCovers (see G10–G17) incubation times of up to 72 hours are possible.

For:	Heating Inserts P or Temperable Inserts P
Height of observation area:	26 mm
Top-opening:	80 x 90 mm
Control range:	3 °C above ambient up to 40 °C
Outer dimension:	225 x 180 x 50 mm
Material:	Acrylic glass, optically clear
Weight:	0.4 kg

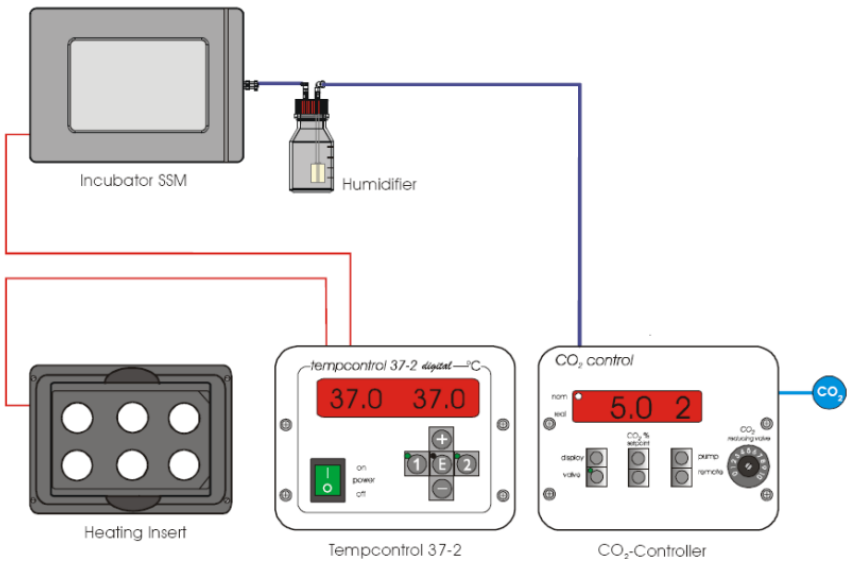
Besides the inserts (see C19-C20, or C25-C26) either a scanning-stage or a regular 3-plate-stage is mandatory, as well as a TempControl 37-2 digital in combination with a CTI Controller 3700.

Accessories:
- Amplifier 0–2.0°C
- Flexi-Tube, (Ø 38 mm) 0.6 m
- Flexi-Tube, (Ø 38 mm) 1.2 m
- Cover, acrylic glass
- Cover, acrylic glass with glass insert (for DIC)
- Adhesive cable clips

G6 Incubator SSM for Heating Inserts M06, M12, M24 or M96 — 11532822

The small size Incubator SSM with low-volume for CO_2- incubation for stabilization of In vitro conditions of cell and tissue cultures during microscopic examination is mounted on top of the Heating Inserts Mxx which are fixed in a scanning stage or regular 3-plate-stages.
The incubator offers a homogenously heated incubation room with a defined atmosphere in combination with the following inserts Heating Inserts M06, M12, M24, M96 for Multiwells from Corning and Falcon (see C21–C24).
For the control of CO_2-concentration the CO_2-Controller has to be used(see H3).
Temperature control is carried out with the TempControl 37-2 digital (see F3) for both the incubator and the heating Inserts Mxx.
The heated glass of the incubator is translucent about 90% of light in the visible wavelength.
The heated glass warms up the incubation chamber from the top. This avoids the condensation of water on the cover of the cell cultivation vessel.
The incubator is compatible to all condensers with a free working distance higher than 20 mm (e.g. S23, S28 and S70).

Connection Diagramm:



This incubation system can be mounted to and removed from the microscope very quickly.
The system has been designed for an incubation time of up to days. Water may evaporate and the ion concentration in the nutrition medium may rise. Using the humidifier system (part of the CO_2-Controller) in combination with the FoilCovers (see G10–G17) will optimize the long time experiments.

For:	Heating Inserts M06, M12, M24, M96
Compatible to:	Condenser S23, S28 and S70
Height of observation area:	> 20 mm
Control range:	3°C above ambient up to 40°C
Outer dimension:	132 x 18 x 205 mm
Material:	Aluminum black anodized; glass
Weight:	0.3 kg

G6
Incubator SSM
Art.-No.: **11532822**

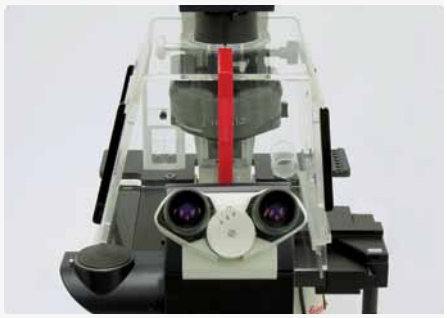
C21
Heating Insert M06
Art.-No.: **11531590**

C22
Heating Insert M12
Art.-No.: **11531823**

C23
Heating Insert M24
Art.-No.: **11531591**

C24
Heating Insert M96
Art.-No.: **11531644**

G7
Incubator L-2
Art.-Nr.: **11532571**



G7
Incubator L-2 Microscope

Higher Volume Incubator

G7 Incubator L-2 **11532571**

The medium size incubator L-2 for warm air incubation and/or CO_2-control mounted on top of the Heating Stage (see A10) has been specially designed for micromanipulation on the inverted microscope with fixed stage in combination with or without an object-guide (see B5).
Warm air incubation is needed to reduce condensation at the cultivation vessel lid, which is significantly colder when it has direct contact to ambient air.
Heating and CO_2-control are both possible with the CTI-Controller (see H2). The transparent acrylic housing is mounted onto the Heating Stage with the object guide attached to the right side. This incubation system can be mounted to and removed from the microscope very quickly. Two big sliding doors on both sides are allowing convenient access to the specimen. The Incubator is compatible to all condensers. The supplied Humidifier Module should be placed on the Heating Stage and enriches the air with humidity to reduce evaporation. Micromanipulation during incubation is possible. An integrated temperature sensor measures the actual air temperature inside the incubator and is used to control the heating device.
Temperature control is carried out with the TempControl 37-2 digital (see F3). One channel of this controller is used for Heating Stage, the second channel is directly connected to the CTI-Controller 3700 (see H2). The system has been designed for an incubation time up to 6 hours. After this, water may evaporate and the ion concentration in the nutrition medium may rise. Placing the vessel filled with distilled water at the front edge of the heating stage will extend the observation time.

• For:	Regular size Heating Stage with or without object guide
• Height over stage:	160 mm
• Openings:	120 x 105 mm right and left
• Control range:	3 °C above ambient up to 40 °C
• Outer dimension:	260 x 185 x 275 mm
• Material:	Acrylic glass, optically clear
• Weight:	2.4 kg

Besides the heated regular stage (see A10) a TempControl 37-2 digital (see F3) in combination with a CTI Controller 3700 is mandatory.

Accessories:
- Flexi-Tube, (Ø 38 mm) 0.6 m
- Flexi-Tube, (Ø 38 mm) 1.2 m
- Acrylic glass rail
- Humidifier module
- Temperature Sensor Connecting Cable

Large Volume Incubator

G8 Incubator BLX **11532829**
Incubator BLX Black **11532830**
Incubator BLX TIRF **11532831**

The large size incubator BLX for warm air incubation and/or CO_2-control covering the entire microscope has been specially designed for the DMI-Series. Warm air incubation is needed to reduce condensation at the cultivation vessel lid, which is significantly colder when it has direct contact to ambient air. Additional local CO_2-control is possible with the CO_2-Controller (see H3) and specific CO_2-Cover (G1-G4).
The transparent acrylic housing is mounted around the microscope. The incubator is easy to install by just one person. No tools are required. 2 large sliding doors above the microscope stage are giving easy access to the specimen and other components. Two smaller sliding doors below the microscope stage permit the easy operation of components like objective turret or filters. Cables and tubes can be routed through the outside by two sliding doors at the backside of the incubator. The lamp support can be swiveled back when the incubator is mounted to the microscope. A temperature sensor to adapt to different setups can be freely positioned inside the incubator.
Temperature control is carried out with the TempControl 37-2 digital (see F3). One channel of this controller is used for Heating Stage, the second channel is directly connected to the Heating Unit (see H1). In case of long-term experiments an increasing amount of water will be extracted and the ion concentration in the nutrition medium may rise. Using FoilCovers (see G1–G4) or in case of CO_2-control by the humidifier which is part of the CO_2-controller (see H3) will reduce this effect.

For:	Leica DMI3000 B, DMI4000 B, and DMI6000 B
Openings:	150 x 150 mm, 90 x 115 mm, 60 x 80 mm
Control range:	3 °C above ambient up to 40 °C
Outer dimension:	620 x 350 x 410/540 mm
Material:	Acrylic glass, optically clear or black
Weight:	9.6 kg

A Heating Unit is mandatory, a TempControl 37-2 digital (see F3) in case of using a heating stage as well.

Accessories:
- Temperature Sensor with cable, 70 cm
- Velcro plates, 6 pieces
- Air duct tube set
- Adhesive cable clips
- Lamp support sealing, left and right
- Slide-in base plate, left and right
- Large sliding door, top left and right
- Flap with hinge, rear left and right

The TIRF incubator is specially designed to match all laser safety issues in combination with standard incubator performance.
Based on the regular large incubator 11532784 the TIRF incubator is featuring interlock doors, which will attenuate the laser power to class I system after opening the doors.

G8
Incubator BLX
Art.-Nr.: **11532829**

G8
Incubator BLX-TIRF/BLX Black
Art.-Nr.: **11532830, 11532831**

Evaporation Reduction

The relative humidity within an incubator depends on the temperature – the higher the temperature, the greater the volume of water that is absorbed. A problem when heating up air inside an incubation system is that it can take up more water. This results in a decrease of relative humidity, which subsequently will cause an increase of evaporation from the media, mainly because most of the lids of multi-well plates have a small gap to let CO_2 pass.
For the experiment this means that as the temperature rises, more and more water is extracted from the nutrients in the cell cultures, which results in an increased ion concentration. Measurements have shown that with cells only 5–10 % water loss in the nutrient medium is tolerated. Less water respectively higher ion concentration will influence cell biological processes and finally leads to cell death.

For the reduction of evaporation 2 different principles or a combination of both can be used: increasing the humidity of the surrounding environment or a reduction of the lost water from the cultivation vessel. Depending on the volume of liquid and the size of the surface, a Humidifying System and/or Foil-Covers should be used when observing culture vessels. Both solutions are recommended for incubation periods of longer than 6 hours.

G9
Humidifier System
Art.-Nr.: **11531592**

G9 Humidifier System for Incubator S-2 and SSM **11531592**

To reduce the evaporation rate the air inside the incubation system must be humidified. This can be achieved by the use of the Humidifier System together with the Incubator S-2 or Incubator SSM and the CTI-Controller or the Heating Unit. The Humidifier System is connected to the backside of the CTI-Controller or the Heating Unit. The air that comes from the incubator flows through the upper Humidifier and is enriched with water, excess water condensates in the lower Condensation Vessel. Then the humidified air is passing the CTIController or the Heating Unit and gets back to the incubator. Water can be added to the Humidifier by a syringe during operation. A water level indicator shows the amount of water inside the Humidifier. To avoid unwanted condensation inside the incubator the air is getting a maximum relative humidity of 60–70 % rH. Therefore for best results the additional use of FoilCovers is recommended, especially if longer incubation times are needed.

FoilCovers

In the case of long-term experiments of more than 12 hours in open cultivation the use of a FoilCover is recommended as protection against evaporation of water. The FoilCover consists of a stretching ring or rectangular frame and a base ring or rectangular frame, both made of stainless steel. Gas permeable CultFoil is fixed between the two rings.

- Optically clear foil (CultFoil 25 µm), only permeable for gases
- Reduction of evaporation from nutrition media, agar and methyl cellulose, thus prevention of rising concentrations of ions in the medium and of damaging cultivated cells
- Sterilizable with foil by autoclaving (121°C) or by dry heating (165–170°C)
- Material: stainless steel, V2A
- Weight: 0.1 kg

Circular FoilCovers are available in different sizes:

G10 FoilCover ring frame Ø 22 mm for POCmini **11521741**
The FoilCover comes with Base Ring and stretching Ring as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylene-propylene). The Foil is not DIC compatible.

G11 CultFoil 25 µm, 20 pieces for POCmini **11521742**
Spare for FoilCover ring frame Ø 22 mm for POCmini

G12 FoilCover ring frame Ø 33 mm for POC-R and POC **11521753**
The FoilCover comes with Base Ring and stretching Ring as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylene-propylene). The Foil is not DIC compatible.

G13 CultFoil 25 µm, 20 pieces for POC-R and POC **11521754**
Spare for FoilCover ring frame Ø 33 mm for POC-R and POC

G14 FoilCover ring frame Ø 35 mm for "35" Petri dishes **11521743**
The FoilCover comes with Base Ring and stretching Ring as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylene-propylene). The Foil is not DIC compatible.

G14a GlassCover frame Ø 35 mm for "35" Petri dishes **11532648**
The GlassCover comes with Base Ring and Glass Insert. The GlassCover is DIC compatible.

G15 CultFoil 25 µm, 20 pieces for "35" Petri dishes **11521744**
Spare for FoilCover ring frame Ø 35 mm for "35" Petri dishes

G16 FoilCover ring frame Ø 56 mm for "60" Petri dishes **11521745**
The FoilCover comes with Base Ring and stretching Ring as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylene-propylene). The Foil is not DIC compatible.

G16a GlassCover frame Ø 56 mm for "60" Petri dishes **11532649**
The GlassCover comes with Base Ring and Glass Insert. The GlassCover is DIC compatible.

G17 CultFoil 25 µm, 20 pieces for "60" Petri dishes **11521746**
Spare for FoilCover ring frame Ø 56 mm for "60" Petri dishes

Rectangular FoilCovers are available in different sizes:

G18 FoilCover rectangular frame 128 x 86 mm for Multiwell Plates (M06, M12, M24, M96) **11521747**
The FoilCover comes with Base rectangular frame and stretching frame as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylenepropylene). The Foil is not DIC compatible.

G19 CultFoil 25 µm, 20 pieces for 128 x 86 mm frame **11521748**
Spare for FoilCover rectangular frame 128 x 86 mm for Multiwell Plates.

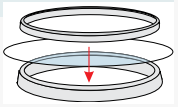
G20 FoilCover rectangular frame 52 x 26.0 mm for Labtek® **11532504**
The FoilCover comes with Base rectangular frame and stretching frame as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylenepropylene). The Foil is not DIC compatible.

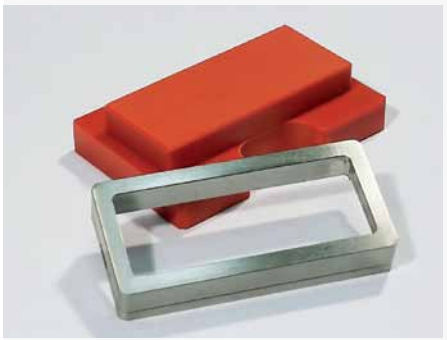
G21 CultFoil 25 µm, 20 pieces for 52 x 26.0 mm frame **11532548**
Spare for FoilCover rectangular frame 52 x 26 mm for Labtek®.

G22 FoilCover rectangular frame 57 x 27.5 mm for Labtek II® **11532542**
The FoilCover comes with Base rectangular frame and stretching frame as well as with a mounting plate and 20 pieces of CultFoil (FEP: fluor-ethylenepropylene). The Foil is not DIC compatible.

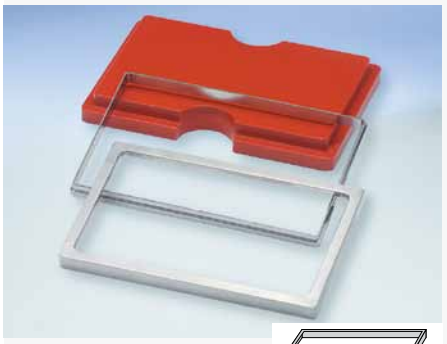
G23 CultFoil 25 µm, 20 pieces for 57 x 27.5 mm frame **11532549**
Spare for FoilCover rectangular frame 57 x 27.5 mm for Labtek II®.

G10-17
FoilCover Ring

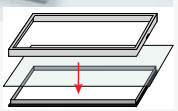




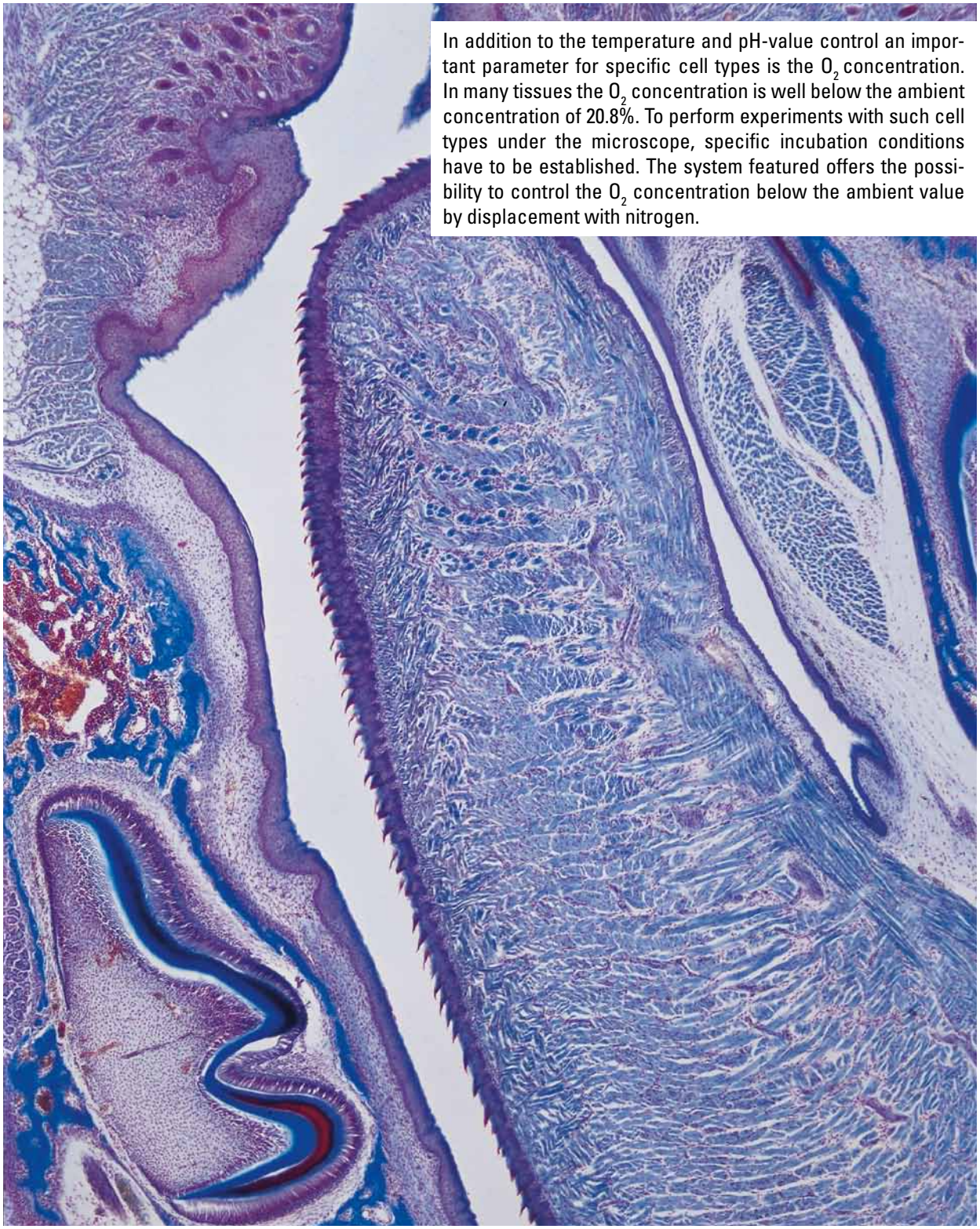
G18
FoilCover rectangular frame 128 x 86 mm
Art.-Nr.: **11521747**



G19-23
FoilCover Rectangular



Controllers for – warm air, – CO_2 and pH-Value, – O_2



In addition to the temperature and pH-value control an important parameter for specific cell types is the O_2 concentration. In many tissues the O_2 concentration is well below the ambient concentration of 20.8%. To perform experiments with such cell types under the microscope, specific incubation conditions have to be established. The system featured offers the possibility to control the O_2 concentration below the ambient value by displacement with nitrogen.

Incubation – Warm Air

H1 Heating Unit 230 Volt **11531833**
Heating Unit 115 Volt **11532306**

This unit is especially designed to heat up the large interior of the Incubator BLX. Two powerful heating elements heat up ambient air, which is transferred into the incubator by a fan. A particle filter with exchangeable filter mats protects the incubator interior from contamination by dust particles.
With the supplied adapters the Heating Unit can also be used to heat up the air inside our other incubators to prevent the occurrence of condensation on the cultivations vessel, when CO_2-control is not needed. In this case the Heating Unit replaces the position of the CTI-Controller (see below). To adjust the Heating Unit to the incubator and environmental requirements the maximum heating intensity can be set to 3 levels and the air speed can be set to 7 levels. Additionally the operation of the fan (on/off) can be controlled by the TempControl 37-2 digital (Heating on/off). The Heating Unit absolutely needs other PID closed loop control parameters than the other heated components, therefore it must be controlled by the TempControl 37-2 digital with the correct PID parameter set.

- For: Incubator BLX
- Outer dimension: 175 x 138 x 200 mm
- Weight: 3.3 kg
- Voltage/Power : 115/230 V, 50..60Hz, 400VA max.

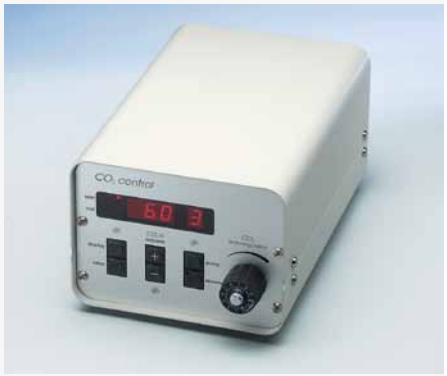
H1
Heating Unit
230 Volt Art.-No.: **11531833**
115 Volt Art.-No.: **11532306**

H2 CTI-Controller 3700 230 Volt **11521588**
CTI-Controller 3700 115 Volt **11521591**

The CTI Controller 3700 digital supplies various incubators as incubator S-2, S-M or L-2 (see G5-G7) with a heated CO_2-air mixture. A CO_2-sensor (I.R. absorption base) permanently monitors the CO_2-concentration in the circulating air stream and displays it at the front of the unit. A digital PID closed loop control compares the CO_2-concentration with the set-point value and controls a magnetic switching valve, which dispenses pure CO_2 into the circulating air.
The CO_2-air mixture is additionally warmed up to the desired temperature by an internal heating element and transferred to the incubator by an adjustable fan. This warmed air stream prevents the occurrence of condensation on the cultivation vessel. For the operation of the CTI-Controller a TempControl device (e.g. TempControl 37-2 digital) is additionally needed to provide the necessary PID closed loop control of the heating. A serial RS232-interface and the supplied software enable the remote control of the unit by a computer.

- For: Incubator S-2, Incubator SSM, Incubator L-2 (warm air and CO_2 control)
- Outer dimension: 270 x 260 x 185 mm
- Control range: 3°C above ambient up to 40°C
- Control tolerance: ± 0.1 °C
- Measurement Range: 0–10 % CO_2
- Control Range: 0–7.5 % CO_2
- Control tolerance: 0.1 %
- Weight: 8.0 kg
- Voltage/Power: 115/230 V, 50..60Hz, 80VA max.
- Heating: Transistor lost heat

H2
CTI-Controller 3700
230 Volt Art.-No.: **11521588**
115 Volt Art.-No.: **11521591**



H3
CO2-Controller
230 Volt Art.-No.: **11521733**
115 Volt Art.-No.: **11532305**

Humidifier

Incubation – CO_2 plus warm Air

H3 CO_2-Controller 230 Volt **11521733**
CO_2-Controller 115 Volt **11532305**

This unit generates a CO_2-air mixture with an adjustable CO_2-concentration and therefore replaces expensive premixed CO_2 gases in cylinders. Pure CO_2 from an external source (e.g. gas cylinder) is fed into an internal mixing chamber, where two fans are providing an optimal CO_2 dispersion. The CO_2-concentration in the chamber is permanently monitored by an I.R. absorption based CO_2-sensor and is displayed at the front of the unit.
A digital PID closed loop control checks the CO_2-concentration and regulates the amount of CO_2 that is fed into the mixing chamber. The CO_2-air mixture is taken from the chamber by an adjustable double membrane pump and is pumped through CO_2-proof tubes to one of the small incubation tools (see G1-G4). To enrich the CO_2-air mixture with humidity a Humidifier is supplied. A serial RS232-interface and the supplied software enable the remote control of the unit by a computer.

Accessories:

- Humidifier
- Air Filter
- Adaptors for CO_2 connection, 2 pieces
- PU-tube, blue (Ø 3.0 mm) 4.0 m
- HT-tube, clear (Ø 3.2 mm) 2.0 m
- PU-tube, blue (Ø 3.2 mm) 1.0 m
- RS232 interface cable
- Software IRC - Incubation Remote Control
- I.R.-lamp module replacement (1 spare part)
- Connecting cable (CTI-Controller 3700-TempControl)

For:	Incubator BLX (air and CO_2 mixture)
Outer dimension:	175 x 135 x 270 mm
Measurement Range:	0–10 % CO_2
Control Range:	0–7.5 % CO_2
Control tolerance:	0.1 %
Pump capacity:	0–150 l/h adjustable
Weight:	5.0 kg
Voltage/Power:	115/230 V, 50..60Hz, 30VA max.

A problem when heating up air inside an incubation system is that it can take up more water. This results in a decrease of relative humidity, which subsequently will cause an increase of evaporation from the media, mainly because most of the lids of multi-well plates have a small gap to let CO_2 pass. Less water in the media means a higher ion concentration, which will influence cell biological processes and finally leads to cell death.
To reduce the evaporation rate the air inside the incubation system must be humidified. To humidify the air under the CO_2-Covers or inside the Incubation System O_2–CO_2–°C the humidifier is used. This humidifier has a volume of 250 ml and is supplied with the CO_2-Controller. It should be placed inside the Incubator BLX for best performance and enriches the air- CO_2 mixture going to the CO_2-Cover with water.

For:	Incubator BLX
Outer dimension:	70 x 170 mm
Material:	Glass, transparent
Volume:	250 ml
Weight:	0.3 kg

Incubation – O_2

H4 O_2-Controller 230 Volt **11521750**
O_2-Controller 115 Volt **11532307**

Using this incubation system the O_2 content can be reduced and kept at a constant level during Live Cell imaging through displacement with Nitrogen and the use of specially sealed components. Within the system the O_2-concentration is monitored by a zirconium oxide sensor, an analogue PID closed loop control adds nitrogen via a piezo-controlled valve into the circulating air stream. This continuous nitrogen flow gives a very homogeneous oxygen distribution with lowest control tolerances. Specially sealed components are minimizing the nitrogen consumption of the incubation system. Nevertheless we recommend to set up the system in a well ventilated environment. The nitrogen fed into the incubation system is humidified by a supplied Humidifier to increase the relative humidity inside the system. However, because of the strong drying effect of nitrogen we absolutely recommend the use of FoilCovers. Because of the high demands on this incubation system it is only available as a complete package. The system consists of the following specially selected components:

- O_2 Controller
- Heating Insert P
- Incubator S-2 Oxygen Complete package
- CTI Controller 3700 digital
- TempControl 37-2

Every Incubation System O_2–CO_2–°C is individually tested in our labs for compatibility and efficiency.

Accessories:

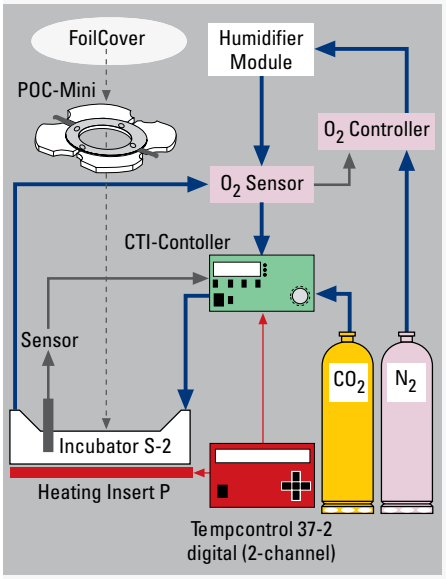
- Humidifier
- O_2-Sensorbox
- Air Filter
- Adaptors for N_2 connection, 2 pieces
- PU-tubes
- Sealing set Incubation System O_2-CO_2-°C

For:	Incubator S-2 Oxygen
Outer dimension:	175 x 135 x 270 mm
Measurement Range:	0–21 % O_2
O_2-sensor:	Zirconium Oxide sensor
Control Range:	0–10 % O_2
Control tolerance:	0.1 %
Weight:	5.0 kg
Voltage/Power:	115/230 V, 50..60Hz, 70VA max.

A problem when heating up air inside an incubation system is that it can take up more water. This results in a decrease of relative humidity, which subsequently will cause an increase of evaporation from the media, mainly because most of the lids of multiwell plates have a small gap to let CO_2 pass. Less water in the media means a higher ion concentration, which will influence cell biological processes and finally leads to cell death. To reduce the evaporation rate the air inside the incubation system must be humidified. To humidify the air under the CO_2-Covers or inside the Incubation System O_2–CO_2–°C the humidifier is used. This humidifier has a volume of 500 ml and is supplied with the Incubation System O_2–CO_2–°C. Nitrogen coming from the O_2-Controller flows through the humidifier and is enriched there with water before it enters the system at the O_2-Sensorbox.

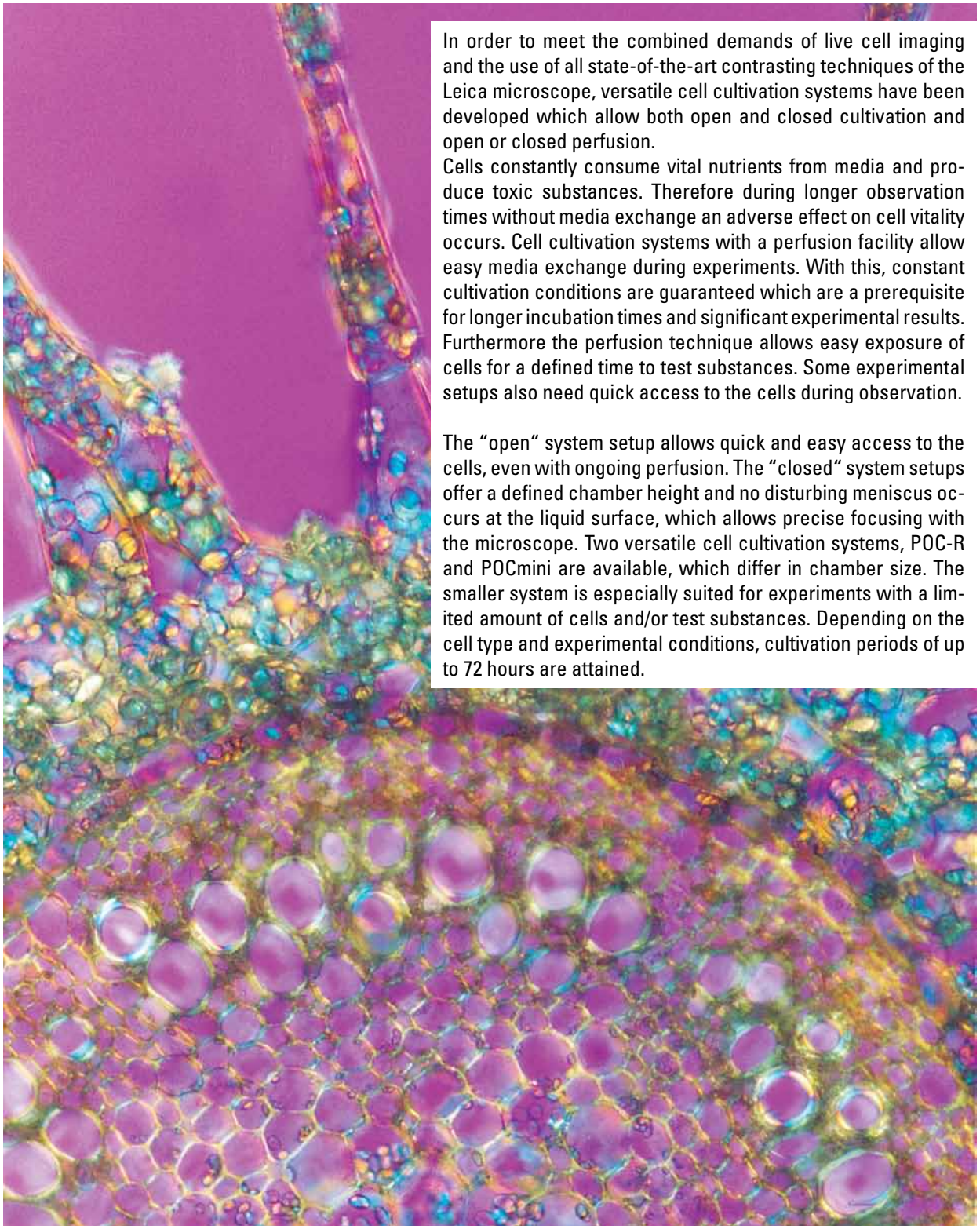
For:	Incubator BLX
Outer dimension:	85 x 210 mm
Material:	Glass, transparent
Volume:	500 ml
Weight:	0.4 kg

H4
O_2-Controller
230 Volt Art.-No.: **11521750**
115 Volt Art.-No.: **11532307**



Humidifier

Cell cultivation Systems – POCmini, – POC-R



In order to meet the combined demands of live cell imaging and the use of all state-of-the-art contrasting techniques of the Leica microscope, versatile cell cultivation systems have been developed which allow both open and closed cultivation and open or closed perfusion.
Cells constantly consume vital nutrients from media and produce toxic substances. Therefore during longer observation times without media exchange an adverse effect on cell vitality occurs. Cell cultivation systems with a perfusion facility allow easy media exchange during experiments. With this, constant cultivation conditions are guaranteed which are a prerequisite for longer incubation times and significant experimental results. Furthermore the perfusion technique allows easy exposure of cells for a defined time to test substances. Some experimental setups also need quick access to the cells during observation.

The "open" system setup allows quick and easy access to the cells, even with ongoing perfusion. The "closed" system setups offer a defined chamber height and no disturbing meniscus occurs at the liquid surface, which allows precise focusing with the microscope. Two versatile cell cultivation systems, POC-R and POCmini are available, which differ in chamber size. The smaller system is especially suited for experiments with a limited amount of cells and/or test substances. Depending on the cell type and experimental conditions, cultivation periods of up to 72 hours are attained.

Perfusion Open and Closed Systems

I1 POCmini Cell Cultivation System 11521739
I2 Open Perfusion Insert for POCmini 11521740

The POCmini chamber system is used for all microscope techniques, as the cells are cultivated on 0.17 mm coverslips. The inserts for open or closed cultivation or for perfusion are fixed onto a base plate. This system has been designed for short- and long-term cultivation especially for experiments with low quantities of cells or test substances. Open and closed cultivation as well as perfusion are possible. The open POCmini chamber system allows e.g. rapid entrance to the cells and easy medium exchange. If used in the "open"-mode the chamber can be protected against evaporation of water by a special FoilCover (see G10-G11).
For cell observation the POCmini chamber is inserted into a Heating Insert P, a Temperable Insert P, a Heatable Universal Mounting Frame (H-UMF), or positioned onto a Heating or Temperable Stage. By autoclaving (121°C) or dry heating (165-170°C) the whole POCmini system can be sterilized.

- For: Insert P, H-UMF or stages
- Outer dimension: Ø 58 m (5,5 mm in height)
- Cultivation area: Cover Slip = 0.17 mm
- Observation Area: Ø 17 – 22 mm
- Volume: closed = 0.4 ml–0.8 ml; open = up to 1.2 ml
- Material: glass, silicone and Teflon® (all non toxic)
  Aluminum black anodized base plate with
  high thermal conductivity
- Weight: 0.1 kg

I1/I2
POCmini
Art.-Nr.: **11521739**
Art.-Nr.: **11521740**

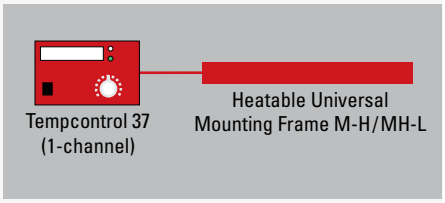
I3 POC-R2 Cell Cultivation System 11532647
I4 Open Perfusion Insert for POC-R2 and POC-R 11521752

This system has been designed for short- and long-term cultivation with a larger volume for cultivation media and easier access to the cells, which are cultivated on 0.17 mm coverslips. Open and closed cultivation as well as perfusion are possible. The open POC-R chamber system allows rapid entrance to the cells and medium exchange, sub-cultivation, measurement of test substances, as well as Ca2+ - measurements, or micromanipulation and histochemical investigations. If used in the "open"-mode the chamber can be protected against evaporation of water by a special FoilCover (see G12–G13).
For cell observation the POC-R chamber is inserted into a Heating Insert P, a Temperable Insert P, the Heatable Universal Mounting Frame (H-UMF), or positioned onto a Heating or Temperable Stage. By autoclaving (121°C) or dry heating (165–170°C) the whole POC-R system can be sterilized.

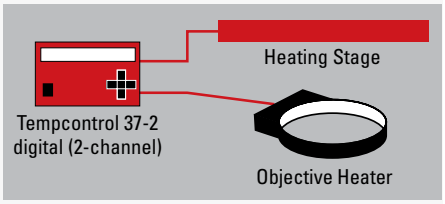
- For: Inserts P, H-UMF or stages
- Outer dimension: Ø 58 m (6,5 mm in height)
- Cultivation area: Cover Slip = 0.17 mm
- Observation Area: Ø 29 – 32 mm
- Volume: closed = 0.9 ml–1.3 ml; open = up to 3.0 ml
- Material: glass, silicone and Teflon® (all non toxic)
  Aluminum black anodized base plate with
  high thermal conductivity
- Weight: 0.1 kg

I3/I4
POC-R
Art.-Nr.: **11532647**
Art.-Nr.: **11521752**

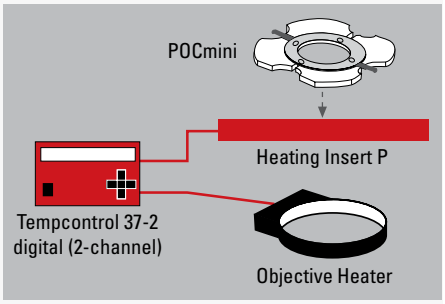
Application Examples



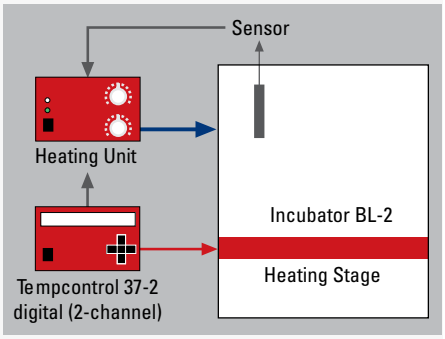
Product		
Fixed microscope stage	11 522 078	A1
Object guide	11 522 014	B5
Heatable Universal Mounting Frame		
M-H	11 531 799	B18
MH-L	11 531 817	B19
MH-R	11 532 439	B20
Tempcontrol 37, 230 V	11 521 721	F1
Tempcontrol 37-2, 115 V	11 532 309	F1



Product		
Heating Stage	11 522 012	A10
Object guide	11 522 014	B5
Objective Heater ø 29 mm	11 531 825	E1
Objective Heater ø 30.5 mm	11 521 738	E2
Tempcontrol 37-2 digital 230 V	11 521 719	F2
Tempcontrol 37-2 digital 115 V	11 532 308	F2



Product		
Scanning stage	11 522 023	A8
Heating Insert P	11 531 172	C19
Objective Heater ø 29 mm	11 531 825	E1
Objective Heater ø 30.5 mm	11 521 738	E2
Tempcontrol 37-2 digital 230 V	11 521 719	F2
Tempcontrol 37-2 digital 115 V	11 532 308	F2



Product		
Incubator BLX	11 532 829	G8
Heating Stage	11 522 012	A10
Heating Unit 230 V	11 531 833	H1
Heating Unit 115 V	11 532 306	H1
Tempcontrol 37-2 digital 230 V	11 521 719	F2
Tempcontrol 37-2 digital 115 V	11 532 308	F2

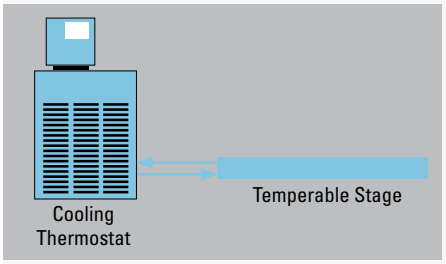
Heatable Universal Mounting Frame M-H/MH-L, Tempcontrol 37
In combination with the object guide both Heatable Universal Mounting Frames are adapted to a fixed stage. The temperature is regulated using Tempcontrol 37. In case a further channel e.g. for an Objective Heater or a pre-heating plate is required, Tempcontrol 37-2 digital should be integrated.

Heating Stage with Objective Heater, Tempcontrol 37-2 digital
This solution for electrophysiological experiments combines the Heating Stage and an Objective Heater. The fixed Heating Stage is mounted onto the microscope.
In combination with the object guide, inserts are adapted to the Heating Stage. To overcome possible problems with temperature gradients in the observation area, an Objective Heater is used.
The temperature of both Heating Stage and Objective Heater is regulated using Tempcontrol 37-2 digital.

Heating Insert P, Tempcontrol 37-2 digital, Perfusion
This long-term stability solution combines the scanning stage with a Heating Insert P and an Objective Heater. Additionally the possibility for perfusion using the POCmini Cell Cultivation System is integrated. The motorized stage, which has been designed for applications where high stage accuracy and repeatability are required in combination with smooth and quiet running, can be adapted to the microscopes.
The temperature of both Heating Insert P and Objective Heater is regulated using Tempcontrol 37-2 digital.
The indicated configuration is easily upgradable with a Pre-Heating Plate with 3 inserts and the perfusion equipment. (chapter D and chapter J)

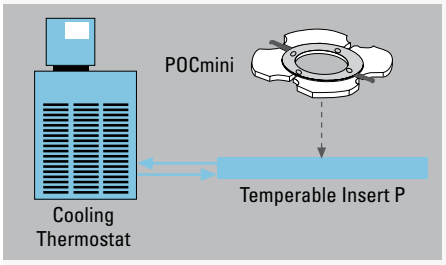
Incubator BLX, Heating Stage, Tempcontrol 37-2 digital
The use of this flexible solution is especially recommended for long-term experiments, time-lapse imaging or micromanipulation. With the Incubator BLX the temperature of the entire volume within the housing including even the objective nosepiece is precisely controlled. This combination of a Leica DMI-Microscope with the new Incubator BLX is used for micromanipulation when absolutely stable temperature conditions are required. The object guide can be easily fixed onto the heating stage of the microscope in order to adapt different inserts.
A sensor installed on the stage near the specimen measures the temperature for the Heating Unit. The temperature of both Heating Stage and Incubator BLX is regulated using Tempcontrol 37-2 digital.

Temperable Stage, Cooling Thermostat
Especially for blastomere biopsy the presented solution of a Temperable Stage and an object guide in combination with a Leica microscope is used. As the Temperable Stage is usually used for cooling, temperature control is carried out via an external circulator.



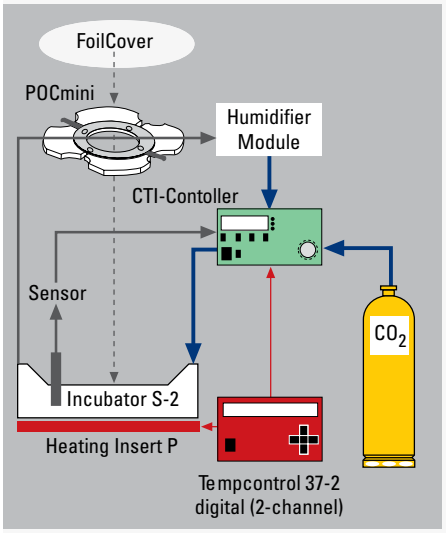
Product		
Temperable Stage	11 522 013	A12
Object guide	11 522 014	B5
Cooling Thermostat 230 V	11 531 834	F3
Cooling Thermostat 115 V	11 531 835	F3

Temperable Insert P, Cooling Thermostat, Perfusion
In combination with a scanning stage the Temperable Insert P which is suitable for petri dishes with a diameter of 35 mm up to 58 mm is integrated in this solution. Especially for blastomere biopsy the presented solution is used with a Leica microscope. As the Temperable Insert P usually is used for cooling, the temperature control is carried out via an external circulator. Temperature control and control of the pH value



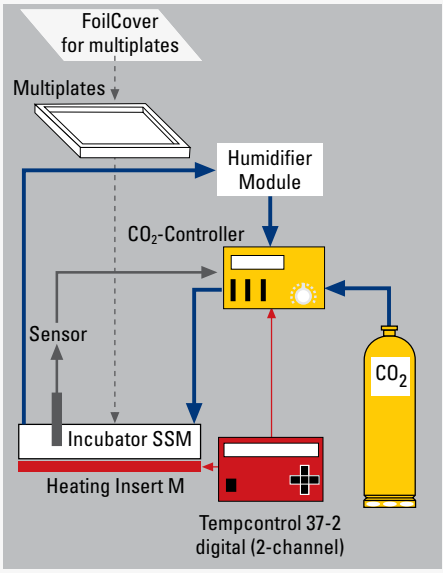
Product		
Stage	see table page 53	
Temperable Insert P	11 531 824	C25
Cooling Thermostat 230 V	11 531 834	F3
Cooling Thermostat 115 V	11 531 835	F3
POCmini Cell Cultivation System (for Temperable Insert P)	11 521 739	J1
Open Perfusion Insert POCmini	11 521 740	J2

Incubator S, Heating Insert P, Tempcontrol 37-2 digital
The solution for long-term experiments of up to 72 hours combines a Leica microscope with an adapted scanning IM 120 x 100 stage, a Heating Insert P and an Incubator S. There is also the possibility of perfusion using the POC-R Cell Cultivation System. The Heating Insert P is suitable for petri dishes with a diameter of 35 mm up to 58 mm and is the optimum choice for live cell imaging at high microscope magnifications.
The cover of the Incubator S-2 with an integrated central glass plate permits observation in DIC mode. Due to its low height in the observation area, it is possible to use the S23 condenser as well as the S70 condenser of the microscopes.
The temperature control is carried out with Tempcontrol 37-2 digital. One channel of this controller is used for the Heating Insert P, the second channel is directly connected to the CTI-Controller 3700 on which the settings for the Incubator S-2 are made.



Product		
Stage	see table page 53	
Heating Insert P	11 531 172	C19
Incubator S-2	11 600 206	G5
TempControl 37-2, digital 230V	11 521 719	F2
TempControl 37-2 digital 115 V	11 532 308	F2
CTI-Controller 3700, 230 V	11 521 588	H2
CTI-Controller 3700, 115 V	11 521 591	H2
Humidifier Module	11 531 592	G9
POCmini Cell Cultivation System	11 521 739	I1
Open Perfusion Insert for POCmini	11 521 740	I2

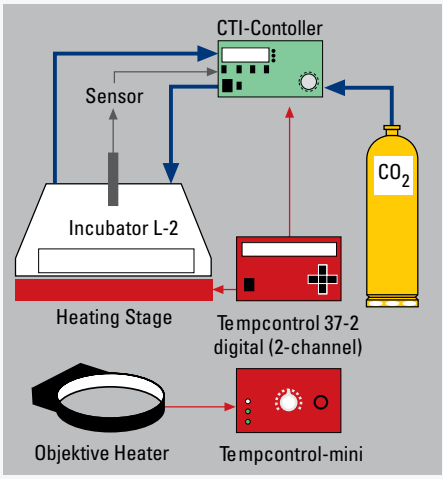
Application Examples



Product		
Stage	see table page 53	
Heating Insert M06	11 531 590	C21
Heating Insert M12	11 531 823	C22
Heating Insert M24	11 531 591	C23
Heating Insert M96	11 531 644	C24
Incubator SSM	11 532 822	G6
TempControl 37-2, digital 230V	11 521 719	F2
TempControl 37-2, digital 115 V	11 532 308	F2

Temperature Control and control of the pH-value
Incubator SSM, Heating Insert Mxx, Tempcontrol 37-2 digital an CO_2 controller

The solution for long-term experiments combines a Leica microscope with an adapted scanning stage, a Heating Insert Mxx and an Incubator. The Heating Inserts M06, M12, M24 and M96, which are fully compatible with Falcon® multiwells, are the optimum choice for simultaneous monitoring and imaging of multiple, time-dependent events or for capturing time-lapse sequences.
The temperature control is carried out with Tempcontrol 37-2 digital. One channel of this controller is used for the Heating Insert M, the second channel is connected to the Incubator SSM. Adjustments of the CO_2 content are made for long-term experiments with the use of the supplied humidifier module. The humidifier receives the adjusted airstream passing it to the Incubator SSM.
Options: An interesting addition is a Pre-Heating Plate with 3 inserts and/or an Objective Heater in combination with Tempcontrol 37 or Tempcontrol-mini.



Product		
Stage	see table page 53	
Incubator L-2	11 532 571	G7
TempControl 37-2 digital 230 V	11 521 719	F2
TempControl 37-2 digital 115 V	11 532 308	F2
CTI-Controller 3700, 230 V	11 521 588	H2
CTI-Controller 3700, 115 V	11 521 591	H2
Objective Heater 29.0 mm	11 531 825	E1
Objective Heater 30.5 mm	11 521 738	E2

Temperature Control and control of the pH-value
Incubator L-2, Heating Stage, Tempcontrol 37-2 digital

The Incubator L-2 which is used in combination with the Heating Stage has been specially designed for micromanipulations onto the inverted microscopes. Due to the design of the Incubator L-2, micromanipulators have access to the specimen on the microscope stage from both sides.
An air humidification vessel is supplied with the Incubator to keep the air moist for longer periods (> 6h) of observation.
The object guide can be easily fixed onto the Heating Stage in order to adapt different inserts.
The temperature is measured via a sensor which is installed onto the stage near the specimen and the signal is forwarded to the Tempcontrol 37-2 digital. One channel of this controller is used for the Heating Stage, the second channel is directly connected to the CTI-Controller 3700 on which the settings for the Incubator L-2 and the CO_2 control are made. Using two pipes the air stream is transmitted from the Incubator L-2 through the CTI-Controller 3700 on which the CO_2 adjustments are carried out.
Options: Objective Heater and Pre-Heating Plate with 3 inserts in combination with Tempcontrol 37-2 digital or Tempcontrol-mini.

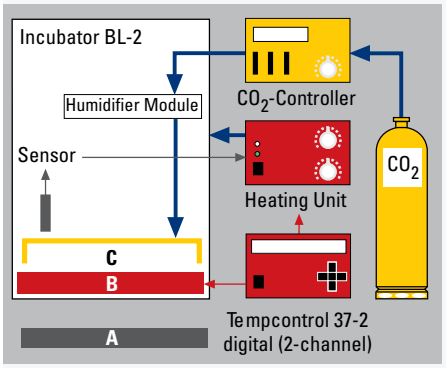
Incubator BLX, Heatable device, Tempcontrol 37-2 digital

The combination of a Leica microscope with the new Incubator BLX is used for micromanipulation when the most stable temperature conditions are required. Onto the stage (A) of the inverted microscope a heatable device (B) is fixed, which can be closed by a special CO_2-Cover (C) for local CO_2-incubation – for the different stages, devices and CO_2-Covers please refer to the table below.

The temperature is measured via a sensor which is installed onto the stage near the specimen and the signal is forwarded to the Tempcontrol 37-2 digital. This control unit adjusts the Heating Insert and the Heating Unit for the Incubator BLX. Using a pipe the CO_2 cover is connected to the CO_2-Controller. Adjustments of the CO_2 content are made for long-term experiments with the use of the supplied humidifier module. The humidifier receives the adjusted airstream passing it to the closed CO_2 cover system.

	A	B	C
01	Fixed Stage + Object-Guide	Heatable Frame MH	CO2-Cover MH
02	Fixed Stage + Object-Guide	Heatable Frame MH-L	CO2-Cover MH
03	Fixed Stage + Object-Guide	Heatable Frame MH-R	CO2-Cover MH
04	Regular 3-Plate-Stage	Heatable Frame KH	CO2-Cover KH
05	Regular 3-Plate-Stage	Heatable Frame KH-L	CO2-Cover KH
06	Regular 3-Plate-Stage	Heatable Frame KH-R	CO2-Cover KH
07	Regular 3-Plate-Stage	Heatable Frame KH	CO2-Cover K-MicroMan
08	Regular 3-Plate-Stage	Heatable Frame KH-L	CO2-Cover K-MicroMan
09	Regular 3-Plate-Stage	Heatable Frame KH-R	CO2-Cover K-MicroMan
10	Regular 3-Plate-Stage	Heatable Insert M06-M96	CO2-Cover HM
11	Regular 3-Plate-Stage	Heatable Insert P	CO2-Cover HP
12	Regular 3-Plate-Stage	Heatable Insert P Labtek	CO2-Cover HP
13	Scanning Stage	Heatable Frame KH	CO2-Cover KH
14	Scanning Stage	Heatable Frame KH-L	CO2-Cover KH
15	Scanning Stage	Heatable Frame KH-R	CO2-Cover KH
16	Scanning Stage	Heatable Frame KH	CO2-Cover K-MicroMan
17	Scanning Stage	Heatable Frame KH-L	CO2-Cover K-MicroMan
18	Scanning Stage	Heatable Frame KH-R	CO2-Cover K-MicroMan
19	Scanning Stage	Heatable Insert M06-M96	CO2-Cover HM
20	Scanning Stage	Heatable Insert P	CO2-Cover HP
21	Scanning Stage	Heatable Insert P Labtek	CO2-Cover HP

	A	B	C
01	A1 + B5	B18	G4
02	A1 + B5	B19	G4
03	A1 + B5	B20	G4
04	A4 or A6	C13	G3
05	A4 or A6	C14	G3
06	A4 or A6	C15	G3
07	A4 or A6	C13	G3a
08	A4 or A6	C14	G3a
09	A4 or A6	C15	G3a
10	A4 or A6	C21, C22, C23, C24	G1
11	A4 or A6	C19	G2
12	A4 or A6	C20	G2
13	A8	C13	G3
14	A8	C14	G3
15	A8	C15	G3
16	A8	C13	G3a
17	A8	C14	G3a
18	A8	C15	G3a
19	A8	C21, C22, C23, C24	G1
20	A8	C19	G2
21	A8	C20	G2



Product

Stage	see table left	
Heatable device	see table left	
CO_2 Cover	see table left	
Incubator BLX	11 532 829	G8
Heating Unit 230 V	11 531 833	H1
Heating Unit 115 V	11 532 306	H1
Tempcontrol 37-2, digital 230 V	11 521 719	F2
Tempcontrol 37-2, digital 115 V	11 532 308	F2
CO_2-Controller	11 521 733	H3
CO_2-Controller	11 532 305	H3

Notes

Notes

“With the user, for the user”
Leica Microsystems

Leica Microsystems operates globally in four divisions, where we rank with the market leaders.

• Life Science Division

The Leica Microsystems Life Science Division supports the imaging needs of the scientific community with advanced innovation and technical expertise for the visualization, measurement, and analysis of microstructures. Our strong focus on understanding scientific applications puts Leica Microsystems’ customers at the leading edge of science.

• Industry Division

The Leica Microsystems Industry Division’s focus is to support customers’ pursuit of the highest quality end result. Leica Microsystems provide the best and most innovative imaging systems to see, measure, and analyze the microstructures in routine and research industrial applications, materials science, quality control, forensic science investigation, and educational applications.

• Biosystems Division

The Leica Microsystems Biosystems Division brings histopathology labs and researchers the highest-quality, most comprehensive product range. From patient to pathologist, the range includes the ideal product for each histology step and high-productivity workflow solutions for the entire lab. With complete histology systems featuring innovative automation and Novocastra™ reagents, Leica Microsystems creates better patient care through rapid turnaround, diagnostic confidence, and close customer collaboration.

• Medical Division

The Leica Microsystems Medical Division’s focus is to partner with and support surgeons and their care of patients with the highest-quality, most innovative surgical microscope technology today and into the future.

The statement by Ernst Leitz in 1907, “with the user, for the user,” describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: **Living up to Life**.

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