



Gravity Convection Incubators

Fisherbrand Basic 60L Gravity Incubator
Fisherbrand Basic 100L Gravity Incubator
Fisherbrand Basic 180L Gravity Incubator
Fisherbrand 75L Incubator 230 V
Fisherbrand 117L Incubator 230 V
Fisherbrand 194L Incubator 230 V

50152755

Revision C

February 2018

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Safety Notes

Basic Operating Precautions

These operating instructions describe Fisherbrand incubators.

Fisherbrand incubators have been manufactured to the latest state of the art and have been tested thoroughly for flawless functioning prior to shipping. However, the incubator may present potential hazards, particularly if it is operated by inadequately trained personnel or if it is not used in accordance with the intended purpose. Therefore, the following must be observed for the sake of accident prevention:

- Never step into the unit.
- Fisherbrand incubators must be operated by adequately trained and authorized professional personnel.
- Fisherbrand incubators must not be operated unless these operating instructions have been fully read and understood.
- The present operating instructions, applicable safety data sheets, plant hygiene guidelines and the corresponding technical rules issued by the operator shall be used to create written procedures targeted at personnel working with the subject matter device, detailing:
 - the decontamination measures to be employed for the incubator and the accessories used with it,
 - the safety precautions to be taken when processing specific agents,
 - the measures to be taken in case of accidents.
- Repair work on the incubator must be carried out only by trained and authorized expert personnel.
- The contents of these operating instructions are subject to change at any time without further notice.
- Keep these operating instructions close to the incubator so that safety instructions and important information are always accessible.
- Keep the door open-times during operation always as short as possible. The longer the door is open, the higher can be a possible overshooting of the temperature. After a door opening allow the incubator to the set-point temperature, before opening again.
- Should you encounter problems that are not detailed adequately in these operating instructions, please contact Fisher Scientific International, LLC immediately for your own safety.

Operational Safety Rules

The following rules must be heeded when working with Fisherbrand incubators:

- Observe the sample weight limits specified for your Fisherbrand incubator as a whole and its shelving in particular; see “Technical Data” on page 47.
- Do not load the bottom of the interior workspace to avoid the risk of overheating any samples placed there and to prevent the temperature sensor from being damaged.
- Arrange the samples evenly throughout the work space, making sure not to place them too closely to the interior walls to ensure a uniform temperature distribution.
- Do not load your Fisherbrand incubator with substances that exceed the capabilities of the available lab apparatus and Personal Protection Equipment to provide sufficient degrees of protection to users and third parties.
- Check the door seal every six months for proper sealing performance and possible damage.
- Do not process any samples containing hazardous chemical substances that may be released into the ambient air through defective seals or may cause corrosion or other defects on parts of the Fisherbrand incubator.

Warranty

Fisher Scientific International, LLC warrants the operational safety and functions of the Fisherbrand incubators only under the condition that:

- the incubator is operated and serviced exclusively in accordance with its intended purpose and as described in these operating instructions,
- the incubator is not modified,
- only original spare parts and accessories that have been approved by Fisher Scientific care used (third-party spares without Fisher Scientific International, LLC approval void the limited warranty),
- inspections and maintenance are performed at the specified intervals,
- an operation verification test is performed after each repair activity.

The warranty is valid from the date of delivery of the incubator to the customer.

Explanation of Safety Information and Symbols

Safety Notes and Symbols Used Throughout These Operating Instructions



Indicates a hazardous situation which, if not avoided, will result in death or serious injuries.



Indicates a hazardous situation which, if not avoided, could result in death or serious injuries.



Indicates a situation which, if not avoided, could result in damage to equipment or property.

NOTE

Is used for useful hints and information regarding the application.

Additional Symbols for Safety Information



Wear safety gloves!



Wear safety goggles!



Harmful liquids!



Electric shock!



Hot surfaces!



Fire hazard!



Explosion hazard!



Suffocation hazard!



Danger of tipping!

Symbols on the Incubator



Observe operating instructions



Mark of conformity USA/Canada

Intended Purpose of the Incubator

Correct Use

Fisherbrand incubators are laboratory devices for preparing and cultivating cell and tissue cultures. The devices employ precision temperature control for simulating the specific physiological ambient conditions for these cultures.

Fisherbrand incubators are for professional use only.

Incorrect Use

To avoid the risk of explosion do not load the incubator with tissue, material, or liquids that:

- are easily flammable or explosive,
- release vapor or dust that forms combustible or explosive mixtures when exposed to air,
- release poisons,
- do not pour any liquids on the bottom of the interior surface or into a collecting basin inside the unit.
- release dust
- exhibit exothermic reactions
- are pyrotechnical substances
- refrain also from pouring any liquids onto the internal base plate or inserting bowls filled with liquids into the sample compartment.

Standards and Directives

The incubator complies with the following standards and guidelines:

- IEC/CAN/CSA-C22.2/UL 61010 - 1
- IEC/CAN/CSA-C22.2 61010 - 2 - 010
- China EEP Hazardous Substances Information
<http://www.thermofisher.com/us/en/home/technical-resources/rohs-certificates.html>.

Additionally, the incubator is in compliance with many other international standards, regulations and directives not listed here. Should you have any questions regarding compliance with national standards, regulations and directives applicable for your country, please contact your Fisherbrand sales organization.

Delivery of the Incubator

Packaging

Fisherbrand incubators are delivered in a rugged packaging box. All packaging materials can be separated and are reusable:

Packaging materials


Packaging carton:	Recycled paper
Foam elements:	Styrofoam (CFC-free)
Pallet:	Chemically untreated wood
Packaging film:	Polyethylene
Packaging ribbons:	Polypropylene

Acceptance Inspection

After the incubator has been delivered, check the delivery immediately for:

- completeness,
- possible damage.

If components are missing or damage is found on the incubator or the packaging, in particular damage caused by humidity and/or water, please notify the carrier as well as Fisherbrand Technical Support immediately.

	 WARNING	Risk of injury
<p>Should sharp edges have formed in damaged areas or elsewhere on the device, take all necessary precautions to protect personnel handling the incubator. For example, have them wear protective gloves and other personal protection equipment.</p>		

Scope of Supply

Incubators

Quantity of components supplied (pieces)	Gravity Convection Incubators
Perforated shelves	2
Support rail for shelf table-top incubators	4
Shelf support	4
Power cord	1
Clip springs for table-top incubators	4
Plug	1
Anti-tilt anchor	1
Operating manual	1
Summarized Safety Instructions	1

Installation



Ambient Conditions

Location Requirements

The incubator must only be operated in a location that meets all of the ambient condition requirements listed below:

- Installation location indoors in dry areas free from drafts.
- The dust burden may not exceed the contamination category 2 based on IEC61010-1. Using the incubator in an atmosphere with electrically conductive dust is prohibited.
- The minimal distance to adjacent surfaces must be observed on all sides (see Section “Incubator Dimensions and Clearances” on page 11)
- The operating room must be equipped with appropriate ventilation.
- Solid, level, fire-proof surface; no flammable materials opposite to the rear panel of the incubator.
- Vibration-proof substructure (floor stand, lab table) capable of bearing the dead weight of the incubator and its accessories (particularly if two devices are stacked).
- The electrical circuitry of the incubator has been designed for an operating height of up to 2000 m above sea level.
- Relative humidity up to 80% (maximum; preferably 60-70%), non condensing.
- Should condensation exist, wait until the moisture has evaporated completely before connecting the incubator to a power source and powering up.
- The ambient temperature must be within a range of +18 °C to +32 °C (64.4 °F to 89.6 °F).
- Avoid direct exposure to sunlight.
- Devices that produce excessive amounts of heat must not be placed near the incubator.
- Place the incubator on a floor stand (option; to be ordered separately), never on the lab floor. This prevents the penetration of dust or dirt into the device.
- Power line voltage variations must not exceed ± 10 % of the nominal voltage.
- Transient surges must lie within the range of levels that normally occur in the power supply system. The impulse withstand voltage based on surge category II of IEC 60364-4-443 shall be applied at the nominal voltage level.

- Consider installing one dedicated upstream circuit breaker per incubator to avoid multiple device failures in case of an electrical fault.

	<div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 5px;">WARNING</div> <div style="margin-left: 20px;">Contamination hazard</div> </div> <p>Do not place the incubator directly on the lab floor, but mount it on the floor stand or on a lab work surface (option; to be ordered separately). Contaminants, such as bacteria, viruses, fungi, prions, and other biological substances may use the open door to migrate easily from the floor into the incubator's work space.</p>
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Intermediate Storage

When the incubator is placed in intermediate storage, make sure that the ambient temperature is between 20 °C to 60 °C (68 °F to 140 °F) and the maximum relative humidity does not exceed 90%, non-condensing.

Room Ventilation

Heat dissipating from the incubator during continuous operation may cause a change in the room climate.

- Therefore, the incubator must only be installed in rooms with sufficient ventilation.
- Do not install the incubator in room recesses without ventilation.
- When several devices are to be placed in the same room, additional ventilation may have to be provided as necessary.
- To avoid any impact of the heat dissipated by the incubator on the ambient climate the room must be vented by means of a laboratory-grade ventilation system that complies with applicable local and national health and safety regulations and has sufficient capacity.
- If excessive temperatures tend to occur in the operating room, be sure to provide a thermal protection means that cuts out the power supply to mitigate the impact of over-temperature scenarios.

Incubator Dimensions and Clearances

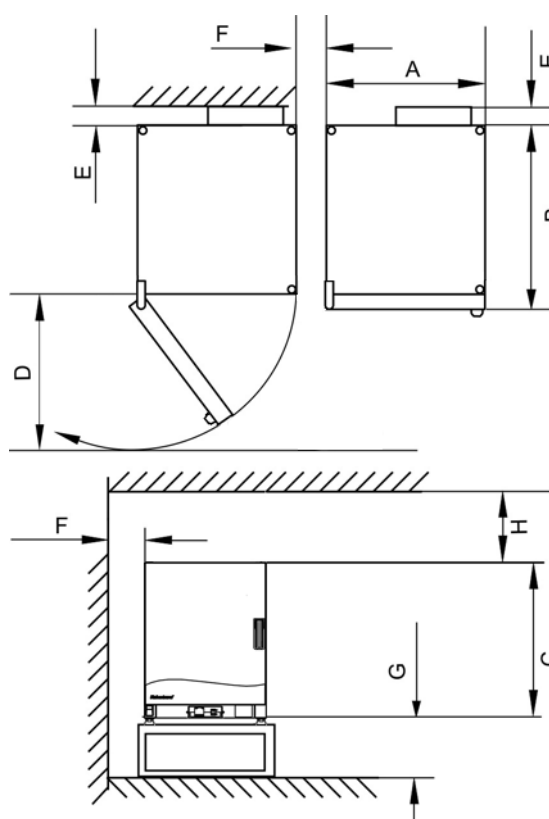


Figure 3-1 Incubator dimensions and required clearances

Table 3-1 Incubator Dimensions

Type	A (mm/inch)*	B (mm/inch)	C (mm/inch)	D (mm/inch)
Fisherbrand Basic 60L Gravity Incubator 120 V	530 / 20.8	565 / 25.2	720 / 28.3	540 / 21.3
Fisherbrand Basic100L Gravity Incubator 120 V	640 / 25.2	565 / 25.2	820 / 32.3	650 / 25.6
Fisherbrand Basic180L Gravity Incubator 120 V	640 / 25.2	738 / 29.1	920 / 36.2	650 / 25.6
Fisherbrand 75L Incubator 230 V	530 / 20.8	565 / 25.2	720 / 28.3	540 / 21.3
Fisherbrand 117L Incubator 230 V	640 / 25.2	565 / 25.2	820 / 32.3	650 / 25.6
Fisherbrand 194L Incubator 230 V	640 / 25.2	738 / 29.1	920 / 36.2	650 / 25.6

* Dimensions in inches are rounded equivalents specified for information only. Depth of handle /display (66 mm/2.6 in) not included in overall depth specified; height of adjustable feet (36 mm/1.4 in) not included in overall height specified.

Table 3-2 Required Clearances

E (mm/inch)	F (mm/inch)	G (mm/inch)	H (mm/inch)
80 / 3.2	50 / 2	300 / 12	300 / 12

Transport

Table-top incubators

For transport, do not lift the incubator using the doors or components attached to the incubator as lift points.

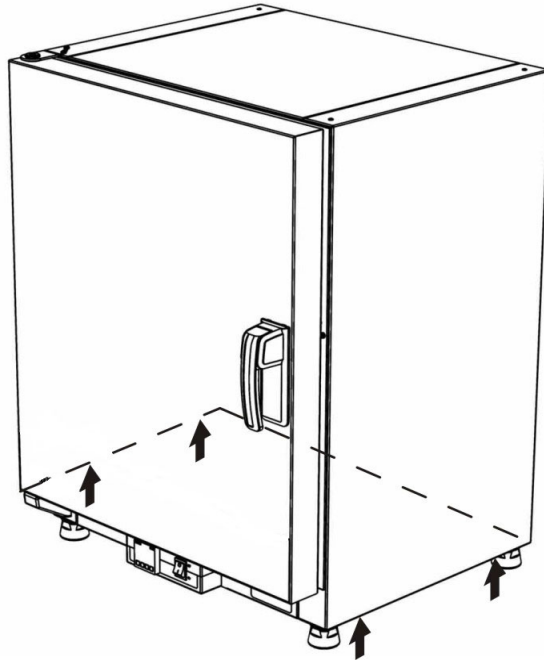


Figure 3-2 Lift Points



Heavy loads! Lift with care!

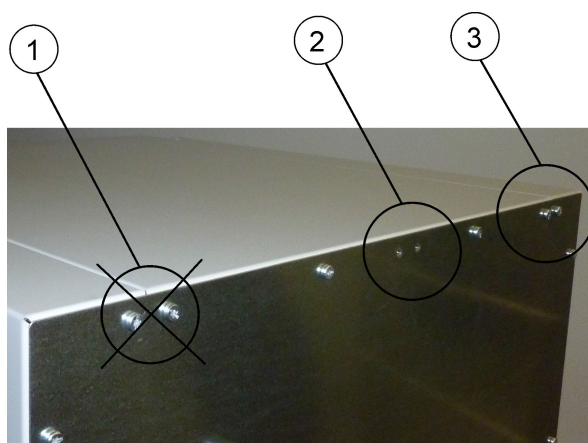
To avoid injury through physical strain, such as strain traumata and slipped discs, do not attempt to lift the incubator alone!
To avoid injury through dropped loads, be sure to wear Personal Protection Equipment, such as safety shoes, when lifting the incubator.
To avoid crushing your fingers or hands (particularly in a closing door) or damaging the incubator, do not use any other lift points than those indicated in the illustration above.

Installing the Anti-tilt Anchor

Table-top incubators


The anti-tilt anchor secures the device to a solid part of a building. The anti-tilt anchor is to be mounted on the side opposite of the door hinges.




Bend the fixing tabs of the anti-tilt anchor up on one side and down on the other by an angle of approx. 90°.






1. Do not use this position if the door is hinged on this side. Right-hand hinges represent the standard configuration.
2. Preferred position.
3. Alternative position. Do not use if the door is hinged on this side.
4. Remove the bracket screws. Use the preferred position, if possible.
5. Fix the anti-tilt anchor with the bracket side down to the unit.
6. Position the unit with the anti-tilt anchor to in an angle of approx. 90° +/- 20%.
7. Take care that the stacking feet of the unit are still in correct place on the lower unit or on the stacking adapter.
8. Fix the anti-tilt anchor to a solid part of the building.

Additionally, the following caution notes must be heeded at all times:

	 CAUTION	Unsafe part of the building!
<p>Install the anti-tilt anchor to a solid part of the building, which is able for shoring loads. The installation has to be carried out by qualified personnel only. The connection to the building must be carried out with appropriate screws and dowels according to the consistence of the building part.</p>		

	<table border="1"><tr><td data-bbox="568 248 928 342"> CAUTION</td><td data-bbox="956 304 1426 338">Risk of overheating with stacked devices</td></tr><tr><td colspan="2" data-bbox="549 376 1517 477"><p>To avoid the risk of electrical components and the outer enclosure overheating or temperature control failing due to insufficient ventilation, do not exceed the specified stacking height!</p></td></tr></table>	 CAUTION	Risk of overheating with stacked devices	<p>To avoid the risk of electrical components and the outer enclosure overheating or temperature control failing due to insufficient ventilation, do not exceed the specified stacking height!</p>	
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	<table border="1"><tr><td data-bbox="568 539 928 633"> CAUTION</td><td data-bbox="956 595 1501 629">Risk of tipping and dropping of stacked devices</td></tr><tr><td colspan="2" data-bbox="549 667 1517 835"><p>You should be aware at all times that stacked devices do not form a stable unit, even when the stacking pads and frames are correctly used. The top device may tip over and drop down when being transported in a stack. To avoid injury to persons and damage to equipment, do not attempt to move stacked devices as a unit! Separate and move each device one by one, then restack them.</p></td></tr></table>	 CAUTION	Risk of tipping and dropping of stacked devices	<p>You should be aware at all times that stacked devices do not form a stable unit, even when the stacking pads and frames are correctly used. The top device may tip over and drop down when being transported in a stack. To avoid injury to persons and damage to equipment, do not attempt to move stacked devices as a unit! Separate and move each device one by one, then restack them.</p>	
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Product Description

This section describes Fisherbrand Basic Gravity Incubator.

Basic Gravity Incubator Overview

Gravity convection incubators come equipped with the following features:

- high-precision work space temperature control, adjustable in steps of one-tenth of a degree up to 75 °C (167 °F)
- two perforated shelves.
- access port for table top units

The individual features of gravity convection incubators are shown in the figures below.

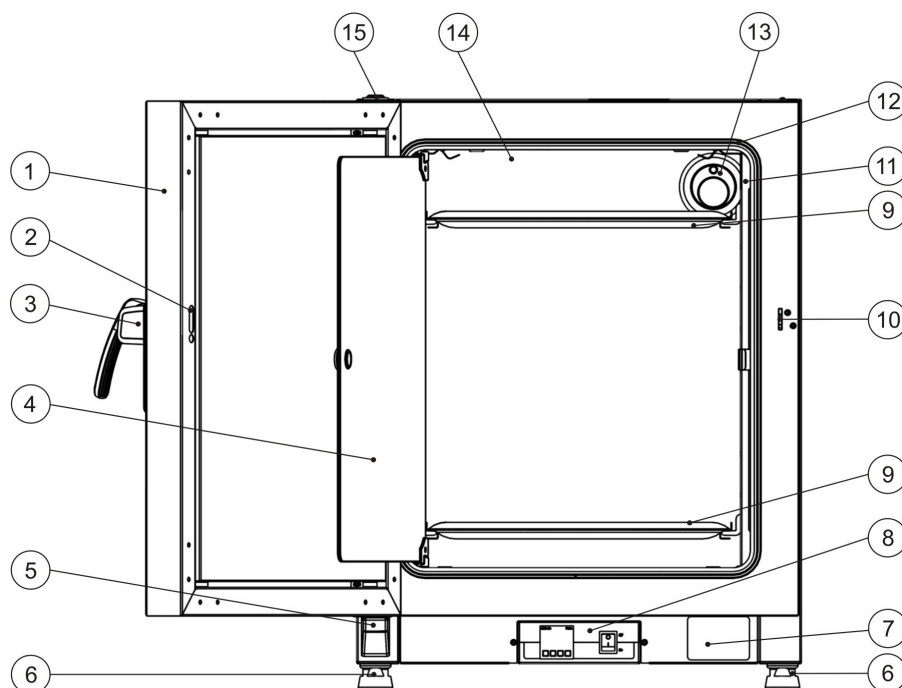


Figure 4-1. Fisherbrand Basic 60L/100L/180L Gravity Incubator Front View

- [1] Outer door
- [2] Door latch cutout
- [3] Door latch and handle
- [4] Glass door
- [5] Door hinge, lower
- [6] Leveling foot
- [7] Nameplate
- [8] Controller
- [9] Perforated shelf
- [10] Door hook catch
- [11] Support rail for perforated shelf
- [12] Door seal
- [13] Access port
- [14] Temperature sensor
- [15] Door bearing

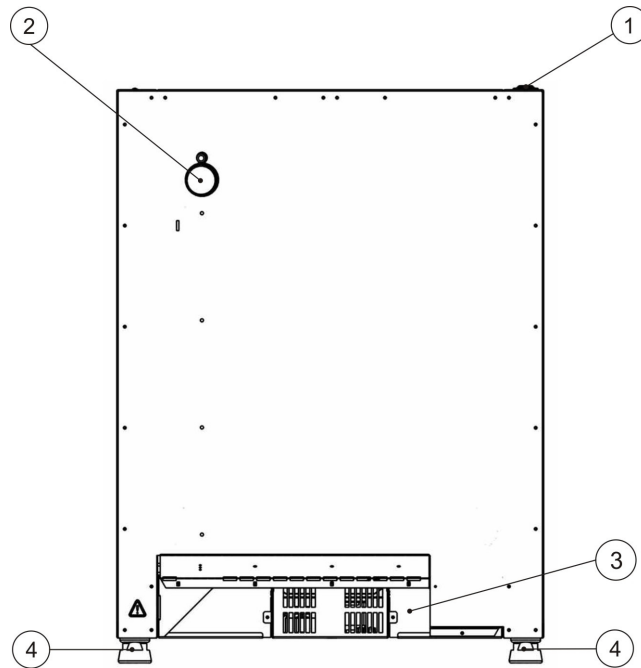


Figure 4-2. Fisherbrand Basic 60L/100L/180L Gravity Incubator Rear View

- [1] Door bearing
- [2] Access port
- [3] Electronics compartment
- [4] Leveling foot

Safety Devices

The incubators are equipped with the following safety features:

- an overheat protection cut-out feature that shuts down the incubator completely when excessive temperatures occur in the workspace;
- dual fuses rated at 16 amperes.

Work Space Atmosphere

To ensure undisturbed operation, the ambient temperature in the operating room must be at least 18 °C (64.4 °F).

The heating system uses this temperature threshold to control the ambient temperature plus 7 °C (12.6 °F) up to the maximum of 75 °C (167 °F) for gravity convection incubators.

Sensing and Control System

The PT 100-type sensor for the control of the work space temperature and for the thermal protection [1] is installed on the top of the inner chamber.

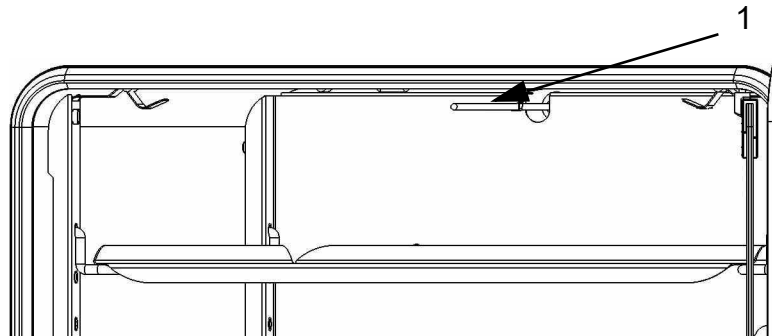


Figure 4-3. Sensor System

The work space temperature sensor provides the inputs to the incubator's built-in controller, which continuously compares the measured values to the user-specified set value and adjusts the heaters according to the result.

AC Power Socket

The incubator is connected to the AC supply mains via the socket (item 4 in Figure 4-4), which accepts a power cord with an IEC standard plug.

Fuses

Two 16 A slow-blow fuses (T 16A H 250 V) mounted on the incubator's main electronic circuit board protect internal circuitry from the impact of excessive power consumption.

NOTE

Replacement should only be carried out by skilled and authorized qualified personnel of electro technology/signal engineering!

NOTE

Fuse replacement

The device fuses are not user-serviceable. When the incubator exhibits the typical signs of a blown fuse (no response to pressing the On/Off button, control panel remains extinguished, no heating operation), call Fisher Scientific Customer Service to have the fuses replaced.

Work Space Components

Inner Chamber

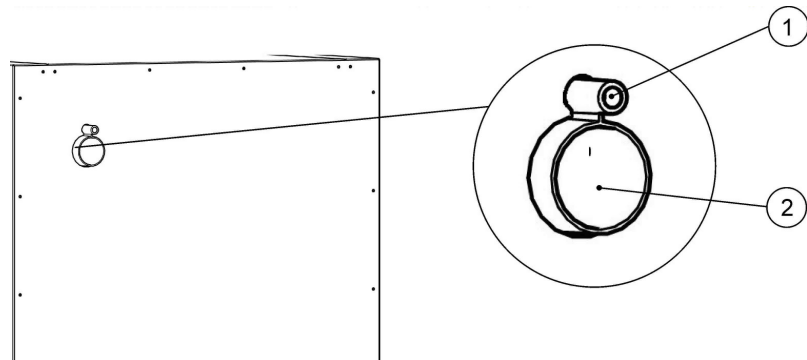
All components of the work space are made of corrosion-resistant stainless steel and have an absolutely smooth and easy-to-clean surface. Any embossings have a large radius.

Access Port

A re-sealable, capped access port (can be closed off using the plugs delivered with the unit) allows cables, hoses or additional sensor leads to be routed into the work space of the incubator.

The small access port [1] is secured with a membrane. Cut off before use.

The main access port [2] has a diameter of 42 mm/1,65 inch.



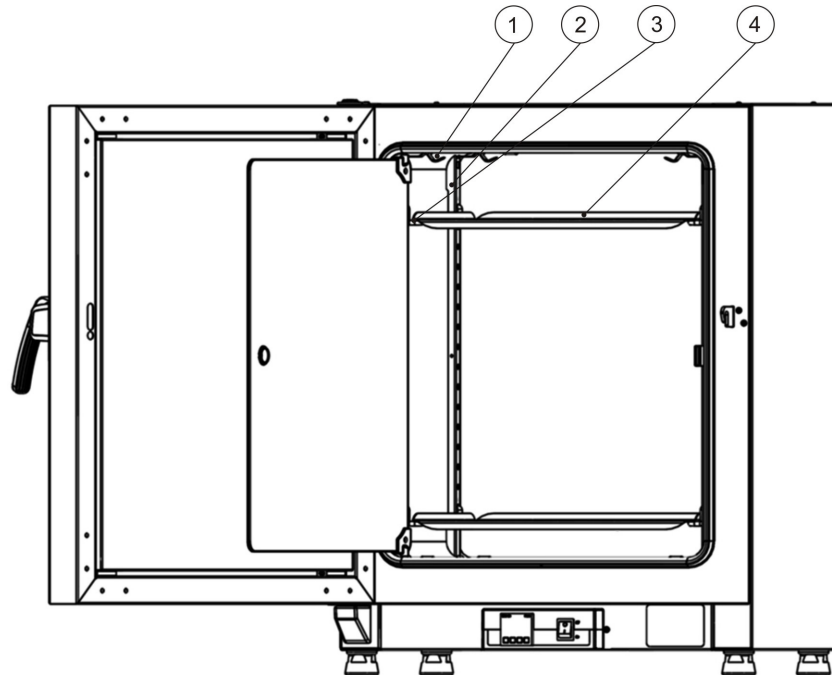
NOTE

Operating conditions

When accessories are to be operated in the work space of the incubator, the ambient condition requirements must be observed. The energy introduced into the work space has an impact on the lower end of the temperature control range. When additional heating sources are introduced into the work space, temperature control may be adversely affected.

Shelf System

The incubator is supplied with two perforated shelves. The shelf support rails [1] have an alternating pattern of oblong and round perforations spaced evenly at 30 mm, allowing the shelf support brackets [8] to be inserted without any room for error, yet in a very flexible way to accommodate any required height of sample container. The shelves [2] have an integrated tilt protection and pull-out stop. For details on using the shelf system, see “Installing the Shelf System” on page 21.



- [1] Retaining Springs
- [2] Support Rails
- [3] Shelf Support
- [4] Shelves

Figure 4-4. Basic Gravity Incubator Shelf System

Start-up

Installing the Shelf System

The installation of the shelf system does not require any tools. The support rails are secured in place by spring action. Once the shelf support have been inserted into the rails, the perforated shelves can be simply pushed onto their support hooks to complete the installation.

Initial Installation

1. Peel off the protective foil from the support rails.
2. Push the retaining spring [1] into the guide on the support rail [2], making sure that the locking nub [3] on the retaining spring safely engages with the matching hole in the support rail.

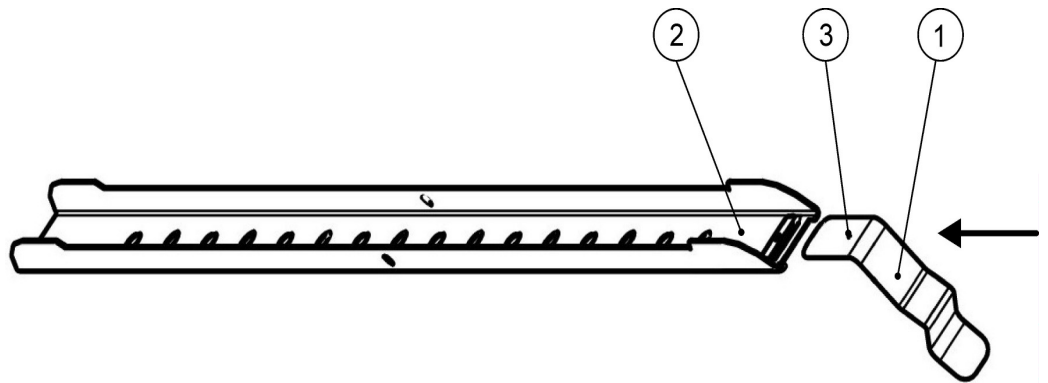


Figure 5-1. Sliding the Retaining Spring into the Support Rail

Preparing the Work Space

Upon delivery, Fisherbrand incubators are not in a sterile state. Before the initial start-up, the incubator must be decontaminated.

The following work space components should be checked for cleanliness and disinfected prior to use:

- support rails,
- shelf support,
- perforated shelves,
- work space surfaces,
- work space seals and gaskets,
- glass door

NOTE

Disinfection

For details about the cleaning and disinfection of the incubator, please refer to “Cleaning and Disinfection” on page 35.

Installation of the Support Rails

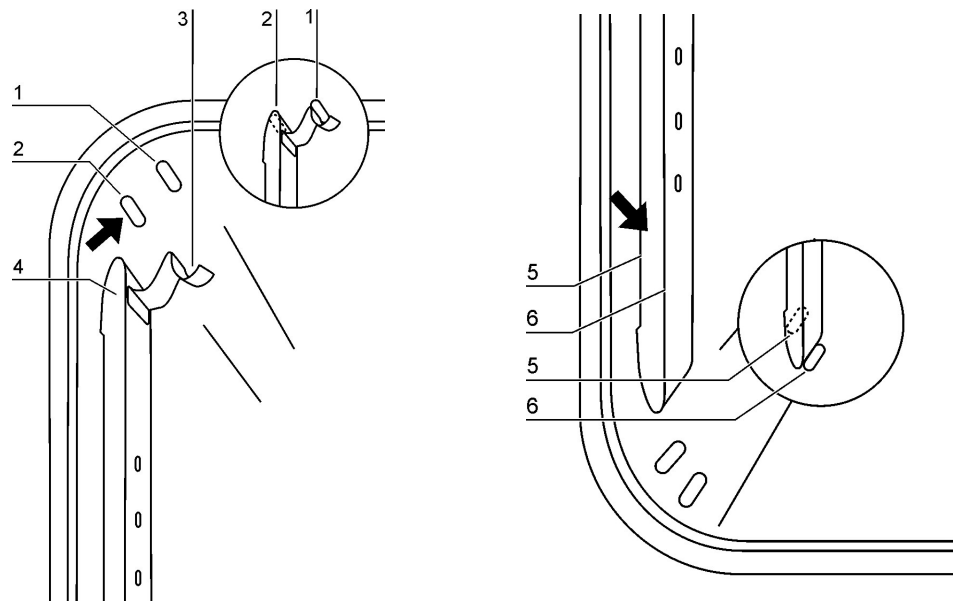


Figure 5-2. Support Rail Installation

The embossings at [2] and [5] act as lateral guides for the support rails, while the embossings at [1] and [6] secure the support rails in place. For the support rails to install correctly the retaining spring [3] must be facing upwards.

1. Place the support rail [4] on the lower embossing [6] and tilt it upwards against the work space side wall so that the rail is positioned over the two embossings at [5] and [2].
2. Clamp the retaining spring [3] behind the upper embossing [1].
3. To remove the support rails, pull the retaining spring tab down out of the embossing and remove the support rail assembly.

Installing the Shelf Support Brackets

1. Insert the shelf support [3] into the perforations [1] of the support rail and tilt it downwards.
2. Make sure that the two vertical elements [2] of the shelf support butt against the support rail.

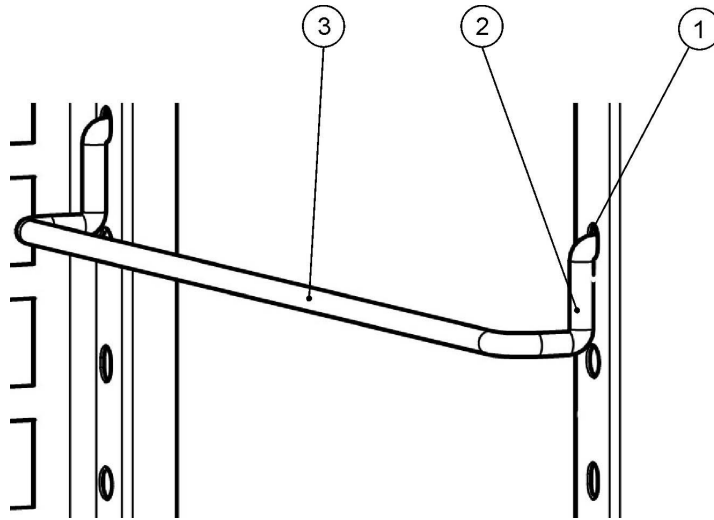
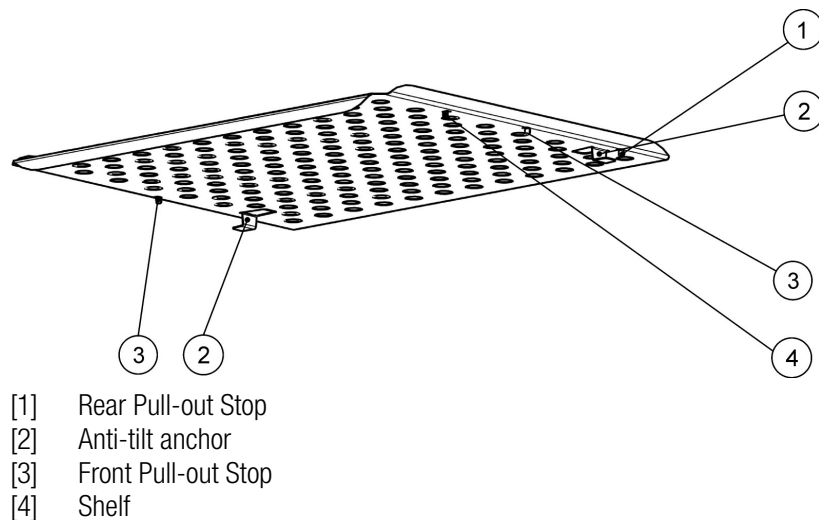


Figure 5-3. Shelf Support Installation

Installing the Perforated Shelves



- [1] Rear Pull-out Stop
- [2] Anti-tilt anchor
- [3] Front Pull-out Stop
- [4] Shelf



Figure 5-4. Installing the Perforated Shelves

1. Push the shelf [4] onto the shelf support with the tilt protection devices [2] facing the rear panel of the incubator.
2. Slightly raise the perforated shelf so that the pull-out stops [1] and [3] can slide over the shelf support.
3. Make sure that the shelves and both of their tilt protection devices are free to move over the shelf support.

Levelling the Incubator

1. Position a bubble level onto the center shelf.
2. Manually adjust the leveling feet until the shelf is horizontally aligned in all directions. Perform the adjustment of the leveling feet from left to right and from rear to front.

Connecting Power

	<div style="display: flex; align-items: center; margin-bottom: 10px;">  <div style="margin-left: 10px;"> <p>Electric shock</p> </div> </div> <p>Contact with live electrical components may cause a lethal electric shock. Before connecting the incubator to the power supply, check the power cord and the plug for damage. Do not use damaged cables for connecting the incubator to the power supply!</p>
---	--

The incubator has a class I, protection-earthed enclosure. To minimize the risk of electrical shock, use the AC power cord supplied to connect the incubator to a correctly installed and protection-earthed power supply source, with the following features in place for each incubator:

- T 16 A slow-blow fusing
- B 16 circuit breaker
- FI circuit breaker

Connecting to the Power Supply Source

1. Before connecting the incubator to the power source, check to see if the power supply voltage corresponds with the specifications on the nameplate on the front of the incubator. If the voltage (V) and current (A) ratings given are not as required, do not connect the incubator to the power source!
2. Connect the IEC connector to the socket at the rear of the incubator.
3. Route the power cord along a path that does not cross exhaust air piping or passageways and aisles.
With stacked devices, keep the power cord away from hot spots on the other incubator in the stack.
4. Connect the protection-earthed plug of the power cord to a correctly protection-earthed and earth leakage circuit breaker fused power socket.
5. Make sure the power cord is not subjected to tensile or compressive force.

NOTE

Keep the power outlet accessible!

To allow a rapid disconnection of power in case of an emergency, make sure that power outlets remain freely accessible at all times!

NOTE**Condensation**

When taking the incubator into operation for the first time allow some time before switching on for stabilization to avoid condensation forming on live parts.

If a high-voltage test is to be performed on the unit, it must first be heated for around 30 minutes at 75°C.

Electrical Requirements to be Met when Operating the Incubators in the European Union:

The incubators are designed to operate on an AC mains having a maximum system impedance $Z_{max} = 0.321$ Ohms, as measured at the system transfer point according to EN 61000-3-11, paragraph 6.2.2. The user must ensure that the device is operated on a mains that complies with this requirement. Where necessary, it is recommended to have the system impedance confirmed by the power utility company.

Operation

Preparing the Incubator

The incubator must not be released for operation before all major start-up activities have been completed (see Chapter 5, “Start-up.”).

Device Check

Prior to starting operation, the following incubator components must be checked for their correct function:

- The door seal in the front frame must not be damaged.
- The glass door must not be damaged.
- The shelving components must be installed safely.
- Disinfecting the Incubator’s Work Space

Disinfect the work space according to the operator-specified hygiene guidelines.

Starting Operation



1. Turn the incubator on using the control panel.
2. Adjust the temperature set value on the control panel.
3. The temperature controller starts adjusting the work space to the user-specified temperature set value now.




To avoid any risk of explosion or fire

- refrain from loading the incubator with any of the substances listed in the section “Incorrect Use” on page 5
- make sure that the ambient air is free of any solvents
- do not operate the incubator in areas with an explosion hazard

4. After the preset temperature is reached load the work space with samples.

	<div style="border: 2px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">  <b style="font-size: 1.2em; margin-left: 5px;">WARNING </div> <p style="margin-left: 20px;">Hot surfaces</p> <p>The screen of the glass door, the interior panel of the outer door as well as the surfaces of the shelving and the work space become hot while the incubator is running through its heating cycles and need some time to cool down.</p> <p>When removing samples from a running or recently completed heating cycle, always wear safety gloves and other appropriate personal protection equipment to avoid burns on hot surfaces!</p>
---	--

	<div style="border: 2px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">  <b style="font-size: 1.2em; margin-left: 5px;">CAUTION </div> <p style="margin-left: 20px;">Risk of overloading</p> <p>Overloading may damage the shelves or cause the shelves and/or the incubator to tilt when the shelves are being drawn out, ultimately destroying the samples. To avoid overloading the incubator or its shelving be sure to observe the sample weight limits specified in Chapter 13, “Technical Data.”</p>
--	--

NOTE
Proper loading
 To ensure sufficient air circulation and uniform heating of the samples, do not use more than 70% of the maximum surface area of the work space. Bulky objects in the work space that dissipate heat may impair heat distribution.

NOTE
Door opening
 Keep the door open-times during operation always as short as possible. The longer the door is open, the higher can be a possible overshooting of the temperature.

Handling and Control

Overview

Fisherbrand basic gravity incubators come with a front panel mounted control unit consisting of a multi-functional display, four control buttons, and an on/off button. The four control buttons interact with the display window to let users access all of the user control functions and adjustments of the incubator.

The graphic below shows the control panel with all of its visualization elements and controls.

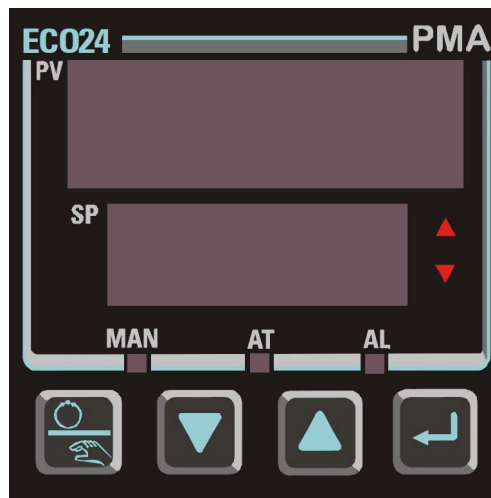













Figure 7-1. Control Panel for Fisherbrand Basic Gravity Incubator




The table below contains brief descriptions of the buttons on the control panel.

Area/Button	Description
PV Display	Process variable - Actual value during normal operation
SP Display	Setpoint value
	For internal use only
	For internal use only
	For internal use only
	For internal use only
	Blinking: Alarm active

	ON: Controller output power up
	For internal use only
	For internal use only
	Down button
	Up button
	Function button (scroll button)

Operator mode

This mode is entered at power on.

Press  to scroll through the parameters, then press  or  to set the required value.


Upper Display	Lower Display	Description
PV Value	Active SP Value	PV (measuring value) and target value of selected SP (setpoint)
SP Value	<i>SP</i>	Setpoint value
Active Alarms	<i>ALSt</i>	Process variable only. Read only
Offset	<i>OFFS</i>	Enables the adjustment of the temperature offset. The adjusted value will be added to the displayed actual temperature (PV-value). This can be used to calibrate the incubator.

Calibration of the reference sensor


The temperature measurement for calibration is performed with a reference sensor placed in the center of the inner chamber.

After placing the reference sensor in the chamber wait at least 2 hours until the temperature is stabilized.

In operator mode the temperature offset can be adjusted.


	 CAUTION	Calibration parameters Only trained personnel should perform the calibration. Be aware that initial calibration parameters are not stored!
--	--	---

Adjustment of the temperature offset:

Press 2 x  to scroll to the offset input *OFFS*.

If an alarm is displayed the  button must be pressed 3x.

Press  or  to set the required value in 0.1 °C steps.

Acknowledge the entry with  or wait approx. 2 min for automatically storage of the value.

The new temperature is adjusted.

For example:

Before

37.1 37.0

offset 1.5 °C then

38.6 37.0

The controller adds the adjusted offset to the measured value on the display.

NOTE





Entering an offset value more than 2 °C, an alarm is indicated and is present as long as the readjustment takes.

Only 1 offset value can be entered. The entered offset value is valid for the complete temperature range. This means, if the setpoint temperature is changed the same offset value remains.

Shut-down

Shutting the Incubator Down

This chapter provides instructions for shutting the incubator down for prolonged periods of time, that is, at least for several days in a row.

	<table border="1"><tr><td data-bbox="555 510 912 600"> WARNING</td><td data-bbox="912 510 1520 600">Contamination hazard</td></tr><tr><td colspan="2" data-bbox="555 600 1520 696">If the work space surfaces are contaminated, harmful biological material may spread to the environment of the incubator.</td></tr><tr><td colspan="2" data-bbox="555 696 1520 875">To rule out any risk for subsequent users, perform a full cleaning, disinfection and decontamination cycle to the standards set out in the section “Cleaning and Disinfection” on page 35 if you suspect (or if you are positive) that harmful biological material has been processed with the incubator.</td></tr></table>	 WARNING	Contamination hazard	If the work space surfaces are contaminated, harmful biological material may spread to the environment of the incubator.		To rule out any risk for subsequent users, perform a full cleaning, disinfection and decontamination cycle to the standards set out in the section “Cleaning and Disinfection” on page 35 if you suspect (or if you are positive) that harmful biological material has been processed with the incubator.	
 WARNING	Contamination hazard						
If the work space surfaces are contaminated, harmful biological material may spread to the environment of the incubator.							
To rule out any risk for subsequent users, perform a full cleaning, disinfection and decontamination cycle to the standards set out in the section “Cleaning and Disinfection” on page 35 if you suspect (or if you are positive) that harmful biological material has been processed with the incubator.							

1. Remove the containers with the cultures, all accessories, and other objects from the work space.
2. Clean and disinfect the work space, as explained in the section “Cleaning and Disinfection” on page 35.
3. Before cleaning and disinfection and/or decontamination, turn the incubator off using the control panel.
4. Unplug the power cord and secure it against accidental reconnection.
5. Until the incubator is shut down, the work space must be continuously ventilated. Leave the glass door and the outer door open and secure them against accidental closure.

Cleaning and Disinfection

Cleaning

	CAUTION	Incompatible cleaners	
<p>Some incubator components are made of plastics. Solvents may attack plastics. Strong acids or alkaline solutions may cause embrittlement of plastics. Please consult the manufacturer or his agent if there is any doubt about the compatibility of decontamination or cleaning agents.</p>			
CAUTION			Moisture-sensitive components
<p>Do not spray cleaning agent onto the control panel and the interfaces at the rear of the incubator. When wiping the incubator clean, always make sure that no moisture enters into these components. Wipe the display window down with a slightly dampened cloth, then wipe dry with a rag made of 100% microfiber.</p>			

Cleaning Exterior Surfaces

Remove dirt residues and depositions thoroughly using a solution of lukewarm water and commercial detergent.




Wipe the surfaces clean using a clean cloth and clear water.


Then, wipe the surfaces dry using a clean cloth.

Wipe / Spray Disinfection





The manual wipe and spray disinfection is a three-stage process:

- pre-disinfection,
- cleaning,
- final disinfection.

		Alcoholic disinfectants!
	<p>Disinfectants having an alcohol content of more than 10% may form, in combination with air, easily combustible and explosive gas mixtures.</p> <p>When using such disinfectants, avoid open flames or exposure to excessive heat during the entire disinfection process!</p> <p>Use such disinfectants only in adequately ventilated rooms.</p> <p>After the disinfectant has been allowed to react, wipe the cleaned incubator components thoroughly dry.</p> <p>Observe safety regulations to avoid fire and/or explosion hazard caused by alcohol-containing disinfectants.</p> <p>Chloride-containing disinfectants!</p> <p>Chloride-containing disinfectants can corrode stainless steel.</p> <p>Use only disinfectants that do not affect stainless steel!</p>	


	Decontamination or cleaning agents
	<p>Thermo Electron LED GmbH or his agent is to be consulted if there is any doubt about the compatibility of decontamination or cleaning agents.</p>

Preparing the Manual Wipe/Spray Disinfection

  	<div style="border: 2px solid black; padding: 5px; margin-bottom: 10px;">  WARNING </div> <p>Health hazard</p> <p>The surfaces of the work space may be contaminated. Contact with contaminated cleaning liquids may cause infections. Disinfectants may contain harmful substances.</p> <p>When cleaning and disinfecting, always observe the safety instructions and hygiene guidelines!</p> <ul style="list-style-type: none"> • Wear safety gloves. • Wear safety goggles. • Wear mouth and respiratory system protection gear to protect your mucous membranes. <p>Observe the safety instructions of the disinfectant's manufacturer and the hygiene supervisor.</p>
---	--

Predisinfection

1. Remove all samples from the work space and store them in a safe place.
2. Turn the power switch off.
3. Spray disinfectant onto the surfaces of the work space and of the accessories or wipe the surfaces clean using disinfectant.

	<div style="border: 2px solid black; padding: 5px; margin-bottom: 10px;">  CAUTION </div> <p>Risk of injury caused by breaking of glass panel</p> <p>The glass panel may only be removed by properly trained and authorized specialists.</p> <p>The glass panel must be held by two persons.</p>
--	---

4. Allow time for the disinfectant to act as specified by the manufacturer.

NOTE

Disinfecting hard-to-reach components

Spray the sensor and other hard-to-reach components with disinfectant!

Cleaning

1. Remove all internals from the specimen chamber.
2. Wipe off the specimen chamber surfaces and the internals that have been removed from the chamber using lukewarm water mixed with standard rinsing agents. Completely remove any tenacious impurities using rinsing agent and warm water.
3. Re-rinse the cleansed surfaces 3 to 5 times with autoclaved water to completely remove and cleaning agent residues.
4. After this, wipe the cleansed surfaces and internals dry with a soft, sterile cloth.



Final Disinfection

1. Spray the specimen chamber surfaces and the internals removed from this chamber again with disinfectant, or wipe them down.
2. Let the disinfectant work on the surfaces/internals as detailed in the manufacturer’s instructions.
3. Re-install the internals in the specimen chamber.

NOTE

Recommendations for decontamination

The user should be familiar with the internationally recognized “Laboratory Biosafety Manual” (from the World Health Organization (WHO)) and with national, pertinent recommendations. These manuals/recommendations provide information about decontaminants, their use, dilution, properties and possible applications.

	
<p>Be sure to determine the current operating condition of the incubator before you open the door!</p>	
<p>Under specific circumstances, there is a risk that bacteria, viruses, fungi, prions, and other biological substances survive.</p>	
<p>Decontamination must be performed immediately if any biohazardous material is spilled in or on the incubator.</p>	

Maintenance

Maintenance and inspection at regular intervals of the features and components listed below are mission-critical to maintain the product in a fully operative and safe condition and avoid malfunctions due to aging and wear. Failure to perform maintenance on a regular basis may result in:

- deviations in heating performance
- damage to samples
- loss of control over temperature distribution throughout the work space

Inspections and Checks

To ensure the operational performance and safety of the incubator and its functions, the components listed below must be checked at regular intervals.

Regular Checks

- Check the incubator for overall cleanliness and remove any residues from previous processes.
- Check the locking screw for the glass panel

Semi-annual Inspection

- Check integrity and proper seating of the seal.
- Perform functional check of the control panel and of the incubator's built-in controller.
- Perform electrical safety check in accordance with the relevant national regulations.

NOTE

Functional check

If safety devices were removed or disabled for inspections, the incubator must not be operated before the safety devices have been reinstalled and checked for their correct function.



Spare Parts and User Modifications

To avoid major malfunctions of the incubator and associated safety hazards that may result in death, serious injuries, or damage to the incubator and other equipment, use spare parts approved by Fisherbrand only. Third-party spares without Fisherbrand approval void the limited warranty.

Do not modify the incubator in any way without obtaining the prior written authorization from Fisherbrand. Unauthorized modifications may compromise operational safety and give rise to hazards that may result in death, serious injuries, or damage to the incubator and other equipment.

Service Intervals

During running operation, the following service works must be performed:

3-monthly service

- Perform the comparative temperature measurement outlined in section 7-3.

Annual Service

- Have the incubator inspected and services by a Fisherbrand authorized Technical Service agent.

NOTE

Service contract

Fisherbrand International, LLC offer a product-specific service contract comprising all necessary tests and service work.

Replacing the Door Seal

The door seal of the outer door is located in the retaining slot.

The door seal should be inspected for any signs of embrittlement at half-yearly intervals.

No tools are required to replace the seal.

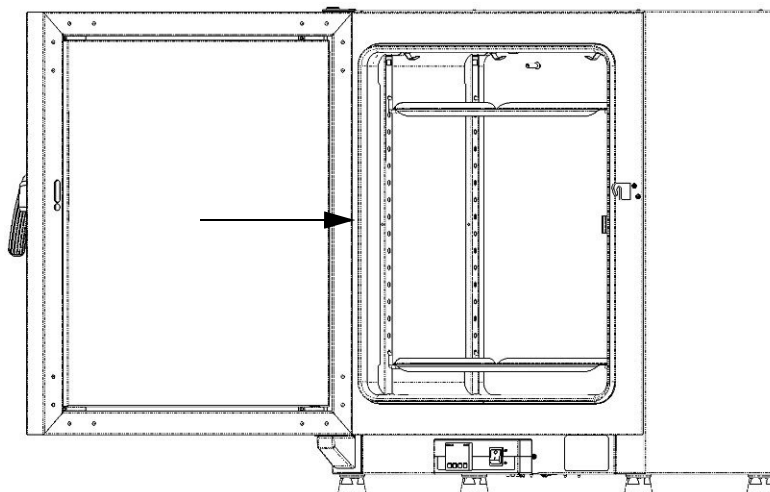


Figure 10-1. Door seal

1. Pull the seal out of the guide slot.
2. Starting on the hinge side of the door, position the end of the new seal at the location indicated by the arrow in Figure 10-1 above.
3. Gently press the seal into the slot, working around the circumference of the door. In corner areas in particular ensure that the seal lip is installed without any wrinkles and that the seal is not stretched or compressed.
4. Make sure that the seal is positioned correctly in the slot and flush with the door frame. Correct, if necessary.



Replacing the Power Cord

If the power cord is damaged, it must be replaced by an original spare part. Using a standard power cord with a lower thermal withstand capabilities is prohibited.



Returns for Repair

Prior to returning any materials, please contact our Customer Service Department for a "Return Materials Authorization" number (RMA).

Material returned without an RMA number will be refused.

		Contamination hazard
<p>The incubator may have been used for treating and processing infectious substances, which may have caused contamination of the incubator and its components. Prior to return shipment, it is therefore mandatory that all incubator components be properly decontaminated.</p>		
<ul style="list-style-type: none">• Clean the incubator components thoroughly, then disinfect or decontaminate them (depending on application).• Fill in and attach a safety declaration with details on decontamination activities performed to the items that are to be repaired.		

Disposal

	<div style="display: flex; align-items: center; margin-bottom: 10px;">  <div> <p>WARNING</p> <p>Contamination hazard</p> </div> </div> <p>The incubator may have been used for treating and processing infectious substances, which may have caused contamination of the incubator and its components. Prior to disposal, it is therefore mandatory that all incubator components be properly decontaminated.</p> <p>Clean the incubator components thoroughly, then disinfect or decontaminate them (depending on application).</p> <ul style="list-style-type: none"> • Attach a declaration of decontamination with details on decontamination activities performed to the items that are to be disposed of.
---	---

Overview of Materials Used

Component	Material
Thermal insulation components	Glass wool
Printed circuit boards	Coated electrical components contain various plastics materials. Components mounted on circuit boards containing epoxy resin bonder.
Plastic components, general	see material labeling
Exterior housing	Galvanized steel sheet, painted
Device rear panel	Galvanized steel sheet
Outer door	Galvanized steel sheet, painted, + stainless steel (optional)
Door inner panel	Stainless steel
Control panel and display window protective foil	Polyethylene
Heater	Silicone-sheathed resistance heater wires
Interior containers, installed components and shelves	Stainless steel 1.4016 + 1.4301
Door frame seal	Silicone
Glass screen	Sodium silicate glass
Cables	Plastic-sheathed stranded copper wire
Packaging	Corrugated board, polyethylene film, and styrofoam, chemically untreated wood

Error Codes

Table 1 below lists the error messages that may appear in the control panel display window and provides instructions for clearing such alarms.


Parameter	Upper Display	Lower Display	Description
Alarm		Setpoint value	An alarm LED indicates that the unit temperature is 2°C above setpoint. The controller is operating the incubator back to set temperature. If an alarm is indicated "AlSt 1!" is displayed after pressing twice the Enter button.
Sensor Break	<i>OPEN</i>	Setpoint value	Break in input sensor or wiring. Contact Technical Service.
OTP - Overtemperature protection	<i>cHH></i>		This code is displayed up to 105 °C, then "OPEN" is displayed. If the incubator does not heat, possibly an activation of the OTP has occurred. In this case the heater will remain off. Contact Technical Service.

Table 1. Error codes

Technical Data

The technical data are valid only for an empty device equipped with three shelves, a spray-painted outer enclosure and a power line voltage 120 V 60 Hz (Table 1) or 230 V 50/60Hz (Table 2). Options may have an impact on the specified performance.

Table 1. Technical Data - Gravity Convection Incubators 120 V

Parameter	Unit	Fisherbrand Basic 60L Gravity Incubator	Fisherbrand Basic 100L Gravity Incubator	Fisherbrand Basic 180L Gravity Incubator
Process				
Work space atmosphere		Ambient temperature plus	Ambient temperature plus	Ambient temperature plus
Min.	K	7 °C/12.6 °F	7°C/12.6°F	7°C/12.6°F
Max.	°C/°F	75 °C/167 °F	75 °C/167°F	75 °C/167 °F
Temperature deviation from set value at 37 °C (98.6 °F), spatial (*)				
typical:	K	± 0.8	± 0.8	± 0.8
max.:		± 0.9	± 0.9	± 0.9
Temperature deviation from set value at 37 °C (98.6 °F), over time (*)	K	±0.3	±0.3	±0.3
Heat-up time (work space unoccupied, from 25 °C (77 °F) to 98% of final temperature (*)	min	80	80	80
Recovery time (work space unoccupied, door open for 30 s, to 98% starting temperature. (*)				
typical:	min	8	10	12
max.:		10	12	14
Heat dissipation to environment (at set temperature of 37 °C (98.6 °F) and room temperature of 25 °C/77 °F)	W	21 ±10%	26 ±10%	31 ±10%
(*) all values measured with unoccupied working space and maximum 3 shelves				
Overall dimensions				
Height	mm/in	720/28.3	820/32.3	920/36.2
Width	mm/in	530/20.8	640/25.2	640/25.2
Depth	mm/in	565/25.2	565/25.2	738/29.1
Overall weight	kg/lbs	40/88	51/112	65/143
Loading capacity				
Loading capacity per shelf	kg/lbs	25/55		
Max. overall loading capacity per device	kg/lbs	50/110	50/110	75/165

Table 1. Technical Data - Gravity Convection Incubators 120 V

Parameter	Unit	Fisherbrand Basic 60L Gravity Incubator	Fisherbrand Basic 100L Gravity Incubator	Fisherbrand Basic 180L Gravity Incubator
Electrical data				
Power consumption	W	300	540	720
Maximum current	A	2.5	4.5	6.0
Earthing system (e.g. 1/N/PE)		1/N/PE	1/N/PE	1/N/PE
Power line frequency	Hz	50/60		
Power line voltage +/- 10 %	V	120		
IP protection system		IP 20		
Protection class		I		
Overvoltage category		II		
Device fusing, building side	A	16		
Device fusing, on PCB (T 16A H 250 V)	A	2 x 16		
Environmental conditions				
Min. ambient temperature	°C/°F	18/65		
Max. ambient temperature	°C/°F	32/90		
Max. humidity in service, non condensing	% r.F./ % r.H.	80, non condensing		
Min. storage temperature	°C/°F	20/68		
Max. storage temperature	°C/°F	60/140		
Max. humidity in storage, non condensing	% r.F./ % r.H.	90, non condensing		
Post-transport acclimation time	h	2		
Noise level	dB(A)	no Inherent noise		
Pollution degree		2		
Site conditions				
Maximum altitude above sea level	m/y NN	2000/2187		
Minimum side clearance	mm/in	50/2		
Minimum front clearance	mm/in	590 / 23.2	690 / 27.2	814 / 32
Minimum back wall clearance	mm/in	80/3.2		
Minimum bottom clearance	mm/in	200/8		
Minimum top clearance	mm/in	300/12		

Table 2. Technical Data - Gravity Convection Incubators 230 V

Parameter	Unit	Fisherbrand 75L Incubator	Fisherbrand 117L Incubator	Fisherbrand 194L Incubator
Process				
Work space atmosphere		Ambient temperature plus	Ambient temperature plus	Ambient temperature plus
Min.	K	7 °C/12.6 °F	7°C/12.6°F	7°C/12.6°F
Max.	°C/°F	75 °C/167 °F	75 °C/167°F	75 °C/167 °F
Temperature deviation from set value at 37 °C (98.6 °F), spatial (*) typical: max.:	K	± 0.8 ± 0.9	± 0.8 ± 0.9	± 0.8 ± 0.9
Temperature deviation from set value at 37 °C (98.6 °F), over time (*)	K	±0.3	±0.3	±0.3
Heat-up time (work space unoccupied, from 25 °C (77 °F) to 98% of final temperature (*)	min	80	80	80
Recovery time (work space unoccupied, door open for 30 s, to 98% starting temperature. (*) typical: max.:	min	8 10	10 12	12 14
Heat dissipation to environment (at set temperature of 37 °C (98.6 °F) and room temperature of 25 °C/77 °F)	W	21 ±10%	26 ±10%	31 ±10%
(*) all values measured with unoccupied working space and maximum 3 shelves				
Overall dimensions				
Height	mm/in	720/28.3	820/32.3	920/36.2
Width	mm/in	530/20.8	640/25.2	640/25.2
Depth	mm/in	565/25.2	565/25.2	738/29.1
Overall weight	kg/lbs	40/88	51/112	65/143
Loading capacity				
Loading capacity per shelf	kg/lbs	25/55		
Max. overall loading capacity per device	kg/lbs	50/110	50/110	75/165
Electrical data				
Power consumption	W	140	185	345
Maximum current	A	0.6	0.8	1.5
Earthing system (e.g. 1/N/PE)		1/N/PE	1/N/PE	1/N/PE
Power line frequency	Hz	50/60		
Power line voltage +/- 10 %	V	230		

Parameter	Unit	Fisherbrand 75L Incubator	Fisherbrand 117L Incubator	Fisherbrand 194L Incubator
IP protection system		IP 20		
Protection class		I		
Overvoltage category		II		
Device fusing, building side	A	16		
Device fusing (T 16A H 250 V)	A	2 x 16		
Environmental conditions				
Min. ambient temperature	°C/°F	18/65		
Max. ambient temperature	°C/°F	32/90		
Max. humidity in service, non condensing	% r.F./ % r.H.	80, non condensing		
Min. storage temperature	°C/°F	20/68		
Max. storage temperature	°C/°F	60/140		
Max. humidity in storage, non condensing	% r.F./ % r.H.	90, non condensing		
Post-transport acclimation time	h	2		
Noise level	dB(A)	no Inherent noise		
Pollution degree		2		
Site conditions				
Maximum altitude above sea level	m/y NN	2000/2187		
Minimum side clearance	mm/in	50/2		
Minimum front clearance	mm/in	590 / 23.2	690 / 27.2	814 / 32
Minimum back wall clearance	mm/in	80/3.2		
Minimum bottom clearance	mm/in	200/8		
Minimum top clearance	mm/in	300/12		

Accessories

Material No.	Description
150145852	Stainless steel perforated shelf for 60L/75L incubators, including 2 shelf supports
150145853	Stainless steel perforated shelf for 100L/117L incubators, including 2 shelf supports
150145854	Stainless steel perforated shelf for 180L/194L incubators, including 2 shelf supports
150145846	Wire mesh shelf for 60L/75L incubators, including 2 shelf supports
150145847	Wire mesh shelf for 100L/117L incubators, including 2 shelf supports
150145848	Wire mesh shelf for 180L/194L incubators, including 2 shelf supports

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