

# Culture Safe CO<sub>2</sub> Incubator Precision Range



160 °C



*Spirit of Innovation*



## Introduction to LEEC

LEEC's mission statement of "aiming to exceed customer expectations for quality, delivery and cost through continuous improvement and customer interaction" is the philosophy behind the company.

The management team operate the ISO 9001 quality models across the various departments. The combination of our mission statement together with the management systems has created a modern, dynamic, forward thinking company.

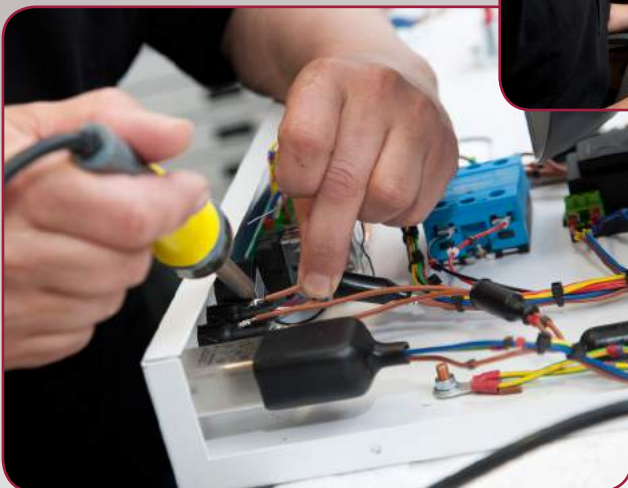
The Precision range of LEEC CO<sub>2</sub> incubators have been developed by listening to our customers and using the latest cutting edge technologies. This has helped LEEC to develop a range of CO<sub>2</sub> incubators that is unsurpassable and class leading.

LEEC are striving to continuously exceed customer expectation in every product we develop. The Precision range has been developed by taking the cutting edge control system away which has many features that are not needed in every application, but fundamentally we have kept the key components that make the Precision incubators some of the best in the world; The fully drawn seamless inner chamber, the largest litre capacity for the smallest foot print, the fan less design and drift free CO<sub>2</sub> sensor.

All LEEC employees are very proud of the high standards of quality achieved, in all the equipment manufactured at our Head Quarters in Nottingham, England and relish the opportunity to exhibit these products to our worldwide customer base.



Paul Venners  
Managing Director



## Frequently Asked Questions

### Why consider the LEEC Culture Safe versus other brands?

LEEC has almost 60 years experience of manufacturing laboratory incubators. LEEC developed the first CO<sub>2</sub> incubator that automatically injected and controlled CO<sub>2</sub> by the use of a thermal conductor (T.C.) CO<sub>2</sub> detector. LEEC developed and patented this world leading technology at this period in time, hence manufacturing the world's 1st automatic CO<sub>2</sub> incubator.

As you would expect from such a forward thinking innovative company, LEEC has continued its relentless R&D programme and now offers world class leading CO<sub>2</sub> incubators with many more built-in inherent features and advantages, whilst still remaining competitively priced. Through continued R&D development, LEEC now offers as standard, state of the art drift free infra red (IR) CO<sub>2</sub> sensors across the complete range of ALL its culture safe models.

### Why consider Drift Free Infra-Red instead of conventional thermal conductivity (T.C.) CO<sub>2</sub> Sensors?

The LEEC IR CO<sub>2</sub> sensor offers the latest technology and is completely drift free. T.C. CO<sub>2</sub> sensors only measure accurately at the desired 88-92% relative humidity (%RH). After the inner glass door is opened the T.C. sensor is measuring inaccurately up to a period of 1 hour after the door closure. TC technology is much older technology and its huge disadvantage is that accurate % CO<sub>2</sub> can only be achieved once the relative humidity (%RH) has recovered back to 88-92%RH, which is typically up to 1 hour.

For very important samples and cell lines this is simply not acceptable. The pH level of the culture media will not recover and cell desiccation may result as a consequence.

### What is the benefit of the LEEC Culture Safe being fitted with a drift free infra red CO<sub>2</sub> sensor?

All LEEC Culture Safe CO<sub>2</sub> incubators are fitted with a premium quality state of the art drift free infra red CO<sub>2</sub> sensor. This ensures accurate CO<sub>2</sub> measurement at all instances in time and total peace of mind that your samples are culturing at the correct % CO<sub>2</sub> level all the time.

This eradicates the need for any additional auto-referencing / zeroing of the CO<sub>2</sub> sensor which is sometimes necessary on other manufacturers incubators to stop drifting of CO<sub>2</sub> calibration and therefore carries the heavy risk of contamination introduction into the incubator each time the auto-referencing / zeroing is performed.

### Why consider a direct heat CO<sub>2</sub> incubator without fanless technology instead of a fan assisted incubator?

LEEC has developed a clever six sided heating system controlled by a state of the art PID controller. There is also independent control of both the door and the base (located under the water tray) allowing for extremely accurate and precise control of temperature inside the inner chamber.

This precise control eliminates the need for a fan (refer to benefits of fanless) and is accurately achieved by the most gentle convection of air movement inside the chamber. This prevents any turbulence and possible rapid spreading of contamination introduced into the chamber by the higher turbulent air flow created by fan assisted incubators.

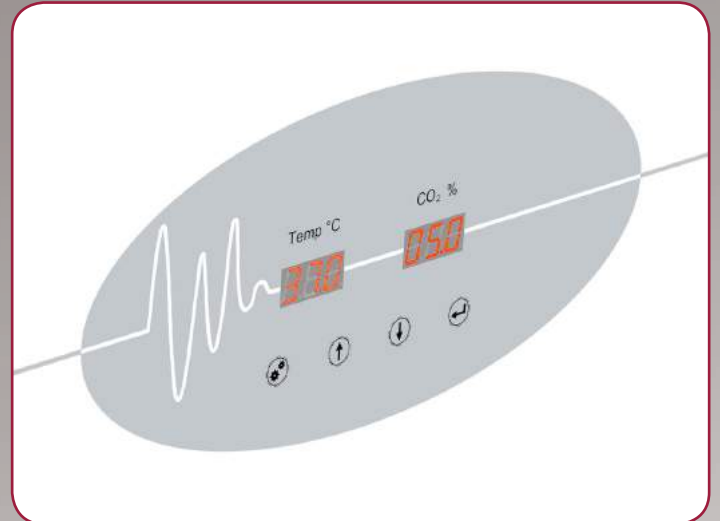
Another great benefit is a much larger internal chamber capacity against rivals with fans fitted and also having considerably smaller external dimensions. The LEEC Culture Safe CO<sub>2</sub> range with its very compact external dimensions will comfortably sit on a laboratory bench or even under the laboratory bench if more convenient, many other brands are simply too large to fit in either location.

# Simple and easy to use Control System

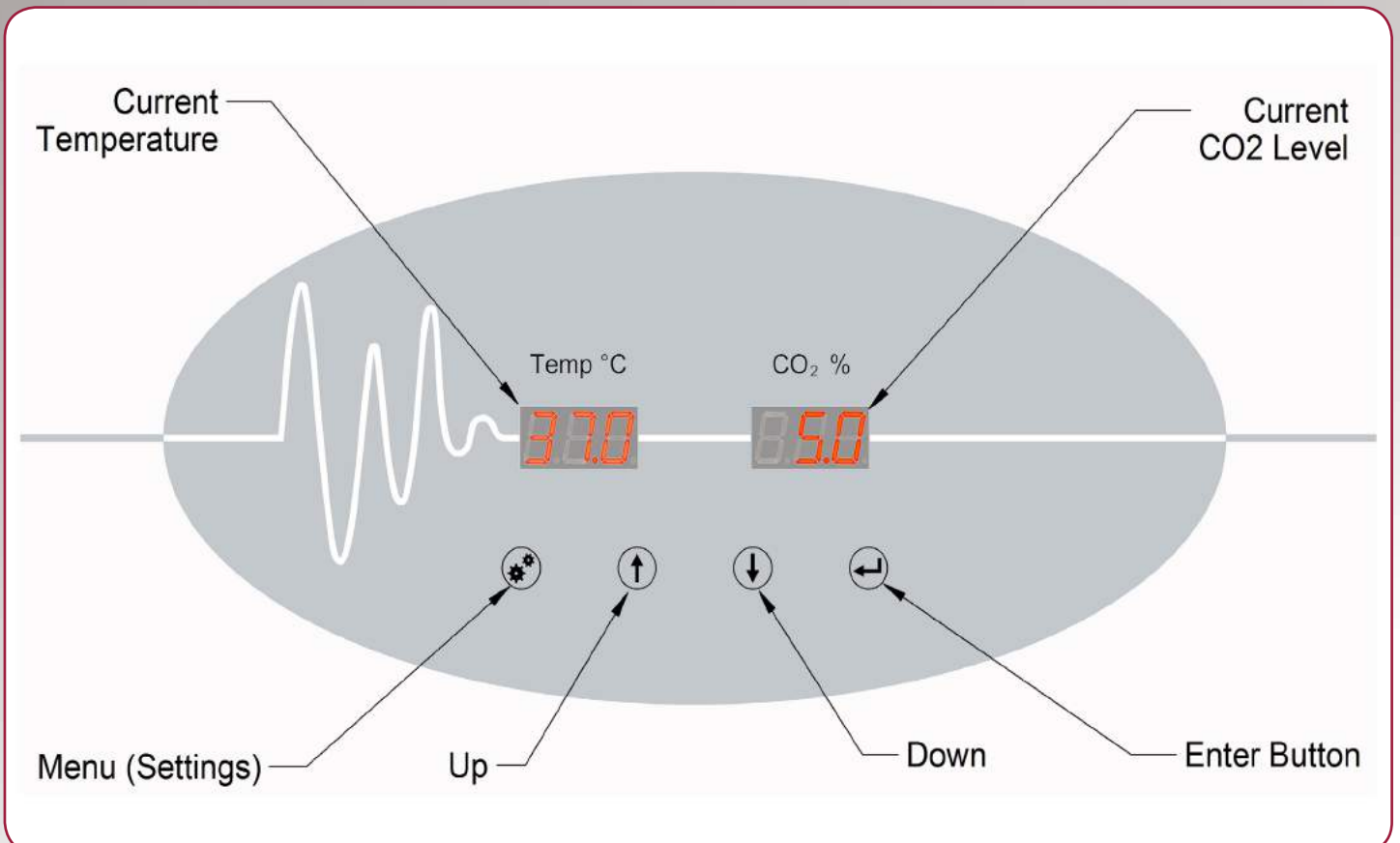


Largest capacity inner chamber for its size on the market

Clear, concise, logic LED Display and programme menus



User friendly and simple to program control system



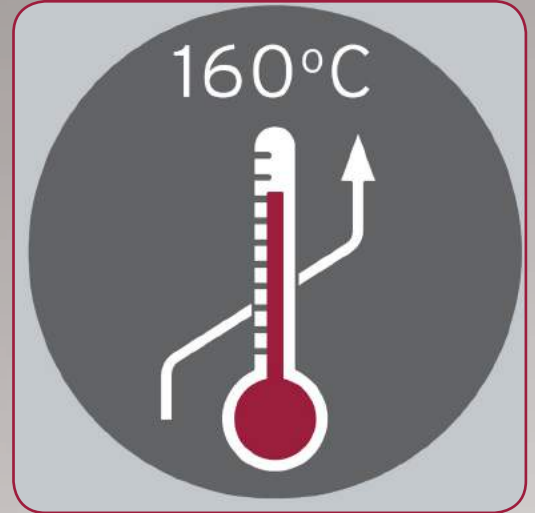
# 160°C Decontamination Cycle

An Independent evaluation of the effectiveness of LEEC's 160°C decontamination cycle against all spores and bacteria commonly associated, and possibly present in laboratory incubators:

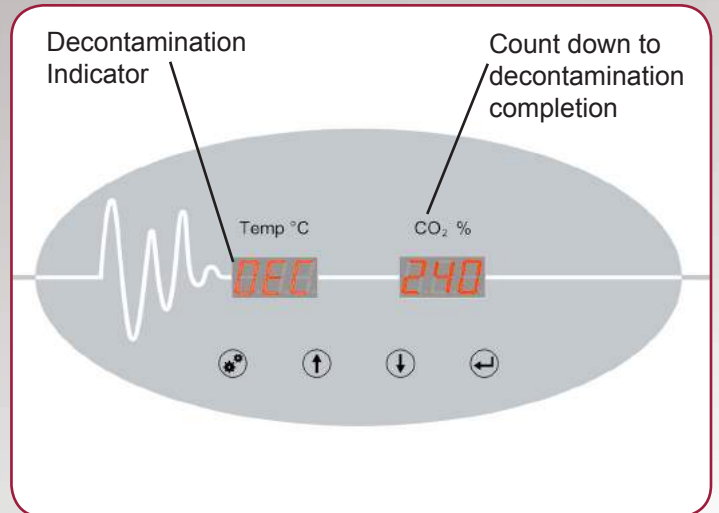
The LEEC Precision CO<sub>2</sub> incubator has been independently evaluated for the effectiveness of its 160°C decontamination cycle. The decontamination cycle was proven to be effective against the stubborn *Geobacillus stearothermophilus* spores. atcc 12980 dried on coupons (Apex Laboratories, Inc. Lot N°. K00001) *Aspergillus* spores ATCC 16404 (formally *Aspergillus niger*) and *Bacillus atrophaeus* spores NCTC dried on coupons (prepared at HPA).

Please view the full report on LEEC's website - [www.leec.co.uk](http://www.leec.co.uk)

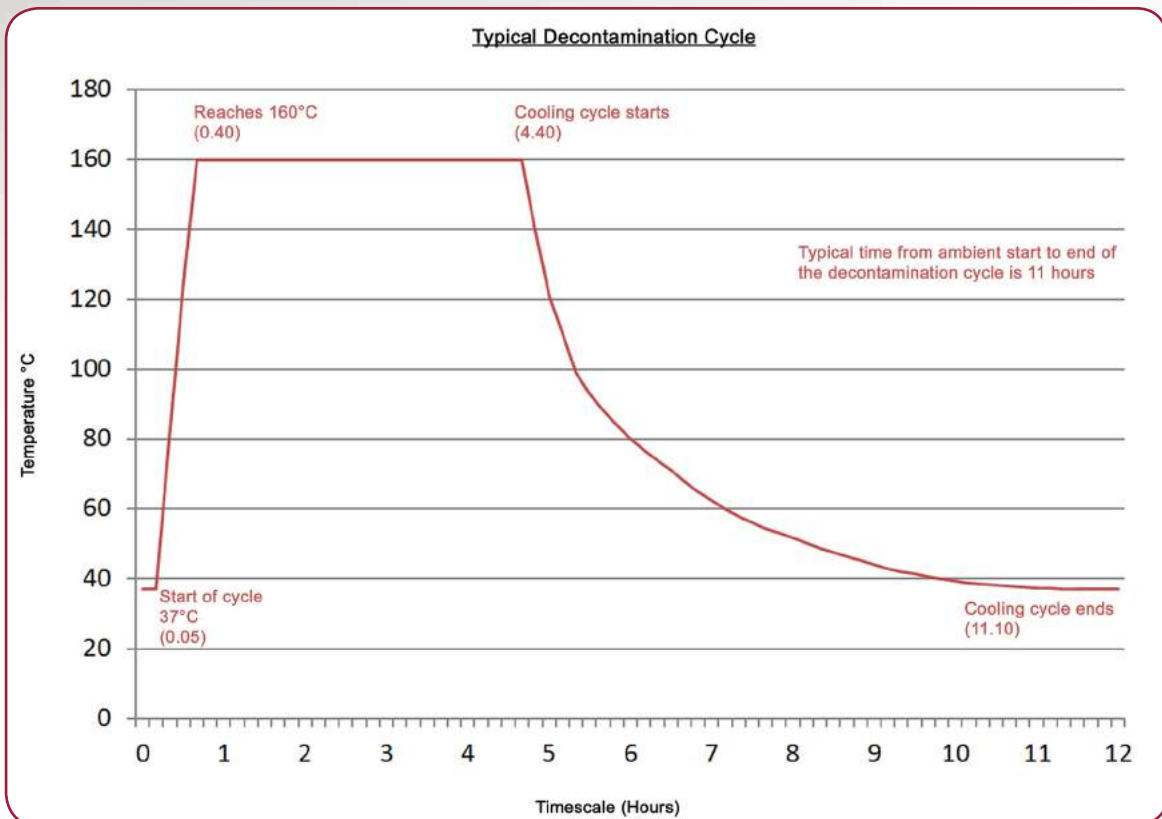
\* PLEASE NOTE - There is no need to remove the IR CO<sub>2</sub> sensor, which remains in situ during 160°C decontamination cycle



Ensure the water tray is empty of all water, make sure both the inner and outer door are closed securely



Decontamination Indication Screen



# Recovery Graphs

Typical recovery graphs for a LEEC Precision P190D model with standard glass door:  
The graphs below in Figure 1, illustrate typical recovery times for \*temperature, \*%CO<sub>2</sub> and \*%RH, after the glass door is opened for the duration of 30 seconds and then closed.  
\*Quicker recovery times are achievable with an 8 Inner door option.

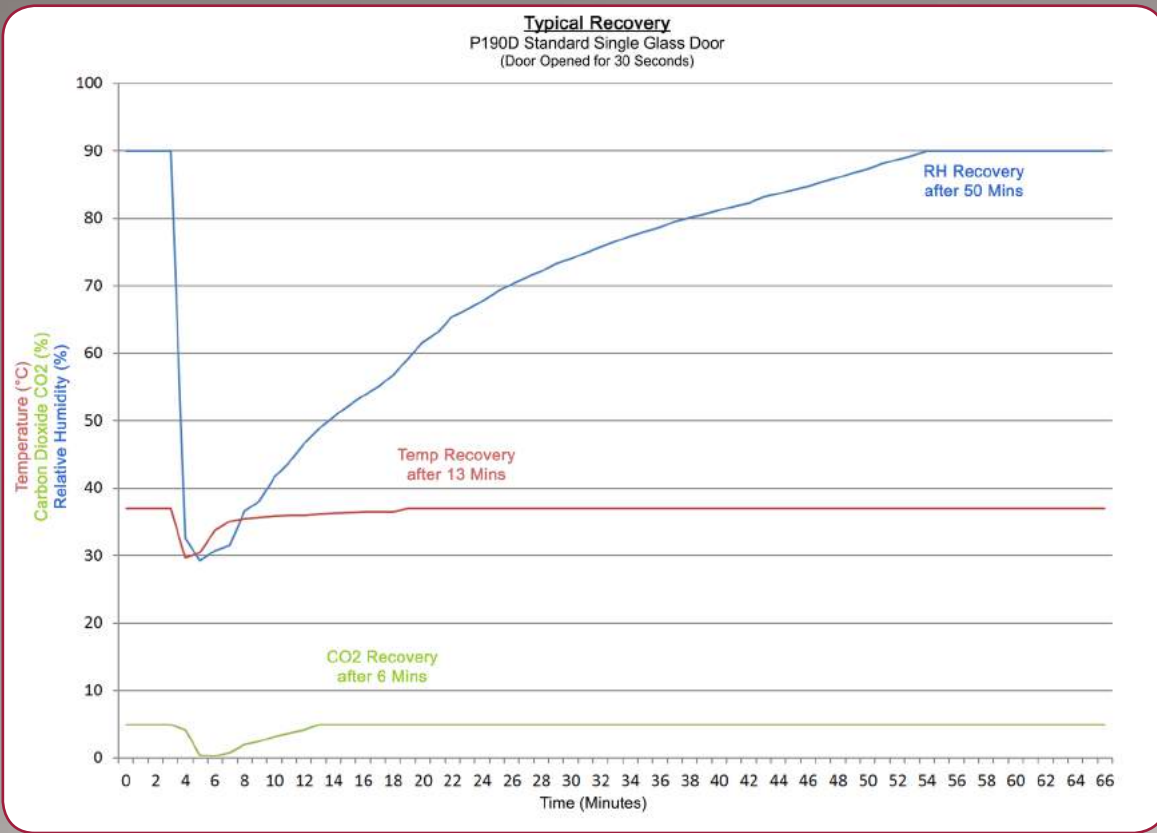
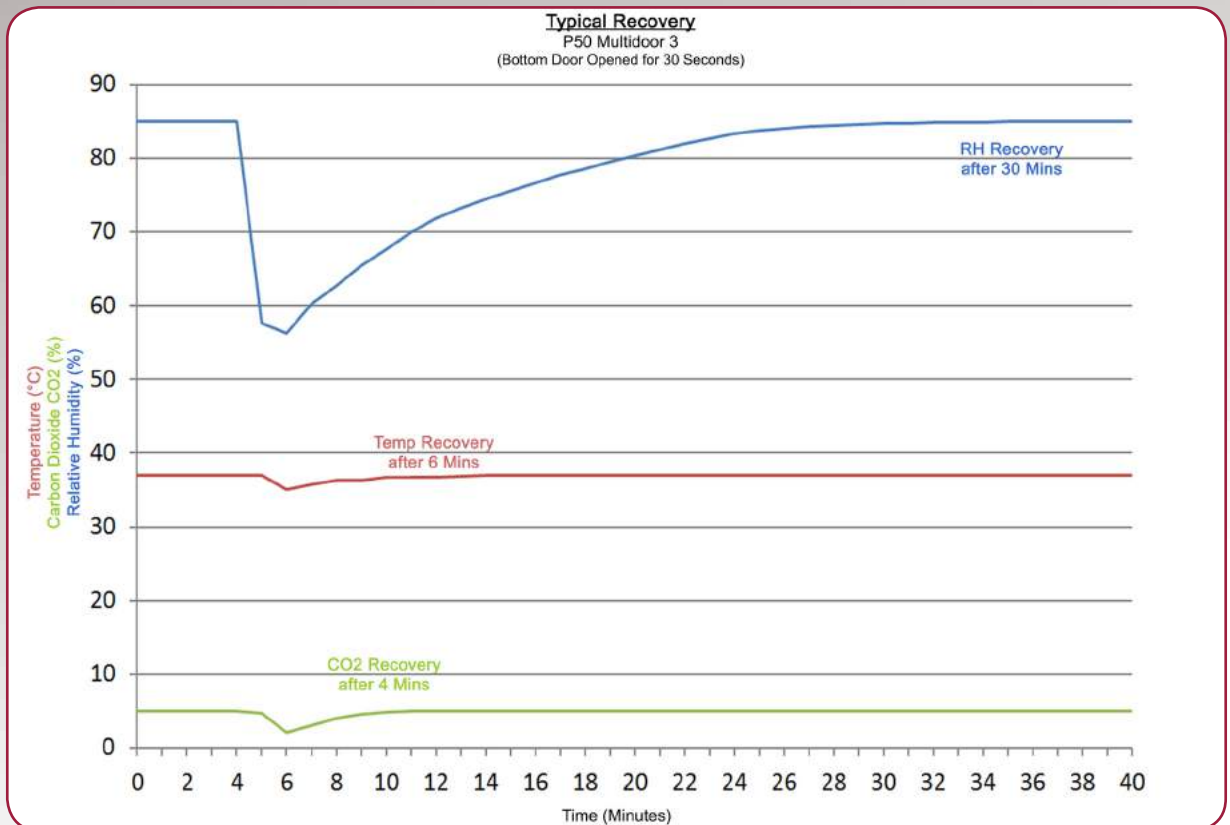


Figure 1

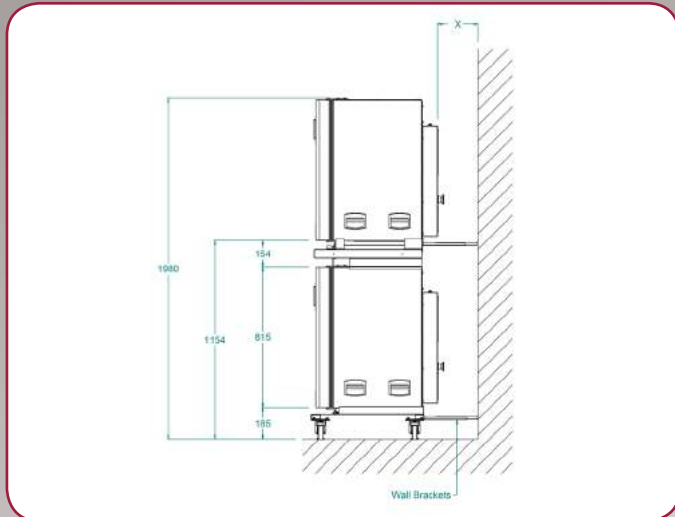
Typical recovery graphs for a LEEC Precision P50 model 3 inner door option fitted:  
The graphs below in Figure 2, illustrate typical recovery times for \*temperature, \*%CO<sub>2</sub> and \*%RH, after the bottom compartmental glass door is opened for the duration of 30 seconds and then closed.

Figure 2



## Options & Accessories, All Precision models

Options		Accessories	
8ID	8 inner door option (available on all 190 litre models)	PRV	Single-stage CO <sub>2</sub> cylinder pressure reducing valve with gauges
3ID	3 door on 50 litre models	PRV2	Two-stage CO <sub>2</sub> cylinder pressure reducing valve with gauges
		PNEU	Automatic change over unit for two cylinders (CO <sub>2</sub> or N <sub>2</sub> )
			Tygon tubing (inert). Free of VOC and CAC (Price per metre)
		PTSK2	Stacking kit for 2 x P50 or 2 x P50S
		PTST1	Wheeled Platform Trolley with 4 Castors for P50 or P50S

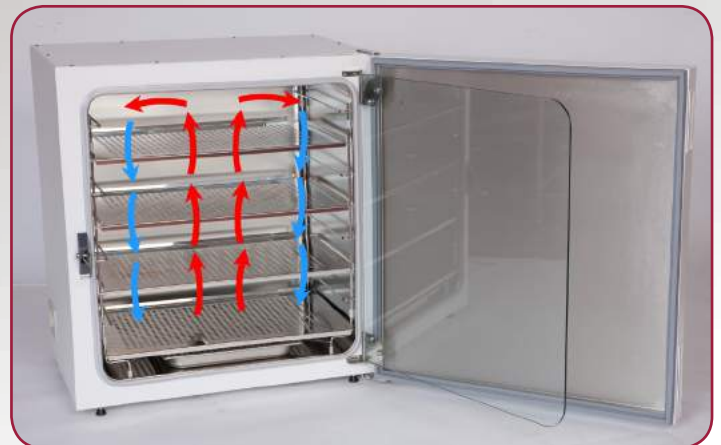


### The benefits of LEEC incubators being fanless

- Significantly reduced risk of contamination
- Zero vibration: eradicates any possibility of cell edging effect
- Significantly less evaporation; minimise loss of water in the water tray, hence less risk of sample evaporation and possible desiccation
- Considerably easier to clean
- Very easy and quick to remove shelves and shelf racks for ease of cleaning
- Considerably more useable space, no ducting or built in hepa to minimise useable space
- No hidden areas or crevasses that can be difficult to clean
- No fan maintenance
- No extra costs to replace expensive fan Hepa filters and the associated health risks in doing so
- Helps to minimise loss of chamber conditions during inner glass door opening
- No turbulent airflow that can spread contamination introduced into the inner chamber quickly.

We have designed our incubators specifically to offer the lowest risk of contamination. Contamination which can enter into an incubator from the laboratory, having been introduced by clothing, individual's hair, ventilation systems, open windows or by the soles of shoes. Once in the incubator the contamination finds it easy to lock onto the fan, the fan then spreads the contamination effectively and makes the problem even greater. The fan remains the single most difficult component in an incubator to clean. For this reason, those people who have designed incubators with fans have had to put an expensive Hepa filter in front of the fan to protect it. This adds another dimension of risk and indeed cost. Firstly, the filter has to be changed on a regular basis if it is to be effective. The process of that change means that contamination can spill from the dirty filter during the process of change. Secondly, the door is open for a long time during that change process and more contamination can enter and lock onto the fan. Thirdly, the process is time consuming and costly. Fourthly, if the filter is not changed, then the incubator system will not be working to its best capacity and fifthly the fan and filter take up valuable user space within the chamber. The fanless design eradicates all these associated problems.

## No Fan Design



Very gentle air movement by natural convection



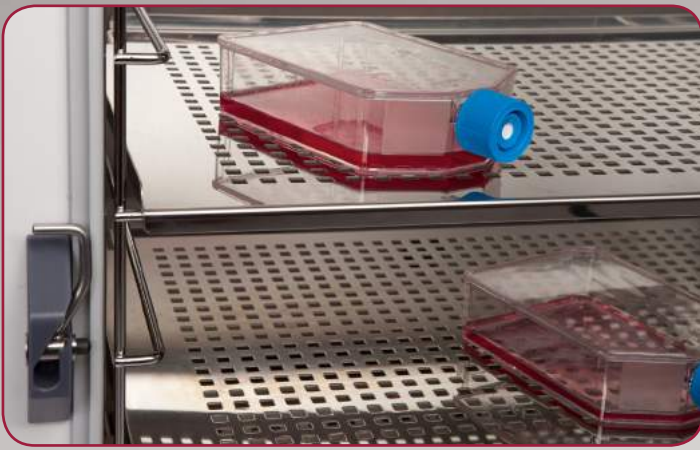
Lifting Handles



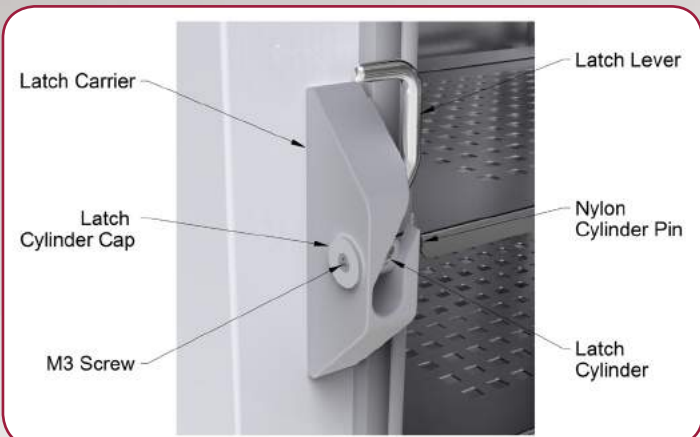
Precision P50 Single door



Rear Wheels, Easy Placement



Low profile shelf racking, maximises shelf space



CO<sub>2</sub> Precision Inner Glass Door Latch



Water Tray - separate heating element for increased control of humidity



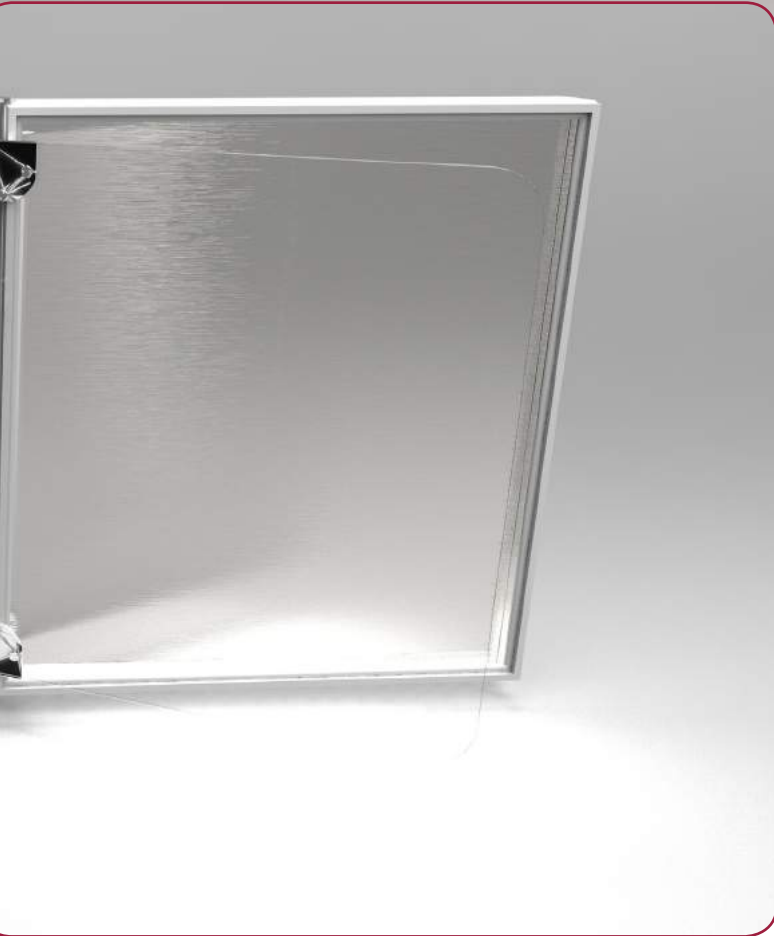
# Features



Precision P190D CO<sub>2</sub> incubator with 8 inner glass door option fitted.



Precision 50 CO<sub>2</sub> incubator with 3 Inner glass door option fitted



CO<sub>2</sub> Precision P190D



Shelving - Anti tilt easily removable shelves. Built in handle lip - Shelf dividers supplied with 8 inner door option.

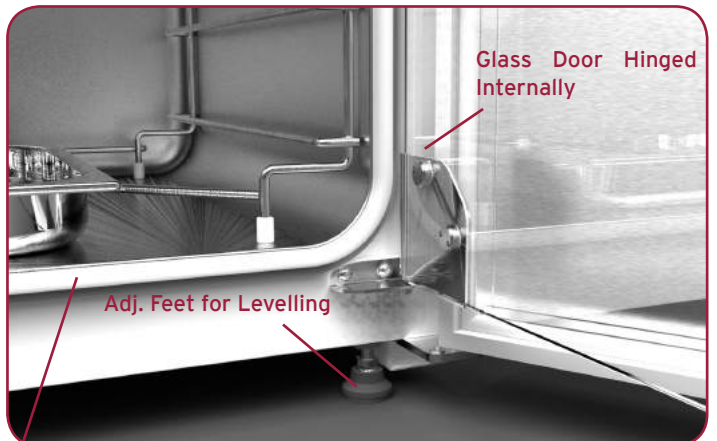


Robust Hinges

Easy to clean robust heavy duty outer door seal



Inner Chamber & Racking - Drawn Chamber - Seamless Design. Easy to Remove - Rounded Corners



Glass Door Hinged Internally

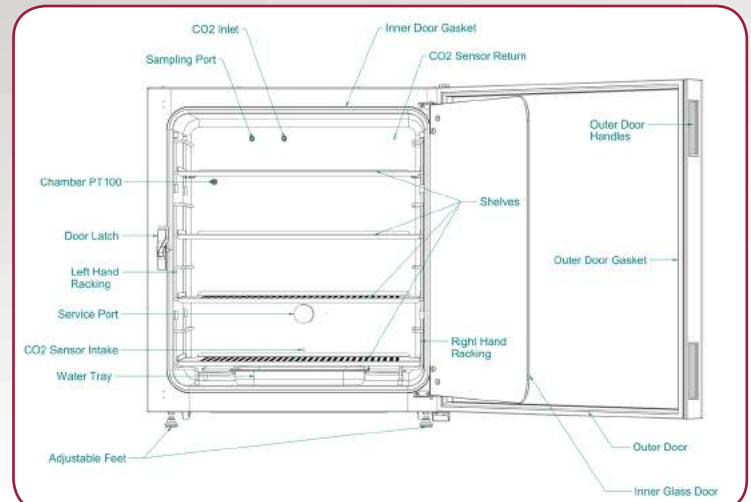
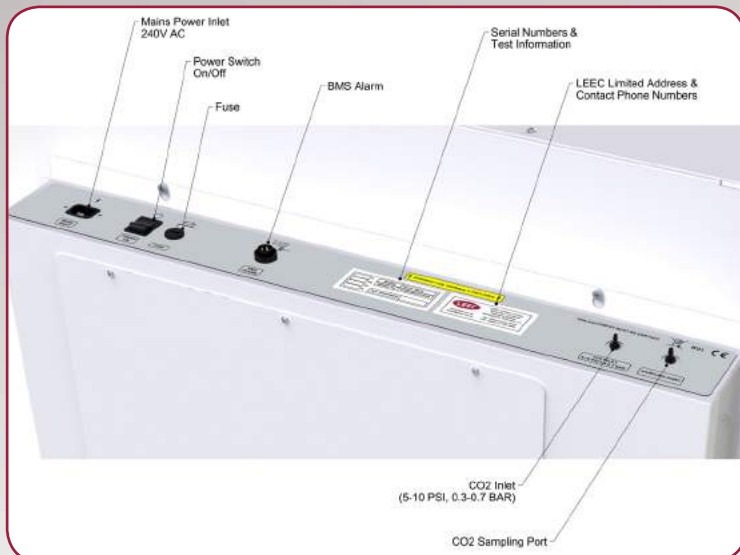
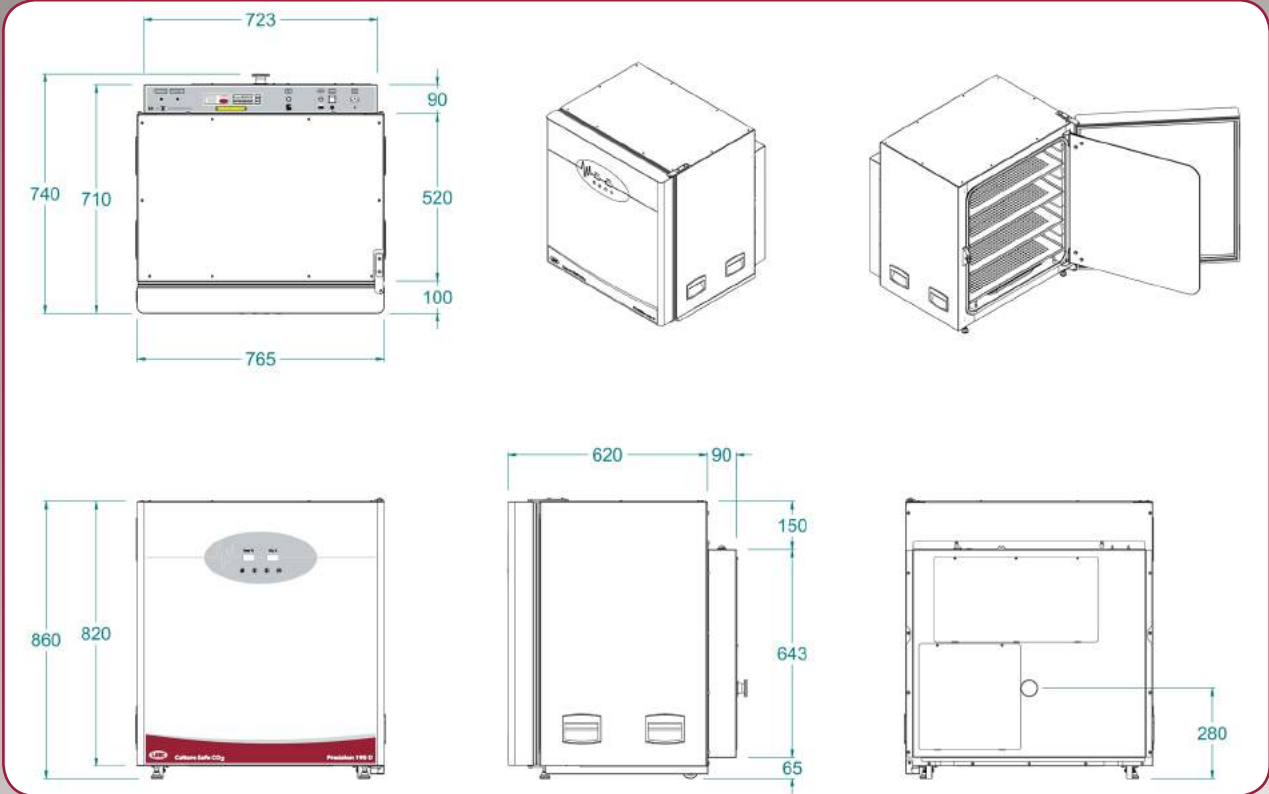
Adj. Feet for Levelling

Inner Door Seal Airtight - Round Corners

# P190 Technical Specifications

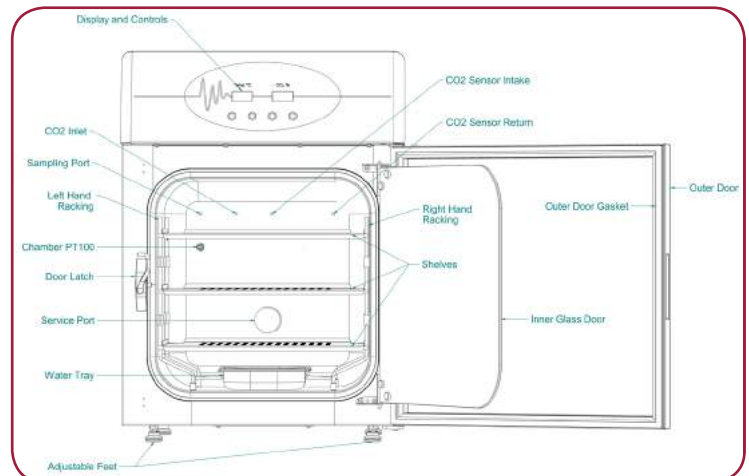
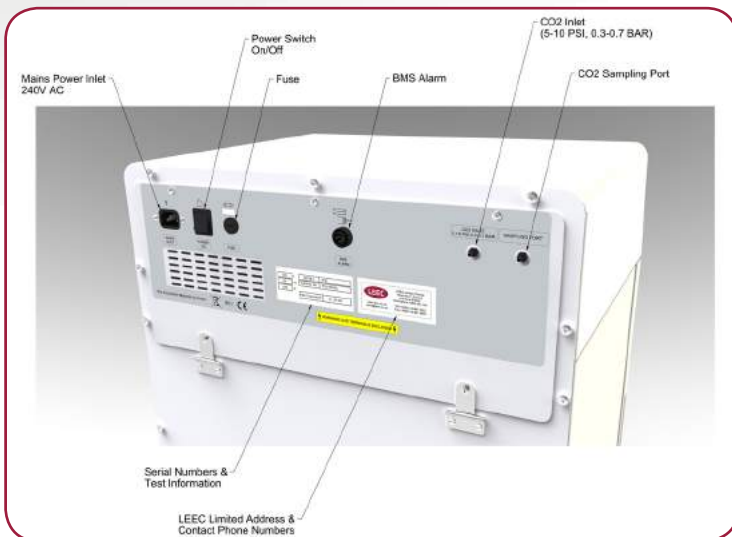
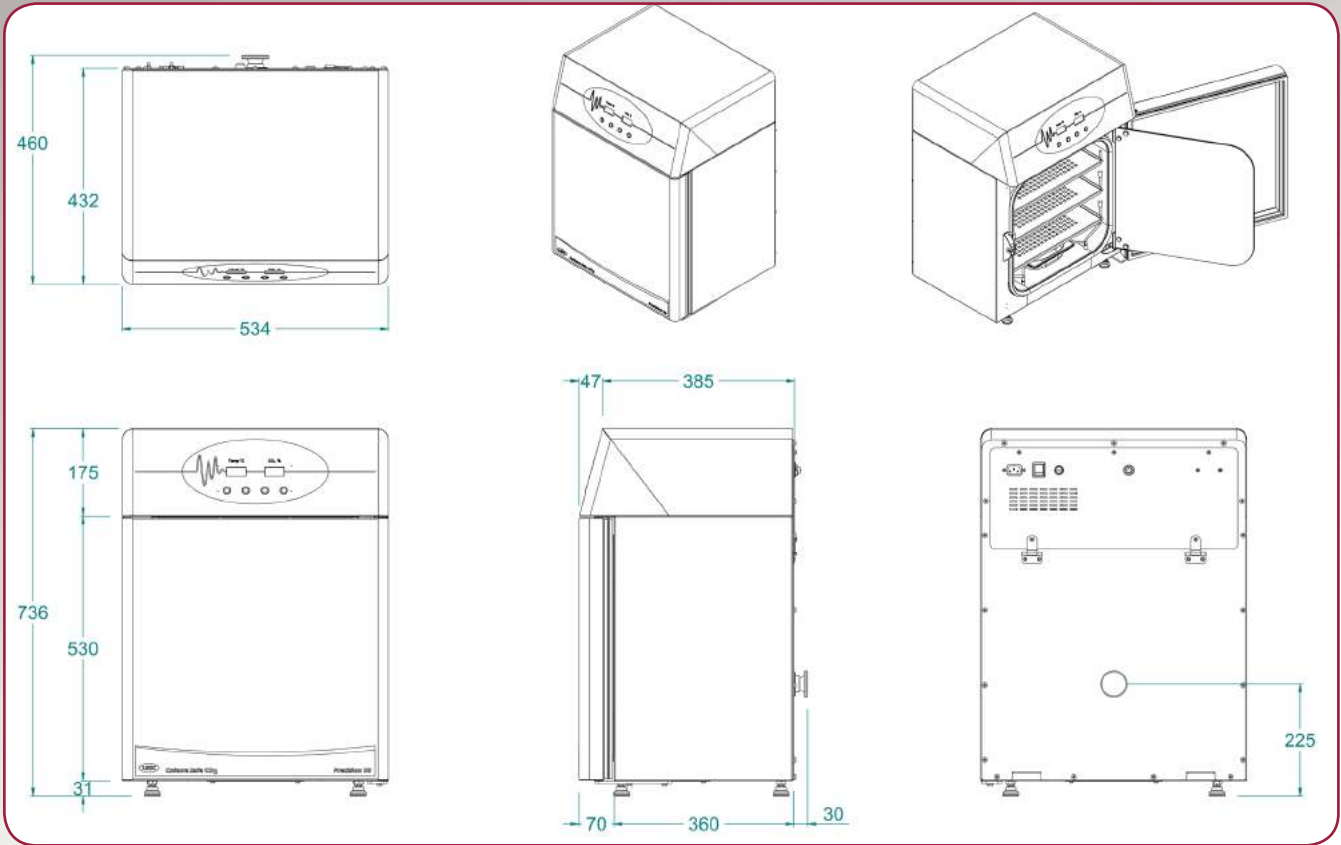
## TECHNICAL SPECIFICATIONS CULTURE SAFE PRECISION 190 & 190D

TEMPERATURE MANAGEMENT		CO <sub>2</sub> GAS MANAGEMENT		DIMENSIONS	
Range	5°C above ambient to +60°C	Range	0% to 20%	Chamber (mm)	632(w) x 686(h) x 440(d)
Control	0.1°C	Control	± 0.1%	Chamber (inches)	24.9(w) x 27(h) x 17.3(d)
Stability	± 0.1°C @ 37°C	Stability	± 0.2%	External (mm)	765(w) x 862(h) x 740(d)
Uniformity	± 0.25°C @ 37°C	Uniformity	± 0.2%	External (inches)	30.1(w) x 34(h) x 29.1(d)
ELECTRICAL		CO <sub>2</sub> Sensor		Shipping Container (mm)	925(w) x 1080(h) x 850(d)
Voltage	230 vac 50/60Hz	CO <sub>2</sub> inlet pressure	min 5 psi max 10 psi	Shipping Container (inches)	36.4(w) x 42.5(h) x 33.5(d)
Power	380w			Chamber Capacity	190 Litres
Power, High Temp. Option	1800w (P190D)		min 0.3 bar max 0.7 bar	WEIGHT	
Consumption to 37°C	0.058 kwh	HUMIDITY		Net	94.5kg precision 190 104kg precision 190D
		RH (@37°C +5%)	upto 95%	Shipping	109kg precision 190 117.5kg precision 190D



# P50 Technical Specifications

TECHNICAL SPECIFICATIONS CULTURE SAFE PRECISION 50					
TEMPERATURE MANAGEMENT		CO <sub>2</sub> GAS MANAGEMENT		DIMENSIONS	
Range	5°C above ambient to +60°C	Range	0% to 20%	Chamber (mm)	402(w) x 402(h) x 300(d)
Control	0.1°C	Control	± 0.1%	Chamber (inches)	15.8(w) x 15.8(h) x 11.8(d)
Stability	± 0.1°C @ 37°C	Stability	± 0.2%	External (mm)	534(w) x 736(h) x 460(d)
Uniformity	± 0.25°C @ 37°C	Uniformity	± 0.2%	External (inches)	21.0(w) x 28.9(h) x 18.1(d)
<b>ELECTRICAL</b>		CO <sub>2</sub> Sensor	IR	Shipping Container (mm)	800(w) x 960(h) x 600(d)
Voltage	230 vac 50/60Hz	CO <sub>2</sub> inlet pressure	min 5 psi max 10 psi	Shipping Container (inches)	31.5(w) x 37.8(h) x 23.6(d)
Power	350w		min 0.3 bar max 0.7 bar	Chamber Capacity	50 Litres
Consumption to 37°C	0.072 kwh	<b>HUMIDITY</b>		<b>WEIGHT</b>	
		RH (@37°C +5%)	upto 95%	Shipping	50kg P50
				Net	38kg P50



## Other LEEC Products



Touch Range Culture Safe CO<sub>2</sub> T50 - T190 Touch Range Culture Safe CO<sub>2</sub>



Warming Cabinet



Microbiological Incubator



Drying Cabinets

# LEEC

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