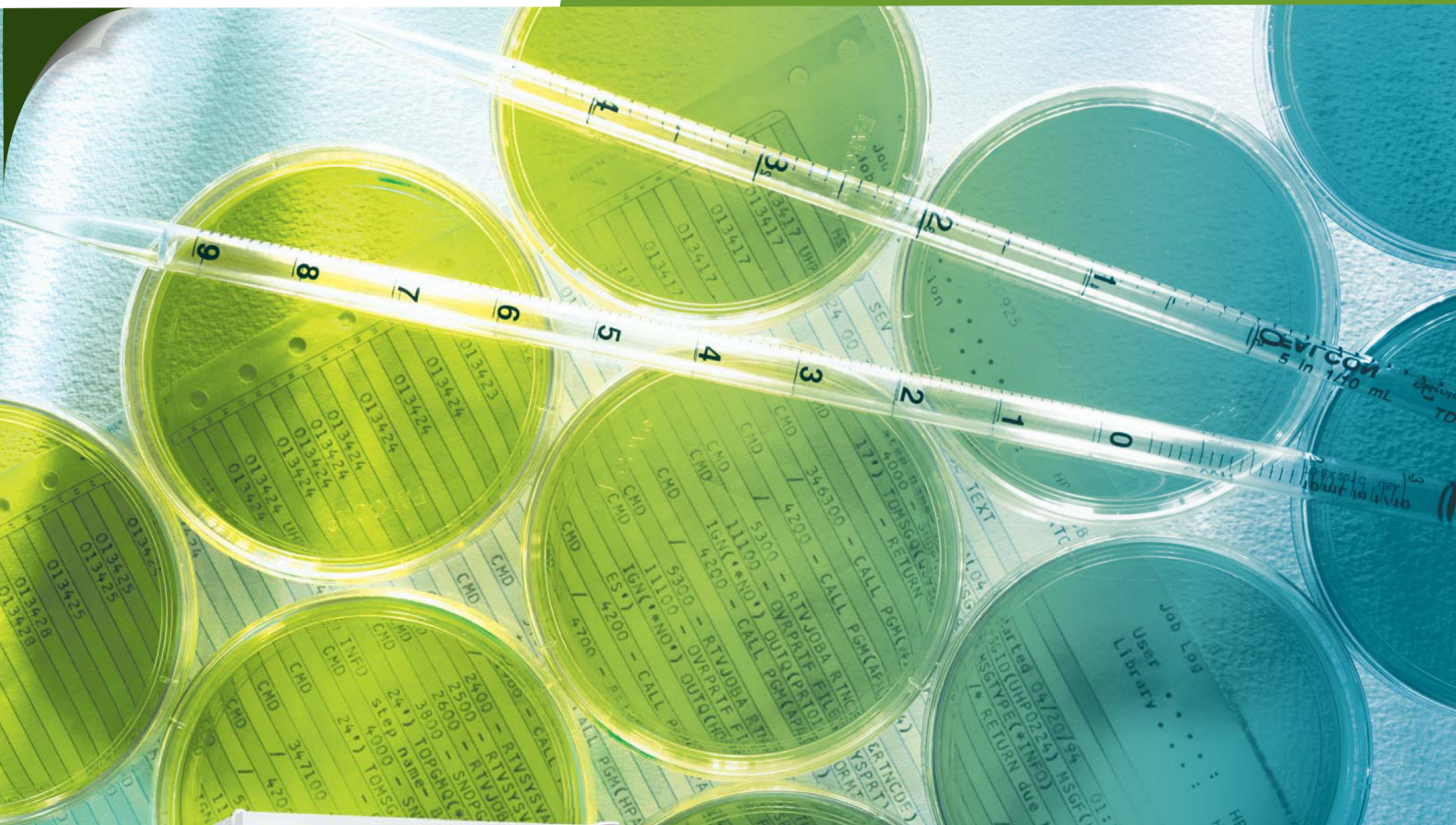


CO₂ Incubator

Ideal Culture Conditions for your success



Accurate, reliable and intuitive

Air-jacketed CO₂ Incubator

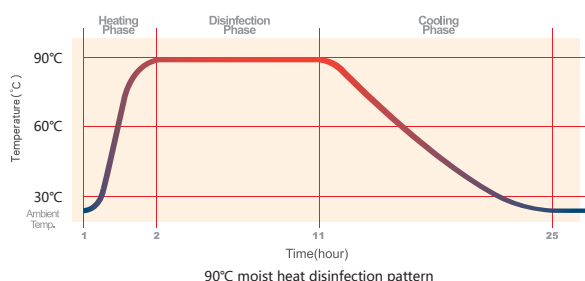
Introductions

CO₂ incubators are widely used in scientific research to grow and maintain cell cultures. A Heal Force CO₂ incubator provides you with unsurpassed natural simulation to ensure optimum growth conditions for your culture at all time. That's why they become the first choice of researchers in fields of application include tissue engineering, in vitro fertilization, neuroscience, cancer research and other mammalian cell research.



Safe for cultivation

Cell cultivation in particular is a highly sensitive process in which bacteria, viruses, fungal spores and mycoplasmas can destroy valuable cultures or distort test results, causing more work. Heal Force solves this problem using a unique design and effective method to ensure sterile conditions.

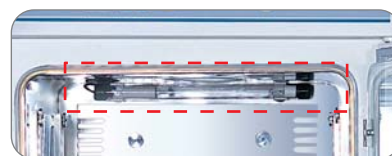


90°C moist heat disinfection (HF90 & HF240)

HF90 and HF240 are equipped with 90 °C moist heat disinfection system. The validated overnight sterilization cycle ensures reliable destruction of germs that could interfere with your work and requires no extra work, such as removal of interior fittings. Mycoplasma is 100% eliminated in a routine disinfection cycle.

Ultraviolet disinfection (HF151UV & HF212UV)

A long-life ultraviolet lamp is equipped at the inner back of HF151UV and HF212UV to sterilize chamber air and water in the reservoir to maintain contamination-free conditions within the chamber. To take maximum effect of disinfection, the wavelength of UV light is kept at 254nm.



UV lamp



Coved corners

Easy-to-clean design

The cleaning process is significantly simplified by Heal Force's unique, seamless, deep-drawn interior chamber, which reduces any areas where contamination could accumulate. Heal Force incubators offer the best usable-space-to-volume ratio due to the total absence of any additional fittings in the interior chamber

Inlet filter for CO₂ supply

All gas injection lines are filtered via HEPA filter to remove impurities and contaminants before being injected into the chamber. The HEPA filter is able to filter particles larger than 0.3µm at 99.998%.



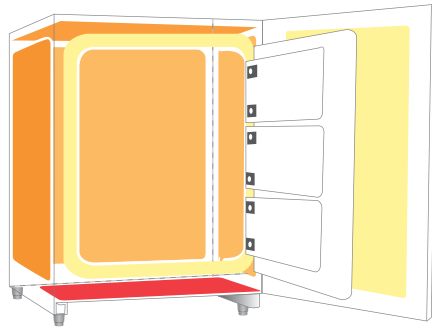
CO₂ inlet filter

Absolutely condensation-free, even at high air humidity level

The high air humidity prevents cell cultures from drying out and also keeps the osmolarity constant in the culture medium. With our CO₂ incubators, you can work with air humidity up to 95% while the internal walls remain completely dry (In order to prevent contamination, however, no condensation must occur). The patented tilted water reservoir system keeps the air humidity absolutely stable.



Water reservoir



Optimum temperature control

A reliable air jacketed heating system combined with PT1000 temperature sensors ensures high precision with homogenous heat distribution in the interior. Outstanding dynamics ensure short recovery times and balance out any fluctuations caused by door open for Heal Force CO₂ incubators. This provides reliable protection at any time, particularly for sensitive cultures.

- The main heater provides precise temperature control.
- The bottom heater warms the distilled water and ensures chamber humidity.
- The outer door heater prevents condensation on the inner door and facilitates quick temperature recovery after door openings.

Divided, inner glass door

Three inner glass doors (HF90) maintain stable climatic conditions, minimize any changes to the humidity, heat and gas concentration, shorten recovery times significantly and also further reduce the risk of contamination. Six half-size sealed inner glass doors and shelves are optional for model HF240. This makes it possible for several users to work with the same equipment.



HF90 with 3 inner glass doors (standard)



HF240 with 6 half-size inner glass doors and shelves (optional)

Auto-start function

The auto-start function, which considerably simplifies the equipment's operation, contains the incubator's automatic start-up and the measuring system's calibration. The thermal conductivity CO₂ sensor has its baseline automatically reset without manual adjustment. The incubator can be loaded immediately after the start-up routine is completed.



Auto-start function

Specifications

| Model | HF90 | HF240 | HF151UV | HF212UV |
|--------------------------------|---|---|---|---|
| Construction | | | | |
| Exterior dimensions (W×D×H) | 637×762×909(mm) 25.1×30.0×35.8(inch) | 780×820×944(mm) 30.7×32.3×37.2(inch) | 615×768×865mm 24.2×30.2×34.1(inch) | "910×763×795(mm) 35.8×30.0×34.1(inch)" |
| Interior dimensions (W×D×H) | 470×530×607(mm) 18.5×20.8×23.9(inch) | 607×583×670(mm) 23.9×22.9×26.4(inch) | 470×530×607(mm) 18.5×20.9×23.9(inch) | "600×588×600(mm) 23.6×23.1×23.6(inch)" |
| Interior Volume | 151L/5.3cu.ft. | 240L/8.5cu.ft. | 151L/5.3cu.ft. | 212L/7.5cu.ft. |
| Net Weight | 80kg/176lbs. | 80kg/176lbs. | 75kg/165lbs. | 95kg/209lbs |
| Interior | Type 304, mirror finish, stainless steel | | | |
| Exterior | Electrolyzed galvanization steel, powder coated | | | |
| Inner door | 3 inner doors standard | 6 mini inner doors optional | one inner door standard | one inner door standard |
| Temperature | | | | |
| Heating method | Direct Heat & Air Jacket (DHA) | | | |
| Temp. control system | Microprocessor | Microprocessor | Microprocessor | Microprocessor |
| Temp. sensor | PT1000 | PT1000 | PT1000 | PT1000 |
| Temp. range | 5 ℃ above ambient temperature to 50 ℃ | | | |
| Temp. uniformity | ±0.2 ℃ | ±0.2 ℃ | ±0.2 ℃ | ±0.3 ℃ |
| Temp. stability | ±0.1 ℃ | ±0.1 ℃ | ±0.1 ℃ | ±0.1 ℃ |
| CO₂ | | | | |
| Inlet pressure | 0.1 MPa | 0.1 MPa | 0.1 MPa | 0.1 MPa |
| CO ₂ control system | Microprocessor | Microprocessor | Microprocessor | Microprocessor |
| CO ₂ sensor | Thermal conductivity | Thermal conductivity | Thermal conductivity | Thermal conductivity |
| CO ₂ range | 0 to 20% | 0 to 20% | 0 to 20% | 0 to 20% |
| CO ₂ stability | ±0.1% | ±0.1% | ±0.1% | ±0.1% |
| Humidity | | | | |
| Humidifying system | Special designed water reservoir | | | |
| Relative humidity | ≥95% | ≥95% | ≥95% | ≥95% |
| Water reservior volume | 3L | 3L | 4L | 6L |
| Shelves | | | | |
| Shelf dimensions (W×D) | 423×445(mm) 16.7×17.5(inch) | 423×445(mm) 16.7×17.5(inch) | 423×445(mm) 16.7×17.5(inch) | 590×510(mm) 23.2×20.1(inch) |
| Shelf construction | 3,10 | 3,12 | 3,10 | 3,12 |
| Standard, Maximum | Type 304, mirror finish, stainless steel | | | |
| Fittings | | | | |
| Access port | Standard | Standard | Optional | Optional |
| Air filter | 0.3μm, Efficiency:99.998% (for CO ₂) | | | |
| Remote alarm contacts | Standard | Standard | Standard | Standard |
| De-contamination | 90 ℃ moist heat disinfection | 90 ℃ moist heat disinfection | UV lamp | UV lamp |
| Rated power | 600W | 735W | 600W | 700W |
| Power supply | 220V/50Hz (standard), 110V/60Hz (Optional) | 220V/50Hz (standard), 110V/60Hz (Optional) | 220V/50Hz (standard), 110V/60Hz (Optional) | 220V/50Hz (standard), 110V/60Hz (Optional) |
| Alarm system | Power interruption * High/low temperature * Deviation of CO ₂ * RH * Door ajar * Independent overheat protection | | | |
| Data output | RS232 | RS232 | RS232 | RS232 |



HF90



HF240



HF212UV



HF151UV

Water-Jacketed CO₂ Incubator

Water-jacketed

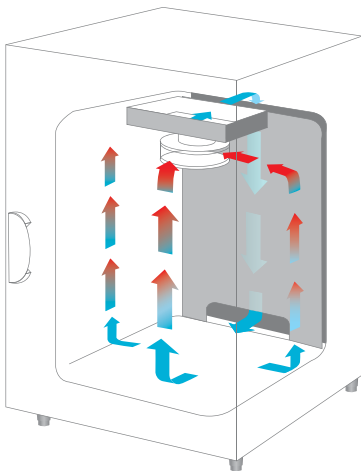
The large size Heal Force HF160W CO₂ incubator incorporates a water jacketed system. Because of the heat retention characteristics of water, there is no sudden temperature change in the event of an unexpected power failure. A stable temperature environment is ensured.

HEPA filter

HF160W applies long term effectiveness of the HEPA filter to protect your cultures. The filter is very efficient to entrap particulates larger than 0.3µm at 99.97%. The HEPA filter system runs continuously and within every 60 seconds, the volume of entire chamber is disinfected. With help of HEPA filter, the air quality achieves Class 100 clean room levels within 5 minutes following a door opening.



HEPA filter



HEPA filter and air flow pattern

Airflow system

Optimized air flow system ensures the temperature and CO₂ concentration to be stable and uniform within the chamber.

AUTO-ZERO/AUTO-START

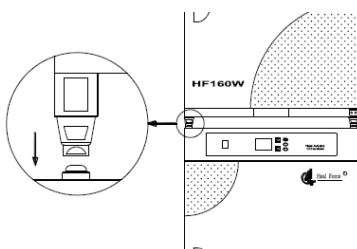
HF160W combines precise CO₂ control with a choice of TC or IR sensors. The microprocessor will automatically "Zero" the incubator(IR type) using room air as a reference every 24 hours. Auto-start function for TC type ensures the sensor's baseline automatically reset without manual adjustment. These features will maintain an accurate CO₂ control without worrying about CO₂ drift.

Automatic control door heater

The outer door incorporates a door heater which is interlocked with the surrounding temperature monitoring system. This prevents temperature differences between the chamber and the inner door, thereby preventing condensation.

Humidity display and alarming system

HF160W is able to create a high humidity environment and the relative humidity (RH) is displayed on the panel, readable in 0.1% increments, including low RH programmable alarm(alerts you of need to add water)



Space Utility

Stackable design takes up less space. Two or three units can be stacked according to available space and usage



Automatic gas cylinder switchover system

This system automatically switches from the primary to secondary gas cylinder when CO₂ gas level does not change while an injection valve is open.



- A. power switch
- B. camber gas sample port
- C. fill port
- D. CO₂ sensor
- E. temperature sensor
- F. humidity sensor
- G. piling leg
- H. mirror finish shelves
- I. water jacket
- J. glass fibre insulator
- K. high efficiency HEPA
- L. magnetic gasket
- M. outer door heater
- N. water pan
- O. water jacket drain
- P. coved corner

HF160W Specifications

Construction

| | |
|-----------------------------|---|
| Exterior dimensions (W×D×H) | 655×656×1030(mm) 25.8×25.8×40.5(inch) |
| Interior dimensions (W×D×H) | 544×504×681(mm) 21.4×19.8×26.8(inch) |
| Interior Volume | 185L/6.5cu.ft. |
| Water jacket volume | 43.5L/1.54cu.ft. |
| Net Weight | 110kg/242lbs |
| Interior | Type 304, mirror finish stainless steel |
| Exterior | cold-rolled steel, power coated |
| Inner door | one inner door standard |

Temperature

| | |
|----------------------|---|
| Heating method | Water Jacket |
| Temp. control system | Microprocessor |
| Temp. sensor | PT1000 |
| Temp. range | 5 °C above ambient temperature to 55 °C |
| Temp. uniformity | ±0.2 °C |
| Temp. stability | ±0.1 °C |

CO₂

| | |
|--------------------------------|-------------------------------|
| Inlet pressure | 0.1 MPa |
| CO ₂ control system | Microprocessor |
| CO ₂ sensor | Thermal conductivity/Infrared |
| CO ₂ range | 0 to 20% |
| CO ₂ stability | ±0.1% |

Humidity

| | |
|------------------------|--------------------|
| Humidifying system | Humidity pan |
| Humidifying sensor | Standard |
| Relative humidity | ≥95% |
| Display | In 0.1% increments |
| Water reservoir volume | 3L |

Shelves

| | |
|------------------------|--|
| Shelf dimensions (W×D) | "466×440(mm)18.3×17.3(inch) |
| Shelf construction | Type 304, mirror finish, stainless steel |
| Standard, Maximum | 3,11 |

Fittings

| | |
|-----------------------|--|
| Access port | Standard |
| Air filter | 0.3µm, Efficiency:99.998% (for CO ₂) |
| Remote alarm contacts | Standard |

De-contamination

| | |
|--|--------------------|
| | HEPA filter system |
|--|--------------------|

Rated power

| | |
|--|------|
| | 430W |
|--|------|

Power supply

| | |
|--|---|
| | 220V/50Hz (standard), 110V/60Hz (Optional) |
|--|---|

Alarm system

| | |
|--|---|
| | Power interruption * High/low temperature * |
|--|---|

| | |
|--|---|
| | Deviation of CO ₂ * RH * Door ajar * |
|--|---|

| | |
|--|---------------------------------|
| | Independent overheat protection |
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