## Specifications

| 220 V/230 V/240 V, 50 Hz (CE) | MDF-137-PE | MDF-237-PE | MDF-437-PE |
|---|---|---|---|
| External dimensions (W x D x H)*1 | 640 x 687 x 881 (mm) 25.2 x 27.0 x 34.7 (inch) | 905 x 687 x 881 (mm) 35.6 x 27.0 x 34.7 (inch) | 1265 x 807 x 902 (mm) 49.8 x 31.8 x 35.5 (inch) |
| Internal dimensions (W x D x H) | 525 x 440 x 715 (mm) 20.7 x 17.3 x 28.1 (inch) | 790 x 440 x 715 (mm) 31.1 x 17.3 x 28.1 (inch) | 1140 x 550 x 733 (mm) 44.9 x 21.7 x 28.9 (inch) |
| Capacity | 138 liters (4.9 cu. ft.) | 221 liters (7.8 cu. ft.) | 425 liters (15.0 cu. ft.) |
| Net Weight (Approx.) | 52 kg (115 lbs.) | 60 kg (132 lbs.) | 81 kg (179 lbs.) |
| Cooling performance | -30°C (AT: 35°C, no load) | | |
| Control range | -20°C to -30°C | | |
| Baskets | 2 | 3 | 4 |
| Access ports | 17mm diameter, right-hand side and bottom left | | |
| Compressor | Hermetic, 150 W | Hermetic, 200 W | Hermetic, 250 W |
| Refrigerant | HFC | | HFC and HFO combined |
| Alarm system | • High/low temperature alarm (SV ±5°C to ±15°C adjustable) • Power failure • Remote alarm contact | | |
| Calibration | Zero adjustment via control panel | | |
| Options | Temperature recorder (MTR-G85C-PE, MTR-4015LH-PE) | | |
| Baskets | MDF-13B2-PW/13B3-PW | | MDF-43B2-PW/43B3-PW |

| Model No. | | | |
|---|---|---|---|
| 110 V, 60 Hz | MDF-U5312-PT | MDF-U334-PT | — |
| 220 V, 50 Hz | MDF-U5312-PB | — | MDF-U443-PB |
| 220 V, 60 Hz | MDF-U5312-PK / MDF-U5312-PR | MDF-U334-PK / MDF-U334-PR | MDF-U443-PK / MDF-U443-PR |
| 230 V/240 V, 50 Hz (CE) | MDF-U5312-PE | — | MDF-U443-PE |
| 220 V/230 V/240 V, 50 Hz (CE) | — | MDF-U334-PE | — |
| External dimensions (W x D x H)*1 | 804 x 772 x 1802 (mm) 31.7 x 30.4 x 70.9 (inch) | 614 x 709 x 1620 (mm) 24.2 x 27.9 x 63.8 (inch) | 800 x 832 x 1810 (mm) 31.5 x 32.8 x 71.3 (inch) |
| Internal dimensions (W x D x H) | 658 x 607 x 1272 (mm) 25.9 x 23.9 x 50.1 (inch) | 490 x 486 x 1290 (mm) 19.3 x 19.1 x 50.8 (inch) | 640 x 615 x 1090 (mm) 25.2 x 24.2 x 42.9 (inch) |
| Capacity | 482 liters (17.0 cu. ft.) | 274 liters (9.7 cu. ft.) | 426 liters (15.0 cu. ft.) |
| Net Weight (Approx.) | 134 kg (295 lbs.) | 81 kg (179 lbs.) | 213 kg (470 lbs.) |
| Cooling performance | -30°C (AT: 35°C, no load) | | -40°C (AT: 35°C, no load) |
| Control range | -20°C to -30°C | | -15°C to -40°C |
| Baskets | Top: 6 small, Bottom: 4 large | 4 large, 1 small | — |
| Access ports | 30mm diameter, rear | 30mm diameter, left-hand side | 40mm diameter, left-hand side |
| Compressor | Hermetic, 400 W (PT, PB) | Hermetic, 200 W | Hermetic, 450 W/750 W |
| Refrigerant | HFC | | HFC and HFO combined |
| Alarm system | •High/low temperature alarm (SV ±5°C to ±15°C adjustable) •Power failure •Remote alarm contact •Part replacement notification | •High/low temperature alarm (SV ±5°C to ±15°C adjustable) •Power failure •Part replacement notification •Remote alarm contact •Self diagnostics •Remote alarm contact | •High/low temperature alarm (SV ±5°C to ±20°C adjustable) •Power failure •Filter clogging •Remote alarm contact •Battery/fan motor replacement notification |
| Calibration | Zero adjustment via control panel | | — |
| Options | Temperature recorder (MTR-G85C-PE/MTR-G85A-PA, MTR-4015LH-PE/PA) | | Temperature recorder (MTR-85H-PW, MTR-4015LH-PE/PA) |

*Cooling performance is indicated by the temperature reached at the center of the freezer (at ambient temperature of 30°C with no load). In order to use the freezer at a stable temperature for a long time, it is recommended that the temperature be set to at least 5°C higher than the indicated lowest temperature. In addition, depending on the usage conditions, it may not be possible to reach the indicated lowest temperature.

**Caution:** PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents of the product.
• Appearance and specifications are subject to change without notice. *1 External dimensions of main cabinet only - see dimension drawings showing handles and other external projections.

## Options

### Storage Baskets

For MDF-137/237
**MDF-13B2-PW** (set of two)
**MDF-13B3-PW** (set of three)
Outer dimensions: 255(W) x 420(D) x 205(H)mm
Inner dimensions: 210(W) x 370(D) x 200(H)mm

For MDF-437
**MDF-43B2-PW** (set of two)
**MDF-43B3-PW** (set of three)
Outer dimensions: 275(W) x 530(D) x 205(H)mm
Inner dimensions: 230(W) x 480(D) x 200(H)mm

### Temperature Recorders

**MTR-G85A-PA** (110V—120V) -100°C to +40°C
**MTR-G85C-PE** (200V—240V) -100°C to +40°C
• Recorder fixing for MDF-137/237/437: MDF-S740-PW
• Recorder fixing for MDF-U334 upper room: MDF-S740T-PW
• Recorder fixing for MDF-U5312 lower room: MPR-S7-PW
• Recording paper: RP-G85-W
• Ink pen: PG-R-PW

MTR-G85

**MTR-4015LH-PE/PA** -40°C to +14°C
• Recorder fixing for MDF-137/237/437: MDF-S3040-PW
• Recorder fixing for MDF-U5312 lower room (no kit required for MDF-U334/MDF-U443): MPR-S30-PW
• Recording paper: RP-40-PW

MTR-4015LH-PE

**MTR-85H-PW**
(for MDF-U443 only)
-100°C to +50°C
• Recording paper: RP-85-PW
• Ink pen: DF-38FP-PW

MTR-85H-PW

Interface board (For data acquisition system MTR-5000 users only)
**MTR-L03-PW / MTR-480-PW**

TÜV SÜD

Preservation (freezers, refrigerators) and Culturing (incubators) Equipment
The management of the design, development, production, sales support, and servicing of the above.
PHC Corporation, Biomedical Division
1-1-1 Sakada, Oizumi-machi, Ora-gun, Gunma 370-0596, Japan

ISO 14001 JACO MS JAB CM021 EC97J1224
UKAS MANAGEMENT SYSTEMS 051

PHC Corporation Biomedical Division is certified for:
**Environmental management system: ISO14001**

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# PHCbi

## Biomedical Freezers

# Preservation
## sub-zero

## Biomedical Freezers

PHCbi Biomedical Freezers offer the outstanding reliability and performance required in a wide variety of storage and research applications.



MDF-U334

MDF-U5312

MDF-U443

MDF-137

MDF-237

MDF-437

**PHC Corporation, Biomedical Division**

Life Science Innovator Since 1966

# Biomedical Freezers

## Chest type
*Power to cope with frequent door openings*

## Upright type
*Maximum capacity in minimum installation space*

*Powerful fan ensures temperature uniformity throughout the freezer cabinet.*

### Small size suitable for personal use
- Digital temperature display as standard feature
- Compact, personal size

### Versatile mid-size model
- Digital temperature display as standard feature
- Easy-to-use 200-liter mid-size model

### Large size 400-liter class
- Digital temperature display as standard feature
- Large-capacity, economical size

### Large-capacity, economical, space-saving model
- Top/bottom twin door design prevents cold air escaping
- Convenient storage drawers

### Easy-to-use, slim & compact design
- Microprocessor digital temperature display
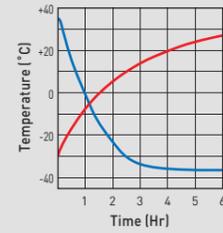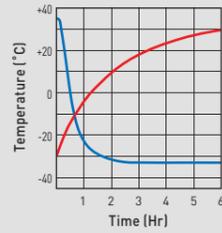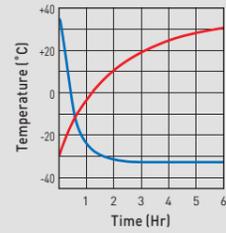- Convenient storage drawers

### Forced air circulation & auto defrost
- High freezing power increases temperature uniformity
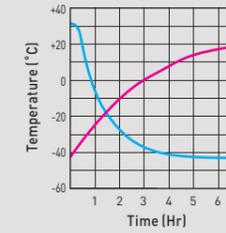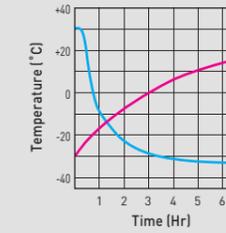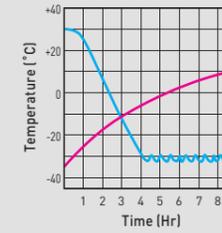- Auto defrost for easy maintenance

| Model | Effective capacity |
|---|---|
| MDF-137 | 138 liters (4.9 cu.ft.) |
| MDF-237 | 221 liters (7.8 cu.ft.) |
| MDF-437 | 425 liters (15.0 cu.ft.) |
| MDF-U5312 | 482 liters (17.0 cu.ft.) |
| MDF-U334 | 274 liters (9.7 cu.ft.) |
| MDF-U443 | 426 liters (15.0 cu.ft.) |

## Performance Data

— Pull-down characteristics under no-load condition
— Pull-up characteristics under no-load condition

— Pull-down characteristics
— Pull-up characteristics during power failure

Central air temp. in cabinet
Ambient temp. 35°C, No-load

(Charts: Temperature (°C) vs Time (Hr) for each model)

## Features

### Enhanced Operation
- Front-mounted display/control panel (with microprocessor) located at convenient waist height



- Memory backup
- Temperature display
- Front access calibration for temperature recorder
- The control panel, alarm system and non-volatile memory are the same for all models in the series.

- Single electrical box makes servicing simpler.
- The chamber temperature is displayed for five seconds if BUZZER key is depressed during power failure alarm.
- After a power outage, operation resumes at pre-outage settings (non-volatile memory for temperature and alarm temperature settings)
- Control panel can be reset to zero for validation.
- Two access ports (right-hand side and bottom left) (chest type)
- Four casters and two adjustable feet

### Recording Features (Optional)
Recorder can be fitted in convenient position that will not interfere with installation. Choice of optional recorders
- 7-day circular recorder (MTR-G85C-PE) and 32-day strip recorder (MTR-4015LH-PE) are available. (except MDF-U443)
- Front access calibration for temperature recorder

### Environment-Friendly
- HFC refrigerants (non-CFC, non-HCFC, HFC and HFO combined) is environment-friendly but offers superb performance.
- Pre-coated metal body causes less environmental damage than conventional paint coating.
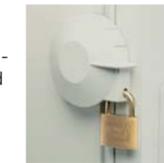
### Safety Features
- Alarm & Recording System
- High / low temperature alarm
- Power failure alarm
- Remote alarm contact
- Self diagnostics function. Should an abnormality be picked up, an error code will be displayed in red figures.
- Breaker switch turns power off in event of over current abnormality.
- Balance hinges keep the lid open in any position to make this chest freezer easier to use. This means you have both hands free to work. (chest type)

- Secure lock safeguards the contents of the freezer and keeps hazarous items out of harm's way.
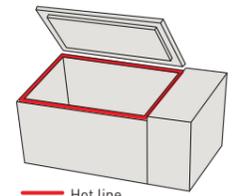
Newly designed lid lock (chest type).

- Door latch can accommodate a pad lock for added protection of valuable samples. (upright type)

- Part replacement notification (MDF-U5312)

### Hot line for secure sealing
Moisture condensation at the top edges of the cabinet due to differences in temperature inside and out causes frost and icing problems that may reduce heat insulation efficiency and obstruct door movements. These problems are prevented by the "hot line" by means of which hot gas from the higher temperature circuit is circulated through the problem areas.

— Hot line

## Dimensions
Unit: mm

(Dimensional drawings for MDF-137, MDF-237, MDF-437, MDF-U5312, MDF-U334, MDF-U443 with Front and Side views)