

F

RANGE



# Plasma Storage Freezers

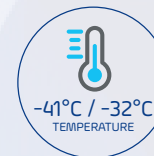
B Medical Systems | F Range

Plasma Storage Freezers are devices intended for the safe storage of frozen blood plasma or blood components at temperatures below  $-27^{\circ}\text{C}$ .

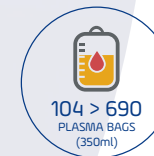
**Compliant to DIN 58375 | Medical Device Class IIa according to MDD 93/42/EEC**



7  
MODELS



$-41^{\circ}\text{C}$  /  $-32^{\circ}\text{C}$   
TEMPERATURE



104 > 690  
PLASMA BAGS  
(350ml)



SN  
CLIMATE  
CLASS



MEDICAL DEVICE  
Certified  
93/42/EEC



medical  
systems

SAVING LIVES  
THROUGH RELIABLE  
AND INNOVATIVE  
TECHNOLOGY

Blood Management Solutions



# Safety Standards B Medical Systems



The Safety Standards developed by B Medical Systems define certain significant technical features of a product. These ensure the safe storage of the preparations as well as setting the highest standards of safety for the user.

PRECISION LINE	PREMIUM LINE	
●	●	B Medical Systems Electronics
●		B Medical Systems digital display
	●	B Medical Systems 7" full touchscreen display
●		Safety door lock (with 2 keys) and key-operated power switch ON/OFF (with 2 keys)
●	●	Power indicator light and digital temperature indicator (display: 0.1 digits)
	●	Controlled fan cooling system for constant temperature and even temperature distribution across the entire refrigerating chamber
	●	Automatic switch-off of the evaporator fans when the door opens
●	●	Self-contained alarm system with integrated battery takes over the alarm function and temperature value measurements in case of system failure for at least 48 hours
●	●	Acoustic and visual alarm signal in case of temperature alarm and system failure
	●	The alarm history function on the electronic stores all the relevant values during a temperature alarm, such as: min., max., average temperature and alarm duration
●	●	Remote transmission alarm signal (via potential-free contact) in case of temperature alarm (change-over contact)
●	●	Door opening alarm (visual / acoustic)
●	●	Designed and tested for climatic class SN (ambient temperature range +10°C to +32°C)
	●	Interior made from stainless steel
●	●	Additional remote transmission alarm signal (via potential-free contact) in case of system failure (change-over contact)
	●	Smooth castors for optimum flexibility of movement
	○	External water cooling
	○	Ambient temperature sensor
○	●	*B Connected - Universal software for the monitoring of refrigeration devices, including the acquisition, recording and visualization of temperature data
○		DCU (Data Communication Unit) - Hardware module monitoring all operating conditions and passing them through to a central database – via local network (in combination with *B Connected)
	●	Ethernet interface for the visualization of all operating and control functions (hardware and software settings) via *B Connected monitoring software on a peripheral device (computer)

# Plasma Storage Freezers

## B Medical Systems | F Range

Plasma Storage Freezers are devices intended for the safe storage of frozen blood plasma or blood components at temperatures below  $-27^{\circ}\text{C}$  developed as a result of over 35 years of expertise in refrigeration technology.

7 models • Volume 121 > 895 L • Set temperature  $-41^{\circ}\text{C}$  /  $-32^{\circ}\text{C}$  • Climate class SN • Compliant to DIN 58375 | MDD 93/42/EEC, Class IIa

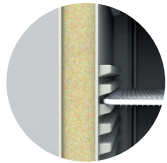
In conformity with national and international guidelines, regulations for Medical Devices offering reliability, efficiency and safety at an optimal price.

MODELS F131-291-381 | PRECISION LINE



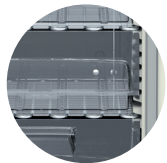
### Integrated multi-function monitoring electronics

Integrated B Medical Systems multi-function electronics; with easy access in the door level; offers alarms, central alarm system, set point security, battery backup, full display and many other control features; compatible with °B Connected monitored solution for data monitoring and recording.



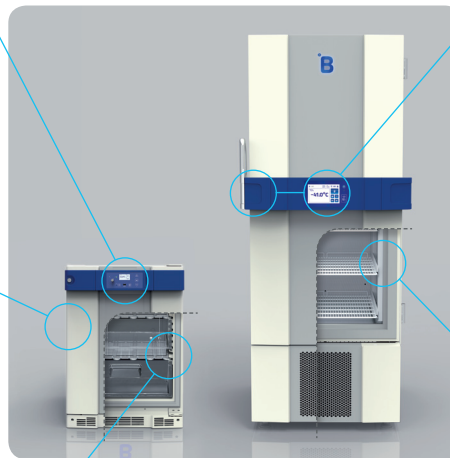
### Lifetime warranty corrosion-free cabinet

- One piece material cabinet with a lifetime warranty for zero corrosion, highest quality polypropylene for better insulation and no sharp edges to provide easier maintenance and cleaning
- Smart ergonomics - Easier and safer handling because of heavier components placed at the bottom



### High storage capacity

High storage per square meter in terms of net volume, with a very versatile inner volume utility due to multiple user friendly rails allowing modularity.



### Exclusive integrated electronics handle bar *(Patent pending)*

All functionalities are easily accessible:

- Digital control with full functionalities - New B Medical Systems 7" full touchscreen display integrated at optimal level in the door handle with pre-installed connection allowing exclusive °B Connected monitoring functionalities
- Open/close - Heavy duty door lock mechanism



### High quality materials

New high quality coating, certified medical devices quality and antibacterial, high quality steel for better longevity and easy hygiene control.



### Versatile modularity

Excellent storage capacity and modularity - Large choice of shelves and drawers offering modularity for every need.

### Special features for easy deicing and defrosting

- New evaporator offering better performance than market average, resulting in lesser ice formation with automatic defrost
- Insulated inner doors for significantly lower loss of cooling when open

MODELS F401-501-701-901 | PREMIUM LINE



## Technical Data

### General features



**F131**

**F291**

**F381**

**F401**

**F501**

**F701**

**F901**

<i>Gross / Net volume (l)</i>	121 / 106	297 / 269	362 / 329	451 / 384	598 / 510	747 / 636	895 / 763
<i>Storage capacity (plasma bags)</i>	104 (350ml)	252 (350ml)	332 (350ml)	345 (350ml)	460 (350ml)	575 (350ml)	690 (350ml)
<i>Set temperature (preset)</i>		-32°C				-41°C	
<i>Set temperature (setting range) can be adjusted in steps of 0.1°C</i>		-				-41°C to -32°C	
<i>Temperature cold / warm alarm limit</i>		-37°C / -27°C				-46°C / -32°C	
<i>Hold over time</i>	0.7 h (-32°C to -23°C)	0.7 h (-32°C to -23°C)	0.6 h (-32°C to -23°C)	2.5 h (-41°C to -18°C)	3.0 h (-41°C to -18°C)	3.0 h (-41°C to -18°C)	3.2 h (-41°C to -18°C)
<i>Climate class (ambient temperature range)</i>				SN (+10°C to +32°C)			
<i>Defrosting technique</i>		Manual		Automatic (hot gas)			
<i>Refrigerant type</i>		R290					
<i>External dimensions H x W x D (mm)</i>	830 x 595 x 695	1670 x 595 x 695	1980 x 595 x 695	1988 x 699 x 1039	1988 x 845 x 1039	1988 x 992 x 1039	1988 x 1139 x 1039
<i>Inner dimensions H x W x D (mm)</i>	630 x 475 x 470	1470 x 475 x 470	1790 x 475 x 470	1370 x 447 x 713	1370 x 590 x 713	1370 x 740 x 713	1370 x 887 x 713
<i>Net weight with standard equipment (kg)</i>	60	100	112	276	301	319	346

<b>Energy Saver</b>	<i>Supply voltage (V)</i>	220-240	115-127	220-240	115-127	220-240	115-127	230	220	115-127	230	220	115-127	230	220	115-127	230	220	115-127
	<i>Frequency (Hz)</i>	50 / 60	60	50 / 60	60	50 / 60	60	50	60	60	50	60	60	50	60	60	50	60	60
	<i>Power (W)</i>	300	360	300	360	300	360	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300
	<i>Energy consumption (kWh/24h)</i>	1.35 / 1.28	1.98	2.19 / 1.92	2.04	2.63 / 2.40	2.59	5.4	6.1	4.9	6.6	5.4	5.2	7.4	5.7	5.3	6.8	6.1	7.6
	<i>Heat emission (Kcal/h)</i>	53	65	78	58	94	89	193	219	176	236	192	186	265	205	190	244	219	272
	<i>Compressor running time (%)</i>	37	36	54	32	65	54	50	43	40	42	40	43	50	39	43	50	43	52
	<i>Noise level (dB(A)) (at 1m height &amp; 1m distance)</i>	45 / 47	47	42 / 43	45	46 / 47	47	60	61	58	60	60	54	55	61	60	58	59	60



## Technical Data Specifications



**F131**

**F291-381**

**F401-501-701-901**

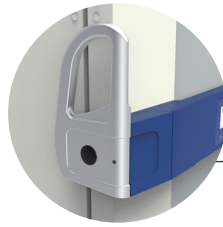
<i>Regulation sensor</i> <i>Precision (from -80°C to +180°C) ± 0.3°C</i>	NTC	PT1000		
<i>Display sensor</i> <i>Precision (from -80°C to +180°C) ± 0.3°C</i> <i>in reference body / 100 ml DOW</i> <i>corning 200-5CST (Silicon Oil)</i>	NTC	PT1000		
<i>Accu data / function time of the control panel when system failure</i>	12 V - 2.3 AH / 48h	12 V - 7 AH / 48h		
<i>Relative humidity at +32°C</i>	≤ 75%			
<i>Door insulation (polyurethane)</i>	82 mm PU	65-82 mm PU		
<i>Casing insulation (polyurethane)</i>	60-65 mm PU	77-82 mm PU		
<i>Material</i>	<i>Inner body</i>	Polypropylene (copolymer UV)	Stainless steel (1.4301)	
	<i>Outer body</i>	Polypropylene (copolymer UV)	DX51D + Z100 coated	
	<i>Inner door</i>	Polypropylene (copolymer UV)	Aluminium	Stainless steel (1.4301)
	<i>Outer door</i>	Polypropylene (copolymer UV)	DX51D + Z100 coated	
	<i>Separate interior doors</i>	-	Anodized aluminium	
	<i>Drawer</i>	Polycarbonate, transparent	-	
	<i>Shelf</i>	-	Wire DIN177, PA11 coated	
<i>European Medical Device Directive</i>	93 / 42 / EEC, Class IIa (models: 220-240 V - 50/60 Hz & 230 V - 50 Hz)			
<i>EMC directive</i>	2014 / 30 / EU (models: 220-240 V - 50/60 Hz & 230 V - 50 Hz)			
<i>Low voltage directive</i>	2014 / 35 / EU (models: 220-240 V - 50/60 Hz & 230 V - 50 Hz)			
<i>FDA regulation</i>	Class II medical devices acc. to 21CFR Part 864.9700 (models: 115-127 V - 60 Hz & 220 V - 60 Hz)			
<i>cCSAus certificate</i>	Yes (models: 115-127 V - 60 Hz & 220 V - 60 Hz)			
<i>GMP - Clean room classification</i>	Class ISO 6 / EC GMP B	Class ISO 5 / EC GMP A		

Subject to change without prior notice. Some of the accessories shown in the pictures are optional.

**SAVING LIVES THROUGH RELIABLE AND INNOVATIVE TECHNOLOGY**



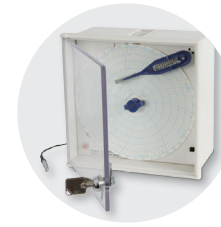
7" FULL TOUCHSCREEN DISPLAY



ERGONOMIC HANDLE



SEPARATE INTERIOR DOORS

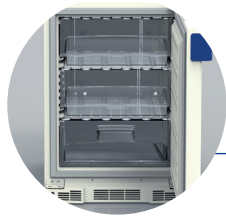


TEMPERATURE CHART RECORDER  
(sample image)

## Equipment General

	F131	F291	F381	F401	F501	F701	F901
<i>B Medical Systems Electronics</i>							
Digital display	●	●	●	-	-	-	-
7" full touchscreen display	-	-	-	●	●	●	●
Ergonomic handle open/close - heavy duty door lock mechanism	-	-	-	●	●	●	●
Separate interior doors in order to minimize the loss of cold air	-	-	-	●	●	●	●
*B Connected - Monitoring Software	○	○	○	●	●	●	●
DCU - Data Communication Unit (in combination with *B Connected)	○	○	○	-	-	-	-
Ethernet interface	-	-	-	●	●	●	●
Temperature chart recorder pre mounted (in the form of a circular chart recorder)	○	○	○	○	○	○	○
Ambient temperature sensor	-	-	-	○	○	○	○
Potential-free alarm contact in case of system failure	●	●	●	●	●	●	●
Integrated port for external sensor (installed by customer)	●	●	●	●	●	●	●
External water cooling	-	-	-	○	○	○	○
Rollers   Smooth castors with stabilizers	● 2   -	● 2   -	● 2   -	-   ● 4	-   ● 4	-   ● 4	-   ● 4
Door hinge Right   Left	●   ○	●   ○	●   ○	●   ○	●   ○	●   ○	●   ○

● Standard ○ Optional - Not available



**DRAWER**

2 versions:  
• with or without Front Cover  
• bottom

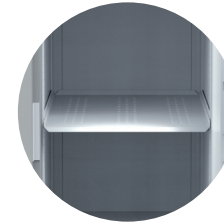


**WIRE SHELF**



**ST-DRAWER**  
(STAINLESS STEEL)

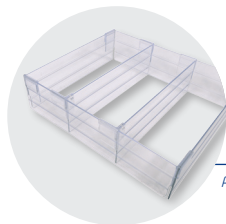
Available with or without Front Cover



**ST-SHELF**  
(STAINLESS STEEL)

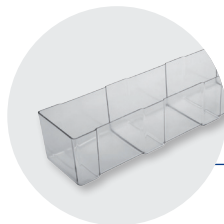
## Equipment Internal storage

Standard	F131	F291	F381	F401	F501	F701	F901
<i>Drawer with Front Cover</i>	● 2	● 6	● 7	-	-	-	-
<i>Drawer without Front Cover</i>	-	-	● 1	-	-	-	-
<i>Bottom Drawer</i>	● 1	● 1	● 1	-	-	-	-
<i>Wire Shelf</i>	-	-	-	● 5	● 5	● 5	● 5
<b>Optional</b>							
<i>ST-Drawer with Front Cover</i>	-	-	-	○ ≤ 5	○ ≤ 5	○ ≤ 5	○ ≤ 5
<i>ST-Drawer without Front Cover</i>	-	-	-	○ ≤ 13	○ ≤ 13	○ ≤ 13	○ ≤ 13
<i>ST-Shelf</i>	-	-	-	○ ≤ 13	○ ≤ 13	○ ≤ 13	○ ≤ 13
<b>Accessories</b>							
<i>Dividers Set (H 100 mm) to facilitate the handling and storage management</i>	● 2	● 6	● 7	-	-	-	-
<i>S-Rack (H 100 x W 113 x D 638 mm)</i>	-	-	-	○ ≤ 15 (max. per unit)	○ ≤ 20 (max. per unit)	○ ≤ 25 (max. per unit)	○ ≤ 30 (max. per unit)
<i>ST-Rack (H 95 x W 134 x D 648 mm)</i>							
<i>with Wire Shelf</i>	-	-	-	○ ≤ 2 (max. per tray)	○ ≤ 3 (max. per tray)	○ ≤ 3 (max. per tray)	○ ≤ 4 (max. per tray)
<i>with ST-Drawer</i>	-	-	-	○ ≤ 2 (max. per tray)	○ ≤ 2 (max. per tray)	○ ≤ 3 (max. per tray)	○ ≤ 4 (max. per tray)
<i>with ST-Shelf</i>	-	-	-	○ ≤ 2 (max. per tray)	○ ≤ 3 (max. per tray)	○ ≤ 4 (max. per tray)	○ ≤ 4 (max. per tray)

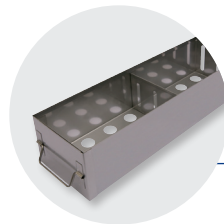


**DIVIDERS SET**

Available For Drawer with Front Cover



**S-RACK**



**ST-RACK**  
(STAINLESS STEEL)

● Standard ○ Optional - Not available

Subject to change without prior notice.

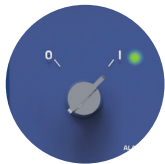
**SAVING LIVES THROUGH RELIABLE AND INNOVATIVE TECHNOLOGY**



# Full functionalities at a glance

## B Medical Systems | Electronics

**PRECISION LINE** | Multifunctional electronics with digital display and easy access, in the door handle; compatible with °B Connected monitored solution.



### Key power switch 0 = OFF / I = ON

- To switch the unit on, turn the key switch to position „I“. The green power LED lights up
- After the self-check, the temperature inside the device is displayed



### Digital display

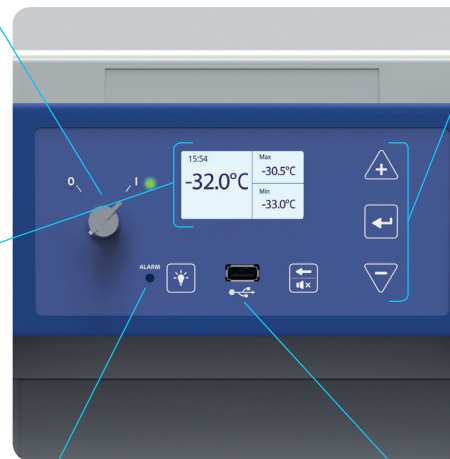
During normal operation the display shows:

- Left-hand side: current time and internal temperature displayed in °C (Celsius) or °F (Fahrenheit) in increments of 0.1°
- Right-hand side: the maximum and minimum inside temperature



### Acoustic and visual alarm signal

When an alarm occurs, the red alarm LED lights up and an acoustic signal sounds. The corresponding alarm message appears on the display alternately with the measured inside temperature. If several alarms occur simultaneously, the messages will be shown alternately.



### Function buttons

- UP / DOWN buttons: navigation within the parameters and modification of their values
- ENTER button: use the ENTER-key to confirm the actual selection. This applies the parameter value. The change of a parameter only becomes effective when confirmed
- MUTE / BACK button: in case of an alarm, the acoustic alarm can be muted for a specified time. In Parameter-mode the same key acts a "BACK-button" to go one step back



### USB-port

A USB port is available for data export only. Measured values of the display sensor are stored for at least 30 days (ring buffer) together with a time stamp.





**The new B Medical Systems Electronics** offers a wide range of adjustment and diagnostic facilities as well as additional protection / warning operations (via external alarm operations, histories and individual display signals).

**PREMIUM LINE** | Multi-function electronics with 7" full touchscreen display, integrated at optimal level in the door handle with pre-installed connection allowing exclusive °B Connected monitoring functionalities.



**Power switch OFF / ON**

- To switch on press the ON/OFF button for 1 second. The green LED will light up
- Switch off protected by password. The door will automatically unlock before powering down



**Touchscreen 7" full display**

During normal operation the display shows:

- At the top: current voltage, current time, defrosting, gasket heater and login status (user level)
- Left-hand side: temperature of the regulation sensor (displaying this temperature can be disabled through the settings) and internal temperature displayed in °C (Celsius) or °F (Fahrenheit) in increments of 0.1°
- Right-hand side: touch buttons to access door unlock, clean, menu, alarm mute and message functions



**USB-port & SD-card-slot**

**Acoustic and visual alarm signal**

When an alarm occurs, the red alarm LED lights up and an acoustic signal sounds. The corresponding alarm message appears on the display together with the measured inside temperature. If several alarms occur simultaneously, the messages will be shown alternately.



**Keycard reader**

Login / Unlock using a NFC card

**Touch buttons**

- DOOR UNLOCK button: unlocks the door of the device
- CLEAN button: the cleaning button allows the user to disable the touch capability of the screen for a short period of time in order to clean the screen. This button is replaced by the logout button when any user is logged in
- MENU button: allows access to the menu screen
- ALARM MUTE button: deactivates the acoustic alarm for a predefined period of time
- MESSAGE button: during a warning or alarm situation, the color of this button and the corresponding level will change. Information on an active alarm and warning is accessible by pressing the message button



# Optimum control and protection

## B Medical Systems | °B Connected & DCU

### °B CONNECTED | MONITORING SOFTWARE

*Universal software for the monitoring of refrigeration devices, including the acquisition, recording and visualization of temperature data.*



- Unique monitoring software for the full range of Blood Management Solutions and Medical Refrigeration products
- Web-based interfaces for computers and mobile devices
- Modern design for simple and intuitive use
- Graphic display of temperature curves
- Integrated event and activity history of appliances' components
- Data recording on centralized database for long-term archiving
- Easy setting of specific alarm forwarding, via email or SMS
- Generation of reports compiling crucial data and activities
- Temperature and detailed device data export for third-party software
- Important price advantage compared to a traditional circular chart recorder and its spare parts
- REST API to access raw data directly from the database in read only mode

#### KEY BENEFITS:

- Unique interface for the monitoring of the full range of refrigeration devices
- Centralized database providing data access to entire customer network

#### 1 CONFIGURATION



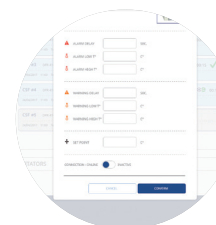
##### USER MANAGEMENT

- Password login
- Access right



##### DEVICE SETTINGS

- Device information
- Device & user configuration



##### ALARM PROFILE

- Parameters of the alarm profile (day, hour, minute)
- Alarm management

#### 2 DISPLAYING



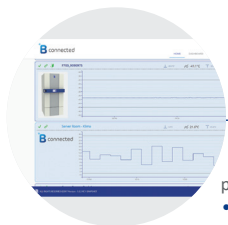
##### DETAILED DISPLAY

- Optimised design for mobile and touch compatible devices
- Support of multiple languages
  - Real time data: Current temperatures, set point, upper and lower limit, door state, compressor runtime
- Log data: Events, alarms within date/time, event type, description of the event. Event and alarm confirmation function
- Batch management: Read in of plasma bags with a barcode scanner
  - Movement state and door control of Agitator devices
  - Parameter settings of each device: Factory settings, real time clock, language, firmware version, RS485 address, IP address

°B Connected & DCU offer a highly flexible system that is adaptable to specific customer requirements

- > Complete & legally safe documentation of temperature data
- > Comprehensive applications and diagnostic possibilities

### 3 ANALYSING



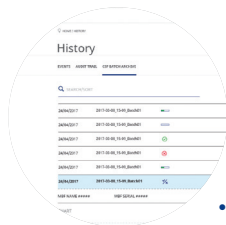
#### REAL TIME GRAPHICS

- Graphic temperature progress (in real time)
- Adjustable time axis
- Offline navigation



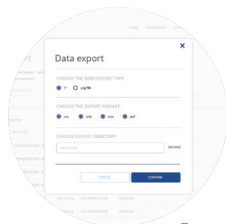
#### CONTROL CENTER

- Overview (Control Monitor) of all monitored appliances:
- Information regarding status, appliance name, location, connection, upper and lower limit, current temperature, events / alarms
  - Dashboard to combine several temperature measurements in one single graph



#### INTERACTIVE ANALYSIS

- No limitation in terms of time range
- Freely scalable
- Detailed information for any point of time
- Temperature data, events and alarms
- Login history and audit trails



#### PRINTED ANALYSIS

- Customisable print reports on daily, weekly and monthly basis
- Exports in various file types
- Standardised format

## DCU | DATA COMMUNICATION UNIT (PRECISION LINE)

Hardware module monitoring all operating conditions and passing them through to a central database – via local network.



- Interface connection of B Medical Systems appliances to an existing network
- Graphical user interface displaying temperature and configuring devices and alarms easily
- Direct connection to Ethernet and serial bus RS485
- Digital in/out (programmable and customer-specific use)
- Recording and storing appliance relevant data
- Integrated USB port allowing to export stored data
- The DCU combined with the °B Connected software replaces the paper temperature recorder
- All data are recorded and save in the internal storage of the DCU and backed up in °B Connected data base if connected
- Several additional self-sufficient temperature sensors (up to 4 PT1000) may be connected
- Humidity sensor input (4-20 mA)

#### KEY BENEFITS:

- Central system collecting relevant temperature data of the appliances and their respective operating conditions
- A number of connection facilities allowing flexible upgrades for individual projects



## Blood Management Solutions

*Safe global blood management: from collection to transfusion, transportation, processing and storage*



## Vaccine Cold Chain

*Reliable solutions for safe vaccination around the world*



## Medical Refrigeration

*State-of-the-art technology for the exacting needs of the medical world*



### After Sales support and service

We strive to provide you with the highest standards of service; not only through our selected distributors and partners for all your maintenance and service but also our second line trouble shooting and after sales service. This Factory based group of engineers is there to help our partners and yourself to get the best solution for your cold storage needs.

### Our Global Expertise



### SAVING LIVES THROUGH RELIABLE AND INNOVATIVE TECHNOLOGY

*B Medical Systems (formerly Dometic Medical Systems) has more than 35 years' experience in the medical refrigeration sector.*

*The company, formerly known as Electrolux Medical Systems, was founded in 1979 when the World Health Organization approached Electrolux in Vianden, Luxembourg, to create a solution for the safe storage and transport of vaccines around the world. In 2001, Electrolux Medical Systems became part of the Dometic Group, and was renamed Dometic Medical Systems. Having established a legitimate reputation in the medical equipment industry, the company has also become a global leader in vaccine cold chain.*

Luxembourg, in the heart of Europe



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WE SUPPORT



*Since 2019 B Medical Systems has been committed to the UN Global Compact corporate responsibility initiative and its principles in the areas of human rights, labour, the environment and anti-corruption.*