

MaxQ 2000 CO2 Plus

Digital CO2 Resistant Shaker

Catalog #88881101, #88881102

#88881103, #88881104

Operation Manual 0000847

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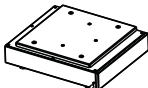






Contents



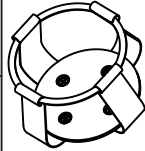
Section 1 Unpacking and Installation	1
Packing List	1
Universal (Aluminum) Platform Installation	3
18inch (Aluminum) Platform Installation	3
Rubber Mat Platform Installation	4
Connections of the Instrument	4
<hr/>	
Section 2 Overview	5
Specifications	5
Environmental Conditions	5
Safety Tips	6
Storing the signal Cable	6
Maximum Shaking Speed	7
<hr/>	
Section 3 Operation	9
Operations on the Control Panel	9
Speed and Time Settings	10
Alarm System	10
<hr/>	
Section 4 Application	11
<hr/>	
Section 5 Safety Tips	12
<hr/>	
Section 6 Optional Accessories	13
<hr/>	
Section 7 Troubleshooting	17
<hr/>	

Section 1 Unpacking and Installation

1. Inspect contents upon receipt of the instrument, if the instrument is upside down, contact the manufacturer immediately.
2. Check packing list below. If there are any damaged or missing items, contact the manufacturer.
3. Place the instrument on a level and firm surface, to avoid vibration and noise.

1.1 Packing List

Cat. No.	88881101	88881102	88881103	88881104	Picture
Model name on carton box label	MaxQ 2000 CO2 Plus, 100-240V, for USA	MaxQ 2000 CO2 Plus, 100-240V, various plugs	MaxQ 2000 CO2 Plus Promotion Package for USA, includes CO2 resistant shaker (88881101), Universal Platform and Flask Clamp Starter Kit	MaxQ 2000 CO2 Plus Promotion Package for EMEA & APAC, includes CO2 resistant shaker (88881102), Universal Platform & Flask Clamp Starter Kit	
Main Body	1	1	1	1	
Control Box	1	1	1	1	
General Power Adaptor	1	1	1	1	
US Plug	1	N/A	1	N/A	
CN Plug	N/A	1	N/A	1	
EU Plug	N/A	1	N/A	1	
UK Plug	N/A	1	N/A	1	

Cat. No.	88881101	88881102	88881103	88881104	Picture
Model name on carton box label	MaxQ 2000 CO2 Plus, 100-240V, for USA	MaxQ 2000 CO2 Plus, 100-240V, various plugs	MaxQ 2000 CO2 Plus Promotion Package for USA, includes CO2 resistant shaker (88881101), Universal Platform and Flask Clamp Starter Kit	MaxQ 2000 CO2 Plus Promotion Package for EMEA & APAC, includes CO2 resistant shaker (88881102), Universal Platform & Flask Clamp Starter Kit	
Universal Platform(AL)	N/A	N/A	1	1	
100ml Flask Clamp	N/A	N/A	1	1	
250ml Flask Clamp	N/A	N/A	1	1	
500ml Flask Clamp	N/A	N/A	1	1	
1L Flask Clamp	N/A	N/A	1	1	
2L Flask Clamp	N/A	N/A	1	1	

1.2 Universal (Aluminum) Platform Installation

1. Place the instrument on a level and firm surface, it must be capable of supporting the weight and load of the instrument, and the impact force generated by the motion. Prepare related parts (see Figure 1-1).
2. Install the horizontal universal platform on the fixed plate of the Main body, ensure all four mounting holes in the universal platform and the four threaded mounting holes are in alignment.
3. Fasten the universal platform and the fixed plate with four M4x14 cross recessed countersink head screws.

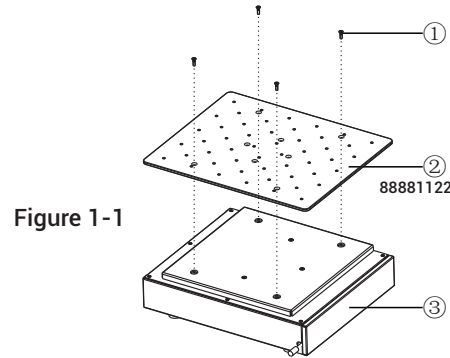


Figure 1-1

- 1) M4x14 cross recessed countersink head screws
- 2) Universal (aluminum) platform
- 3) Main body of CO2 resistant shaker

1.3 18inch (Aluminum) Platform Installation

1. Place the instrument on a level and firm surface, it must be capable of supporting the weight and load of the instrument, and the impact force generated by the motion. Prepare related parts (see Figure 1-2).
2. Install the horizontal universal platform on the fixed plate of the Main body, ensure all four mounting holes in the universal platform and the four threaded mounting holes are in alignment.
3. Fasten the universal platform and the fixed plate with four M4x14 cross recessed countersink head screws.

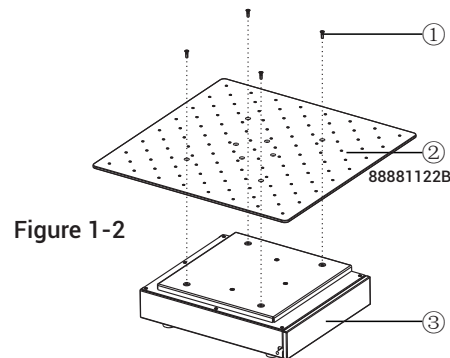


Figure 1-2

- 1) M4x14 cross recessed countersink head screws
- 2) 18inch (aluminum) platform
- 3) Main body of CO2 resistant shaker

1.4 Rubber Mat Platform Installation

1. Place the instrument on a level and firm surface, it must be capable of supporting the weight and load of the instrument and the impact force generated by the motion. Prepare related parts (see Figure 1-3).
2. Install the horizontal platform on the fixed plate of the Main body, ensure all four mounting holes on the platform and the four threaded mounting holes are in alignment.
3. Fasten the platform and the fixed plate with four M4x10 cross recessed countersink head screws.
4. Place the rubber mat on the platform.

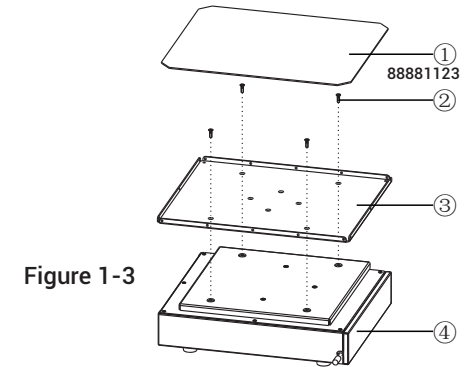


Figure 1-3

- 1) Rubber mat
- 2) M4x10 cross recessed countersink head screws
- 3) Platform
- 4) Main body of CO2 resistant shaker

1.5 Connections of the Instrument

Refer to Figure 1-4 when connecting the instrument.

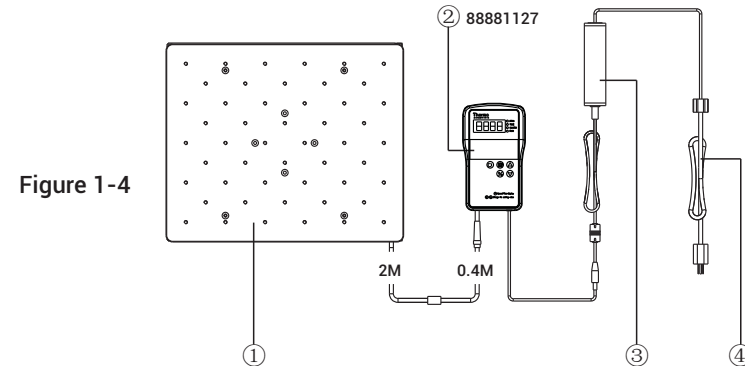


Figure 1-4

- 1) Main body of CO2 resistant shaker
- 2) Control box
- 3) Power adapter
- 4) Power cord

Note:

- 1) When disconnecting the control box from the main body, please cut off the power first. ▲

Section 2 Overview

2.1 Specifications

Rotation Speed	Speed Range.....	30 to 300rpm
	Speed Accuracy.....	±1rpm
	Orbit Diameter.....	∅ 19mm
	Motion Type.....	Orbital
	Speed Display.....	LED
Load	Maximum Load.....	6kg @ ≤300rpm
Timer	Timing Range.....	0~99h 59min
	Hour Display.....	LED
	Minute Display.....	LED
Dimensions	Main body.....	360×300×96mm(14.2×11.8×3.8inch)
	Control Box.....	164×95×26mm(6.5×3.7×1.0inch)
Weight	Net Weight (Main body).....	17.5kg(35.27lbs)
	Net Weight (Control Box).....	0.3kg(0.66lbs)
	Gross weight.....	19kg(41.9lbs)
Power Supply	Requirement.....	AC100-240V, 50/60Hz
Others	Certification.....	RoHS, WEEE, cCSAus, CE Mark
	Noise level.....	< 60dB

2.2 Environmental Conditions

Application Environmental Conditions: indoor use

Temperature.....	4 to 60°C
Altitude.....	≤2,000 m
Humidity.....	20% to 99%
CO ₂ Concentration.....	0% to 20%

Storage Environmental Conditions

Temperature.....	5 to 60°C
Altitude.....	≤2,000 m
Humidity.....	20% to 99%, non-condensing

2.3 Safety Tips

1. Unplug and unload before moving the unit.
2. This instrument uses a single-phase AC100-240V 50/60Hz power supply.
3. Remove the power supply when the instrument is in maintenance.
4. Do not clean the unit with flammable or corrosive liquid.
5. Use specified power supply.
6. Maximum load 6kg(13.23 lbs) @ ≤ 300 rpm.
7. To ensure proper operation, the unit must be free of surrounding obstructions.

2.4 Storing the signal Cable

To store the signal cable, simply open the side plate on the main body. Refer to Figure 2-1. The signal cable can be placed inside.

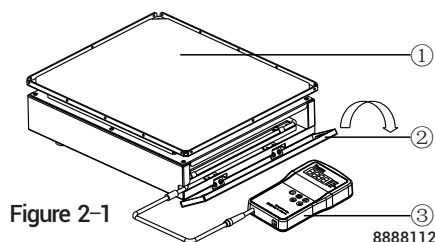


Figure 2-1

- 1) Main body of CO₂ resistant shaker
- 2) Side plate
- 3) Control box

Caution: When storing the cable, pay attention to closing the side plate door, to avoid pinching your fingers. ▲

2.5 Maximum Shaking Speed

Table 2-1. Maximum Shaking Speed on Rubber Platform in Relation to Flask Size

Flask size		Max Speed(rpm)
Size	Liquid volume	
50ml	≤50ml	200
100ml	≤100ml	150
150ml	≤150ml	150
200ml	≤200ml	150
250ml	≤250ml	150
500ml	≤500ml	150
1000ml	≤1000ml	150
2000ml	≤2000ml	150
3000ml	≤3000ml	150
5000ml	≤5000ml	150

Table 2-2. Maximum Shaking Speed and Flask Capacity on Universal Platform

Flask size		Max Flask Capacity	Max Speed(rpm)
Size	Liquid volume		
50ml	≤50ml	30	300
100ml	≤100ml	15	300
150ml	≤150ml	15	300
200ml	≤200ml	15	300
250ml	≤250ml	15	300
500ml	≤500ml	9	300
1000ml	≤500ml	4	260
	≤1000ml	4	240
2000ml	≤1000ml	4	240
	≤2000ml	4	220
3000ml	≤1500ml	3	250
	≤3000ml	3	220
5000ml	≤2500ml	1	220
	≤5000ml	1	200

Note:

- 1) The flask clamps (≤2L) can be placed anywhere on the universal (aluminum) platform, even if the load is not balanced. ▲
- 2) Please refer to the "Liquid Volume" table in the specifications section for the maximum load. ▲

Table 2-3. Maximum Shaking Speed and Flask Capacity on 18 inch (aluminum) Platform

Flask size		Max Flask Capacity	Max Speed(rpm)
Size	Liquid volume		
50ml	≤50ml	49	210
100ml	≤100ml	25	210
150ml	≤150ml	25	210
200ml	≤200ml	18	210
250ml	≤250ml	18	210
500ml	≤500ml	10	190
1000ml	≤500ml	7	200
	≤1000ml	7	190
2000ml	≤1000ml	4	180
	≤2000ml	4	180
3000ml	≤1500ml	4	160
	≤3000ml	2	150
5000ml	≤2500ml	2	170
	≤5000ml	1	150

Note:

- 1) The flask clamps (<2L) can be placed anywhere on the 18inch (aluminum) platform, even if the load is not balanced. ▲
- 2) Please refer to the "Liquid Volume" table in the specifications section for the maximum load. ▲

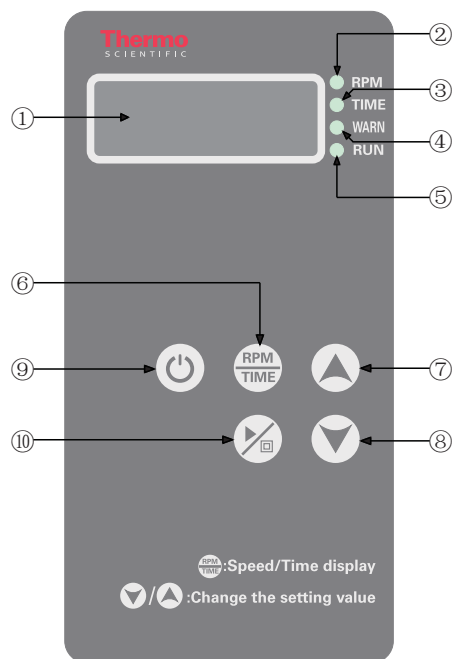
Section 3 Operation

The unit has been designed with a "soft start/slow down" providing a smooth acceleration/ deceleration during operation. This feature will decrease splashing of solutions from vessels during operation.

Warning: The microprocessor control system may take 1 minute to

synchronize the actual RPM of the universal (aluminum) platform to the desired RPM setting. Make sure that all the flasks and test tubes are firmly fixed on the universal platform and the flask clamps are fasten securely with the screws.

3.1 Operations on the Control Panel



- 1) Display LED: Shows time or speed
- 2) RPM indicator light: LED shows current speed
- 3) TIME indicator light: LED shows current time
- 4) WARN indicator light: Over-speed alarm
- 5) RUN indicator light: The instrument is running
- 6) RPM/TIME Key: While instrument is in operation, press to change time and speed display; when setting parameter, press to change minutes, hour or speed.
- 7) Up Arrow Key: Increases value. Hold for 3 seconds to increase rapidly
- 8) Down Arrow Key: Decreases value. Hold for 3 seconds to decrease rapidly.
- 9) Key: The power is On/Off.
- 10) Key: The instrument is running or stopped.

3.2 Speed and Time Settings

Speed setting

1. Press RPM/TIME key. The speed indicator light is lit.
2. Press up and down arrow keys to access the speed setting state, speed value starts flashing.
3. Press up and down arrow keys to change the speed value. Speed increases or decreases. The minimum unit is 1rpm.
4. During settings, the unit will reset to current values if no value is input after 3 seconds.
5. Press key to run or stop.

Time setting

1. Press RPM/TIME key. The time indicator light is lit.
2. Press up and down arrow keys to access the time setting state. Speed value starts flashing;
3. Press up and down arrow keys to change the time value. Time increases or decreases. The minimum unit is 1 minute or 1 hour.
4. During settings, the unit will reset to current values if no value is input after 3 seconds.
5. Press key to run or stop.

Notes

1. When the shaker is running, the LED display will switch between the speed and timer function every 30 seconds

automatically. Press RPM/TIME key to manually toggle between the speed and timer value.

2. In "timer mode" the LED display will show the remaining running time.
3. In "continuous mode" the LED display will show elapsed run time.
4. After the run is complete, the LED display will read "end". Press any key to place the shaker in standby mode.

3.3 Alarm System

Alarm System

1. During operation, the alarm will sound after 10 seconds if the unit has not begun shaking. In addition, the alarm will sound and stop for the speed over 350 rpm after 2 seconds.
2. Once the shaker begins to alarm, the RUN indicator light will not be visible and the WARN indicator light will flash, and the unit will stop running.

Power failure recovery

When the power supply is cut off suddenly to the shaker, resulting in a power failure, the unit will automatically run at the previous set parameter upon power restoration.

Section 4 Application

Application on Lab Benches

To operate the shaker outside of a CO₂ incubator, refer to Specifications in Section 2.

Application in CO₂ Incubator

Place the main body of the shaker in the CO₂ incubator, and use the signal cable to connect the control box through the access port of the CO₂ incubator. Refer to Figure 4-1.

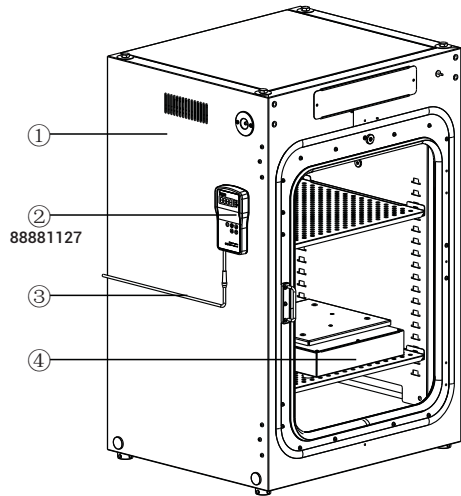


Figure 4-1

- 1) CO₂ Incubator
- 2) Control Box
- 3) Power Cord
- 4) Main body of CO₂ Resistant Shaker

Warning

1. Never put the control box in the CO₂ incubator.
2. The back of control box is magnetized, and can be attached on the surface of the CO₂ incubator.
3. When the main body of CO₂ Resistant Shaker is in operation in the CO₂ incubator, keep a safe distance from the inner wall of the CO₂ incubator to avoid collisions.
4. The main body of the shaker should be connected to the control box wire through the access port of the CO₂ incubator.
5. If the cells are sensitive to vibrations, do not put them in the same incubator or on the shaker.

Section 5 Safety Tips

Safety Tips

1. Confirm local power supply voltage before use the unit.
2. The unit must not be plugged into a power supply extension with other pieces of equipment.
3. The data cable between the main body and control box cannot be extended.
4. Never modify the supplied power cables.
5. Service should only be performed by a qualified professional.
6. In the following situations, the power supply must be unplugged:
 - ◆ When the unit is moved.
 - ◆ When the control box is opened.
 - ◆ When a fuse is replaced.
 - ◆ When the equipment is not functioning properly.
 - ◆ When the equipment is not in use.

Maintenance

Surfaces can be cleaned with mild detergent and water. Liquid should not be allowed to enter inside the unit.

Clean spill


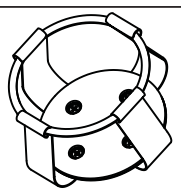

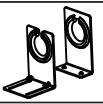
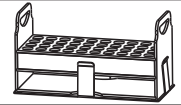
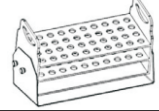
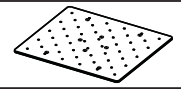
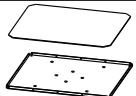
If accidental spillage of liquids or other materials occur on the platform, shut down the machine and clean up the liquids or other materials immediately.

Note: If liquid has entered the unit, remove the platform and clean it. ▲

1. Turn off the machine and unplug the power cord.
2. Remove the platform (with 4 screws).
3. Remove top plate (with 7 screws).
4. Use 70% ETOH to clean the inner area.
5. All allow the unit to dry for one hour, reassemble unit, and operate normally.

Section 6 Optional Accessories

Table 6-1. Universal (Aluminum) Platform

Description	Cat. No.	Dimensions (WxDxH)mm	Max. Qty.	Figure
50ml clamp	88881105	60×60×40	30	
100ml clamp	88881106	60×65×45	15	
150ml clamp	88881107	80×80×50	15	
200ml clamp	88881108	80×80×55	15	
250ml clamp	88881109	90×90×60	15	
500ml clamp	88881110	115×115×70	9	
1000ml clamp	88881111	130×130×75	4	
2000ml clamp	88881112	170×170×100	4	
3000ml clamp	88881113	200×200×140	2	
5000ml clamp	88881114	245×245×140	1	
500ml Infusion bottle clamp	88881115	100×100×95	6	
1000ml Infusion bottle clamp	88881116	125×125×125	4	
Funnel Clamp	88881117	N/A	2	
Fixed Tube rack 40×Ø14mm	88881118	265×120×140	2	
Fixed Tube rack 40×Ø16mm	88881119	265×120×140	2	
Adjustable Tube rack 40×Ø14mm	88881120	285×125×175	2	
Adjustable Tube rack 40×Ø16mm	88881121	285×125×175	2	
Universal (Aluminum) platform	88881122	360×300×5	1	
Rubber Mat platform	88881123	360×305×10	N/A	



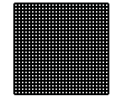
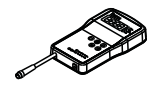






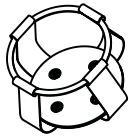


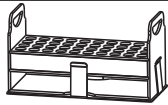
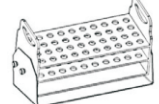
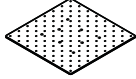



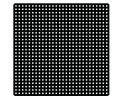






Description	Cat. No.	Dimensions (WxDxH)mm	Max. Qty.	Figure
96-well microplate holder	88881124	130×90×15	6	
Spring Wire Rack	88881125	350×240×80	1	
Sticky Mat	88881126	140×140	4	
Control Box	88881127	164×95×26	1	
General Power Adaptor	88881128	N/A	1	
US Plug	88881129	N/A	1	
CN Plug	88881130	N/A	1	
EU Plug	88881131	N/A	1	
UK Plug	88881132	N/A	1	
Flask Clamp Starter Kit	88881133	N/A	1	100ml flask clamp x 2 250ml flask clamps x 4 500ml flask clamps x 4 1L flask clamps x 2 2L flask clamp x 2

Table 6-2. 18inch (Aluminum) Platform

Description	Cat. No.	Dimensions (WxDxH)mm	Max. Qty.	Figure
50ml clamp	88881105	60×60×40	49	
100ml clamp	88881106	60×65×45	25	
150ml clamp	88881107	80×80×50	25	
200ml clamp	88881108	80×80×55	18	
250ml clamp	88881109	90×90×60	18	
500ml clamp	88881110	115×115×70	10	
1000ml clamp	88881111	130×130×75	7	
2000ml clamp	88881112	170×170×100	4	
3000ml clamp	88881113	200×200×140	4	
5000ml clamp	88881114	245×245×140	2	
500ml Infusion bottle clamp	88881115	100×100×95	12	
1000ml Infusion bottle clamp	88881116	125×125×125	9	
Funnel Clamp	88881117	N/A	6	
Fixed Tube rack 40×Ø14mm	88881118	265x120x140	4	
Fixed Tube rack 40×Ø16mm	88881119	265x120x140	4	
Adjustable Tube rack 40×Ø14mm	88881120	285x125x175	4	
Adjustable Tube rack 40×Ø16mm	88881121	285x125x175	4	
18inch (Aluminum) platform	88881122B	457x457x6	1	
Rubber Mat platform	88881123	360x305x10	N/A	
96-well microplate holder	88881124	130x90x15	10	

Description	Cat. No.	Dimensions (WxDxH)mm	Max. Qty.	Figure
Spring Wire Rack	88881125	350X240X80	1	
Sticky Mat	88881126	140×140	9	
Control Box	88881127	164×95×26	1	
General Power Adaptor	88881128	N/A	1	
US Plug	88881129	N/A	1	
CN Plug	88881130	N/A	1	
EU Plug	88881131	N/A	1	
UK Plug	88881132	N/A	1	
Flask Clamp Starter Kit	88881133	N/A	1	100ml flask clamp x 2 250ml flask clamps x 4 500ml flask clamps x 4 1L flask clamps x 2 2L flask clamp x 2

Section 7 Troubleshooting

To troubleshoot the unit, refer to the table below. If your problem persists, contact your local sales/service representative.

Error	Cause	Solution
Indicator off No reaction	Power disconnected	Connect the power
	Power adapter failure	Replace power adapter
	Switched off	Switch on
No rotating of platform	Sensor failure	Contact local sales/service
	Main-board failure	Contact local sales/service
Loud noise	The unit has been placed on uneven surface	Place the unit on level and sturdy surface
	Platform loose	Fasten platform
	Accessories loose	Fasten accessories
Other	Keep record for maintenance	

THERMO FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period.

During the first two (2) years, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor included. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of components parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any components or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo Fisher Scientific postage paid and replacement parts are shipped FOB destination.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages relating to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-800-438-4851 (USA and Canada) or 1-740-373-4763. We're ready to answer your questions on equipment warranty, operation, maintenance, service and special application. Outside the USA, contact your local distributor for warranty information.

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