

MaxQ 2000 CO2 Plus

Digital CO2 Resistant Shaker

Catalog #88881101, #88881102 #88881103, #88881104 Operation Manual 0000847



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Thermo Scientific CO2 Resistant Shaker

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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.

Table 1-1. Packing List

Thermo Scientific Cat. No.	88881101	88881102	88881103	88881104	
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	Pictutre
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	

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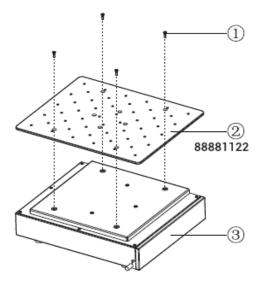
Table 1-1. Packing List (Continued)

Thermo Scientific Cat. No.	88881101	88881102	88881103	88881104	
Model name on carton box label.	MaxQ2000CO2 Plus, 100-240V, for USA	MaxQ2000CO2 Plus, 100-240V, various plugs	MaxQ2000CO2 Plus Promotion Package for USA, includes CO2 resistant shaker (88881101), Universal Platform and Flask Clamp Starter Kit	Max02000C02 Plus Promotion Package for EMEA & APAC, includes CO2 resistant shaker (88881102), Universal Platform & Flask Clamp Starter Kit	Pictutre
EU Plug	N/A	1	N/A	1	
UK Plug	N/A	1	N/A	1	0 0
Universal Platform (AL)	N/A	N/A	1	1	
100ml Flask Clamp	N/A	N/A	2	2	a Pa
250ml Flask Clamps	N/A	N/A	4	4	
500ml Flask Clamps	N/A	N/A	4	4	
1L Flask Clamps	N/A	N/A	2	2	
2L Flask Clamps	N/A	N/A	2	2	
Data Port	1	1	1	1	

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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).



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

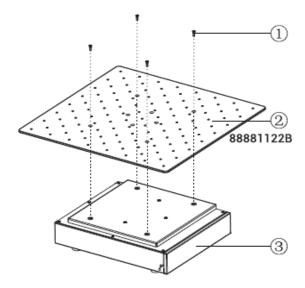
Figure 1-1. Universal Platform Installation Diagram

- 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.

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18 inch (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).



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

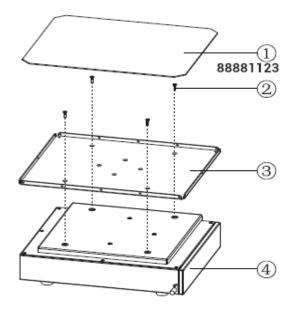
Figure 1-2. 18 inch Platform Installation Diagram

- 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.

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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).



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

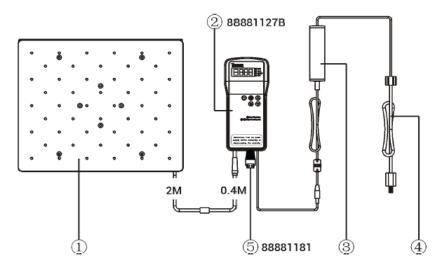
Figure 1-2. Universal Platform Installation Diagram

- 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.

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Connections of the Instrument

Refer to Figure 1-4 when connecting the instrument.



- 1) Main body of CO2 resistant shaker
- 2) Control box
- 3) Power adapter
- 4) Power cord
- 5) 4-20mA data port

Figure 1-4. Circuit Diagram

Note:

- When disconnecting the control box from the main body, please cut off the power first. ▲
- 2) No special cable needed to connect with 4-20mA data port. **\(\Lambda \)**

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Section 2 **Overview**

Specifications	Rotation Speed Speed Range
	Load Maximum Load 6kg @≤300 rpm
	Timer Timer Range0∼99h 59min. Hour Display LED Minute Display LED
	Dimensions (WxDxH) Main body 360 x 300 x 96mm (14.2 x 11.8 x 3.8 inch) Control Box 213 x 95 x 26mm (8.4 x 3.7 x 1.0 inch)
	Weight17.5 kg (38.58 lbs)Net Weight (Main body).17.5 kg (38.58 lbs)Net Weight (Control Box).0.3 kg (0.66 lbs)Gross weight.19 kg (41.9 lbs)
	Power Supply Requirement
	Other CertificationROHS, WEEE, cCSAus, CE Mark Noise level<60dB IP Class

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Environmental Conditions

Application Environment Conditions: Indoor use

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

Storage Environmental Conditions

Temperature	5°C to 60°C
Altitude	≤2,000m
Humidity	20% to 99%, Non-Condensing

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.

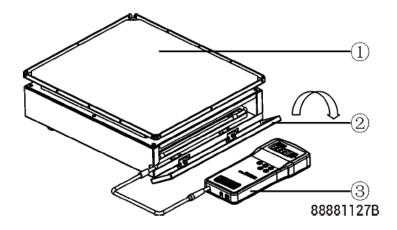
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Storing the Signal Cable

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.

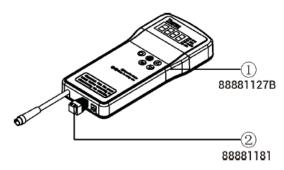
Caution When storing the cable, pay attention to closing the side plate door, to avoid pinching your fingers. ▲



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

Figure 2-1. Storing the Signal Cable Diagram

Orbital Speed vs. Output Current Monitoring System



- 1) Control box
- 2) Data port

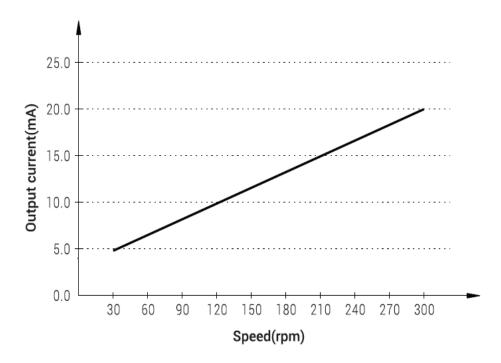
Figure 2-2. Output Current Monitoring System

Thermo Scientific CO₂ Resistant Shaker

Orbital Speed vs. Output Current Monitoring System (Continued)

Table 2-1. Output current under different speed conditions

Speed (rpm)	Output current (mA)
0	4
30	4.8
300	20



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Maximum Shaking Speed

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

Flas	- 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 2-3. Maximum Shaking Speed and Flask Capacity on Universal Platform

Flask Size		Max Flask	May Speed (rpm)
Size	Liquid Volume	Capacity	Max Speed (rpm)
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
10001111	≤1000ml	4	240
2000ml	≤1000ml	4	240
20001111	≤2000ml	4	220
3000ml	≤1500ml	3	250
JUUUIIII	≤3000ml	3	220
5000ml	≤2500ml	1	220
JUUUIIII	≤5000ml	1	200

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Maximum Shaking Speed (Continued)

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 2-4. Maximum Shaking Speed and Flask Capacity on 18 inch (aluminum) Platform

Flask Size		Max Flask	Max Speed (rpm)	
Size	Liquid Volume	Capacity	wax Speed (Ipili)	
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	
TOOOTH	≤1000ml	7	190	
2000ml	≤1000ml	4	180	
20001111	≤2000ml	4	180	
3000ml	≤1500ml	4	160	
JUUUIIII	≤3000ml	2	150	
5000ml	≤2500ml	2	170	
30001111	≤5000ml	1	150	

Note:

- 1) The flask clamps (<2L) can be placed anywhere on the 18 inch (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. ▲

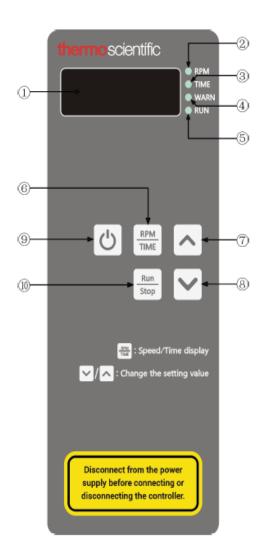
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Section 3 Operation

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. ▲

Operations on the Control Panel



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Operations on the Control Panel (Continued)

- 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.
- 10) Run/Stop Key: The instrument is running or stopped.

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 three seconds.
- 5. Press "Run/Stop" 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 speed 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 three seconds.
- 5. Press "Run/Stop" key to run or stop.

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Speed and Time Settings (Continued)

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.

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.

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Section 3

Operation

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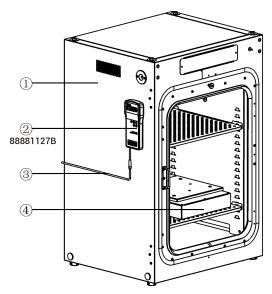
Section 4 Application

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.



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

Figure 4-1. Application in CO2 incubator

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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.

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Section 5 Safety Tips and Maintenance

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.

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Thermo Scientific CO₂ Resistant Shaker

Section 5

Safety Tips and Maintenance

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. \triangle

- 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.

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Section 6 Optional Accessories

Tabel 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 40ר14mm	88881118	265x120x140	2	
Fixed Tube rack 40ר16mm	88881119	265x120x140	2	

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Tabel 6-1. Universal (Aluminum) Platform (Continued)

Description	Cat. No.	Dimensions (WxDxH) mm	Max. Qty	Figure
Adjustable Tube rack 40ר14mm	88881120	285x125x175	2	1,000,000
Adjustable Tube rack 40ר16mm	88881121	285x125x175	2	3 000000000
Universal (Aluminum) platform	88881122	360x300x5	1	
Rubber Mat platform	88881123	360x305x10	N/A	
96-well microplate holder	88881124	130x90x15	6	
Spring Wire Rack	88881125	350X240X80	1	
Sticky Mat	88881126	140×140	4	
Control Box	88881127B	213×95×26	1	
General Power Adaptor	88881128	N/A	1	
US Plug	88881129	N/A	1	

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Tabel 6-1. Universal (Aluminum) Platform

Description	Cat. No.	Dimensions (WxDxH) mm	Max. Qty	Figure
CN Plug	88881130	N/A	1	
EU Plug	88881131	N/A	1	
UK Plug	88881132	N/A	1	n n
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
Data port	88881181	41X41X41	1	

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Tabel 6-2. 18 inch (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	a Fo
150ml clamp	88881107	80×80×50	25	
200ml clamp	88881108	80×80×55	18	
250ml clamp	88881109	90x90x60	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	OO
Fixed Tube rack 40ר14mm	88881118	265x120x140	4	STEETER S
Fixed Tube rack 40ר16mm	88881119	265x120x140	4	

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Tabel 6-2. 18 inch (Aluminum) Platform (Continued)

Description	Cat. No.	Dimensions (WxDxH) mm	Max. Qty	Figure
Adjustable Tube rack 40ר14mm	88881120	285x125x175	4	100000000
Adjustable Tube rack 40ר16mm	88881121	285x125x175	4	3 0000000000
18 inch (Aluminum) platform	88881122B	457x457x6	1	
Rubber Mat platform	88881123	360x305x10	N/A	
96-well microplate holder	88881124	130x90x15	10	
Spring Wire Rack	88881125	350X240X80	1	
Sticky Mat	88881126	140×140	9	
Control Box	88881127B	213×95×26	1	
General Power Adaptor	88881128	N/A	1	
US Plug	88881129	N/A	1	

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Tabel 6-2. 18 inch (Aluminum) Platform (Continued)

Description	Cat. No.	Dimensions (WxDxH) mm	Max. Qty	Figure
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
Data port	88881181	41X41X41	1	

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Section 7 Troubleshooting

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

Table 7-1. Troubleshooting

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

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Section 7

Troubleshooting

7-2 CO₂ Resistant Shaker Thermo Scientific

8-1

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 ed for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this expense, labor included. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contactwarranty.

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

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Thermo Scientific CO2 Resistant Shaker

Section 8

Warranty Information

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