Temporary Pacemakers
Model 5388 Dual Chamber Temporary Pacemaker

1. Pace/Sense LEDs
2. Lock/Unlock Key
3. Lock Indicators
4. Rate Dial
5. Atrial Output Dial
6. Ventricular Output Dial
7. Menu Parameter Dial
8. Parameter Selection Key
9. Menu Selection Key
10. Pause Key
11. Power On Key
12. Power Off Key
13. Emergency/Asynchronous Pacing Key
14. Lower Screen
15. Ventricular Output Graphics
16. Atrial Output Graphics
17. Upper Screen
18. Rate Graphics
19. Setup Indicators
20. DDI Indicator
21. Low Battery Indicator
22. Setup Labels
Off / On Keys

Values at Power-On

Dual Chamber Pace/Sense
- RATE 80 ppm
- UPPER RATE 110 ppm
Emergency Key

Emergency Pacing Values

- RATE Current Rate
- A OUTPUT MAX
- V OUTPUT MAX
- PACING ASYNC
- NO SENSING!

Use caution when setting the device to asynchronous modes.

Always available – Single key press enters Emergency mode.
Pause Key – Check Patient’s Intrinsic Rhythm

10 seconds max
Indicators

Pace/Sense Indicators
(Flashlight Lights)

Pace/Sense Setup Indicators
(“how is the device setup?”)

Padlock Indicator
(“is the device locked?”)
Lock / Unlock

To unlock push the "Lock/Unlock" Key

Emergency key is always available

Locks Rate, V Output, A Output dials

Lock/Unlock Key

Lock Indicator

Padlock Icon

Flashing Key Icon

Medtronic, Inc., Minneapolis, MN
June 2007
Rate and Output Adjustments
Single or Dual Chamber Pacing With Only 3 Dials!

Max rate of 200bpm for pediatrics

For Single Chamber pacing, turn OFF Atrial output

Rate Dial
Atrial Output Dial
Ventricular Output Dial
Lower Screen Menus

**Menu 1:** Pacing Parameters

- **A Sensitivity:** 0.5 mV
- **V Sensitivity:** 2.0 mV
- **A-V Interval:** 170 mS
- **A Tracking:** ON

**Menu 2:** Rate-Based Pacing Parameters

- **Upper Rate:** 110 ppm
- **PVARP:** 300 mS
- **A-V Interval:** 170 mS

**Menu 3:** Rapid Atrial Pacing

- **RAP:** 320 ppm
- **Press SELECT to DELIVER RAPID ATRIAL PACING:**

**Menu M:** Dial-A-Mode

- **Press SELECT to ACTIVATE new Mode:**
Device Usage - Cable Connectors

- Connector pins on the lead(s) must be fully inserted in the patient connector block
- Observe polarity
- **Finger tighten only** – no tools!
Cable to Device Connections

Make sure device is OFF

Cable clicks in place
Emergency Connections

Temporary use only - Leads do not lock in place

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Low Battery Indicator
When indicator first appears you have approximately 24 hours of pacing remaining.

Check Status
Check battery status at least twice per day – replace battery when indicator is on.
Replace battery at least once per week when device is in continuous use.

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June 2007
Battery Replacement

15 seconds of pacing provided while changing 9V battery (note: battery polarity is reversible)

1. Make sure the drawer clicks shut

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June 2007
# Pacing Setup Table

## Model 5388 Pacing Setup Table

<table>
<thead>
<tr>
<th>Setup Indicators</th>
<th>AOO*</th>
<th>VOO</th>
<th>AAI</th>
<th>VVI</th>
<th>DOO</th>
<th>DVI</th>
<th>DDD</th>
<th>DDI</th>
</tr>
</thead>
<tbody>
<tr>
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<td>PACE</td>
<td>SENSE</td>
<td>PACE</td>
<td>SENSE</td>
<td>PACE</td>
<td>SENSE</td>
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<tr>
<td></td>
<td>A</td>
<td></td>
<td>A</td>
<td></td>
<td>A</td>
<td></td>
<td>A+V</td>
<td></td>
</tr>
</tbody>
</table>

## Instructions

1. **Set Output**
   - **A Output**: On
   - **V Output**: Off

2. **Set Sensitivity**
   - **A Sensitivity**: SYNC
   - **V Sensitivity**: NA

3. **Set**
   - **A Tracking**: NA

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*Caution: DAD and OOO are accessible modes, but are not recommended. Refer to "Controls, Indicators, and Other Features" in the technical manual.*

NA: Not Applicable
NBG Codes

1st Letter
Chamber(s) Paced
A = atrium
V = ventricle
D = dual (both atrium and ventricle)

2nd Letter
Chamber(s) Sensed
A = atrium
V = ventricle
D = dual
O = none

3rd Letter
Response to Sensing
I = inhibit
(Demand mode)
T = triggered
D = dual
O = none (Asynch)

Chamber paced
Chamber sensed
Action or response to a sensed event
Setting Sensitivity

The degree that the pacing system “sees” or senses signals, controlled by the sensitivity setting which is graduated in millivolts (mV)

- 1.25 (mV)
- 2.5 (mV)
- 5 (mV)

Sensitivity settings should provide at least a 2:1 safety margin.
Sensing Threshold Procedure

1. Set rate at least 10 ppm below patient’s intrinsic rate.
2. Adjust output: Set OUTPUT to 0.1 mA (A OUTPUT for atrial threshold; V OUTPUT for ventricular threshold).
3. Highlight SENSITIVITY (atrial or ventricular) (Menu 1).
4. Decrease SENSITIVITY: Slowly turn MENU PARAMETER dial counterclockwise until pace indicator flashes continuously.
5. Increase SENSITIVITY: Slowly turn MENU PARAMETER dial clockwise until sense indicator flashes and pace indicator stops flashing. This value is the sensing threshold.
6. Set SENSITIVITY to half (or less) the threshold value. This provides at least a 2:1 safety margin.
7. Restore RATE and OUTPUT to previous values.
Atrial/Ventricular Sensing Thresholds

Sensing

Atrial Undersensing
Capture

Depolarization of cardiac muscle following an electrical stimulus
Stimulation Threshold

The minimum output pulse needed to consistently capture the heart

Set output to 2-3 times stimulation threshold
Stimulation Threshold Procedure

1. Set RATE at least 10 ppm above patient’s intrinsic rate.
2. Decrease OUTPUT: Slowly turn OUTPUT dial counterclockwise until ECG shows loss of capture.
3. Increase OUTPUT: Slowly turn OUTPUT dial clockwise until ECG shows consistent capture. *This value is the stimulation threshold.*
4. Set OUTPUT to a value 2 to 3 times greater than the stimulation threshold value. *This provides at least a 2:1 safety margin.*
5. Restore RATE to previous value.
Atrial/Ventricular Stimulation Thresholds

Capture

Loss of Ventricular Capture
Model 5348 Single Chamber Pacemaker
Basic Device Operation

Turning device off

Push both buttons at the same time to turn OFF

Battery Replacement

Push Buttons at the same time
Locking Feature

Slide plastic cover over
dials to protect against
changes in settings

Emergency Pacing

- Rate: Check Rate
- Output: Turn to MAX
- Sensitivity: Turn to ASYNC

*Use caution when setting the sensitivity to asynchronous*
Troubleshooting Pacemaker Performance
Troubleshooting Process

1. Gather information
2. Identify the problem and possible cause
3. Identify the solution and carry out corrective procedures
Loss of Capture

Electrical stimuli delivered by the pacemaker does not initiate depolarization of the atria or ventricle
Loss of Capture

Possible Causes
- Threshold rise
- Fractured/dislodged lead
- Battery depletion
- QRS not visible
- Tissue is refractory
- Faulty cable connections

Corrective Measures
- Increase output (mA)/check thresholds
- Replace/reposition lead
- Replace battery
- Adjust ECG
- Assess mode selection
- Check connections
- Switch polarity (epicardial system)
No Output

Pacemaker fails to emit stimuli at the programmed intervals
No Output

Possible Causes
• Battery depletion
• Pacemaker OFF
• Faulty cable connections
• Fractured/dislodged lead
• Oversensing

Corrective Measures
• Replace battery
• Verify pacemaker settings
• Check cable connections
• Replace/reposition lead
• Verify/adjust sensitivity

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Undersensing

Failure of the pacemaker to sense intrinsic R-waves or intrinsic P-waves
Undersensing

Possible Causes
• Decreased QRS voltage
• Fractured/dislodged lead
• Battery depletion
• Inappropriate sensitivity setting
• Fusion beat

Corrective Measures
• Increase sensitivity
• Replace/reposition Lead
• Replace Battery
• Sensing test/increase sensitivity
Fusion/Pseudofusion Beats

- Intrinsic Beat
- Paced Beat
- Fusion Beat
- Pseudofusion Beat
Oversensing

Inhibition of the pacemaker by events pacemaker should ignore, e.g. EMI, T-waves and myopotentials
Oversensing

Possible Causes
• Fractured/dislodged lead
• Environmental interference
• T-wave oversensing
• Faulty cable connections

Corrective Measures
• Replace/reposition lead
• Eliminate interference
• Sensing test/decrease sensitivity
• Check connections
References