



## REPLACING THE BATTERY

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The MBK Series UPS has an easy to replace hot-swappable battery. Please read the following warning statements before attempting to service the battery.

**WARNING!** THIS UNINTERRUPTIBLE POWER SOURCE CONTAINS POTENTIALLY HAZARDOUS VOLTAGES. DO NOT ATTEMPT TO DISASSEMBLE THE UNIT BEYOND BATTERY REPLACEMENT PROCEDURES BELOW. EXCEPT FOR THE BATTERY, THIS UPS CONTAINS NO USER SERVICABLE PARTS. REPAIRS CAN BE PERFORMED BY MINUTEMAN SERVICE PERSONNEL ONLY



**CAUTION:** DO NOT OPEN OR MUTILATE BATTERIES. RELEASED ELECTROLYTE IS HARMFUL TO THE SKIN AND EYES AND MAY BE TOXIC

**CAUTION:** DO NOT DISPOSE OF BATTERIES IN A FIRE. THE BATTERIES MAY EXPLODE.



THE BATTERIES IN THIS UPS ARE RECYCLABLE. DISPOSE OF THE BATTERIES PROPERLY. THE BATTERIES CONTAIN LEAD AND POSE A HAZARD TO THE ENVIRONMENT AND HUMAN HEALTH IF NOT DISPOSED OF PROPERLY. REFER TO LOCAL CODES FOR PROPER DISPOSAL REQUIREMENTS OR RETURN THE BATTERY TO MINUTEMAN.

**CAUTION:** ALTHOUGH BATTERY SYSTEM VOLTAGES ARE ONLY 12 VDC AND 24 VDC THE BATTERY SYSTEM CAN STILL PRESENT A RISK. THE CURRENT CAPABILITY OF A BATTERY IS SUFFICIENT TO BURN WIRE OR TOOLS VERY RAPIDLY, PRODUCING MOLTEN METAL. OBSERVE THESE PRECAUTIONS WHEN REPLACING THE BATTERIES:

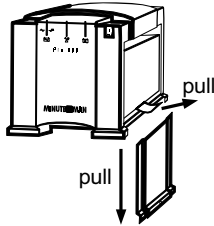
1. REMOVE WATCHES, RINGS, OR OTHER METAL OBJECTS;
2. USE HAND TOOLS WITH INSULATED HANDLES;
3. DO NOT LAY TOOLS OR OTHER METAL PARTS ON TOP OF

**CAUTION:** BATTERIES REPLACE BATTERIES WITH THE SAME NUMBER AND TYPE AS ORIGINALLY INSTALLED IN THE UPS. THESE BATTERIES HAVE PRESSURE OPERATED VENTS.

### BATTERY REPLACEMENT PROCEDURE

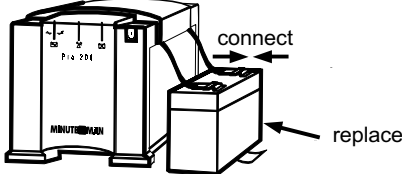
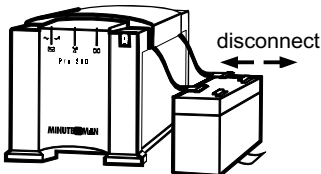
PLEASE READ THE CAUTIONS SECTION BEFORE ATTEMPTING TO REPLACE THE BATTERIES

1. Lay the unit on its side or bring to the edge of a table. Remove the retaining screw holding the battery door in place and slide the door towards the bottom of the unit.



2. Gently pull out the battery by grasping the battery removal tab

3. Disconnect the two wires connecting the battery to the UPS. Pull back straight on the connector while wiggling the connector from side to side.



4. Connect the new battery in place of the old one, ensuring that black wire is connected to the negative (-) terminal and the red wire is connected to the positive (+) terminal. Small sparks at the battery connection are normal.

5. Place the new battery in the case taking care not to pinch any wires.

6. Slide the battery door back into its slot and replace the retaining screw.

7. Dispose of the battery properly at an appropriate recycling facility or return it to the supplier in the packing material for the new battery. See new battery instructions for more info.

## OBTAINING SERVICE

### IF THE UPS REQUIRES SERVICE

1. Use the **TROUBLESHOOTING** section 5 to eliminate obvious causes.

2. Verify that no circuit breakers are tripped. A tripped circuit breaker is the most common problem.

3. Call your dealer for assistance. If you cannot reach your dealer, or if he cannot resolve the problem, call or FAX Minuteman Technical Support at the following numbers; Voice phone

(972) 446-7363, FAX line (972) 446-9011. Please have the following information available BEFORE calling technical support.

- A. Your Name and address.
- B. Where and when the unit was purchased.
- C. All of the model information on the rear of your Pro Series UPS.
- D. Any information on the failure, including LEDs that may be illuminated.
- E. A description of the protected equipment, including model numbers if possible.
- F. A technician will ask you for the above information and, if possible, help solve your problem over the phone. In the event that the unit requires factory service, the technician will issue you a Return Material Authorization Number (RMA #).
- G. If the UPS is under warranty, the repairs will be done at no charge. If not, there will be a charge for repair.

4. Pack the UPS in its original packaging. If the original packaging is no longer available, ask the technical support technician about obtaining a new set. It is important to pack the UPS properly in order to avoid damage in transit. Never use Styrofoam beads for a packing material.

- A. Include a letter with your name, address, day time phone number, RMA number, a copy of your original sales receipt, and a brief description of the trouble.

5. Mark the RMA # on the outside of all packages. The factory cannot accept any package without the RMA # marked on the outside.

6. Return the UPS by insured, prepaid carrier to:  
Minuteman, Para Systems Inc.  
1455 LeMay Drive  
Carrollton, Tx. 75007

## SPECIFICATIONS

| NOTE: 230VAC Specs Shown In ( )                                                                                     | 300 VA                                                                      | 320VA                                          | 520VA                          | 680VA                            |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------|--------------------------------|----------------------------------|
| Acceptable input voltage                                                                                            | 0 - 135 (0 - 270) VAC                                                       |                                                |                                |                                  |
| input voltage (on-line operation)                                                                                   | 105 - 136 (175 - 270) VAC                                                   |                                                |                                |                                  |
| Output voltage                                                                                                      | 105 - 136 (210 - 250) VAC                                                   |                                                |                                |                                  |
| Nominal input frequency                                                                                             | 50 or 60 Hz, autosensing                                                    |                                                |                                |                                  |
| input protection                                                                                                    | Resettable circuit breaker                                                  |                                                |                                |                                  |
| Frequency limits (on-line operation)                                                                                | 50 or 60 Hz, +/-5%                                                          |                                                |                                |                                  |
| Transfer time                                                                                                       | 2 - 4 ms typical                                                            |                                                |                                |                                  |
| Maximum load                                                                                                        | 300VA<br>195W                                                               | 320VA<br>208W                                  | 520VA<br>338W                  | 680VA<br>442W                    |
| On-battery output voltage                                                                                           | 115 (230) VAC                                                               |                                                |                                |                                  |
| On-battery frequency                                                                                                | 50 or 60 Hz, +/-0 Hz, unless synchronized to utility during brownout        |                                                |                                |                                  |
| On-battery waveshape                                                                                                | Simulate sine-wave                                                          |                                                |                                |                                  |
| Protection                                                                                                          | Overcurrent and short circuit protected, latching shutdown on overload      |                                                |                                |                                  |
| Surge energy rating<br>(one time, 10/1000 us waveform)                                                              | 500 J (440J)                                                                |                                                | 500 J (440J)                   |                                  |
| Surge current capability<br>(one time, 8/20 us waveform)                                                            | 19.5 kAmps total                                                            |                                                | 39 kAmps total                 |                                  |
| Surge response time                                                                                                 | 0 ns (instantaneous) normal mode; <5 ns common mode                         |                                                |                                |                                  |
| Surge voltage let-through<br>percentage of applied ANSI<br>C62.41 Cat. A +/-6 V test waveform)                      | <5%                                                                         |                                                | <0.5%                          |                                  |
| Noise filter                                                                                                        | Normal and common mode EMI/RFI suppression                                  |                                                |                                |                                  |
| Battery Type-Spill proof, maintenance free, user replaceable, sealed lead-acid                                      | one 12v, 4.5 Ah                                                             | one 12v, 7 Ah                                  |                                | one 12v, 11 Ah                   |
| Typical battery life                                                                                                | 3 to 6 years, depending on the number of discharge cycles and ambient temp. |                                                |                                |                                  |
| Typical recharge time                                                                                               | 2 to 5 hours from total discharge                                           |                                                |                                |                                  |
| surge protection<br>let-through (as a percentage of an applied +/-6 kV 1.2/50 us, 500 a 8/20 us test)               | <5%                                                                         |                                                |                                |                                  |
| Telephone line surge protection let-through<br>(as a percentage of an applied +/-6 kV 1.2/50 us, 500 a 8/20 us test | <1%                                                                         |                                                |                                |                                  |
| Operating temperature                                                                                               | 0 to 40 degrees C (+32 to 104 degrees F)                                    |                                                |                                |                                  |
| Storage temperature (see Section 11)                                                                                | -15 to +45 degrees C (+5 to +113 degrees F)                                 |                                                |                                |                                  |
| Operating and storage relative humidity                                                                             | 0 to 95%, non-condensing                                                    |                                                |                                |                                  |
| Operating elevation                                                                                                 | 0 to +3,000 m (0 to + 10,000 ft)                                            |                                                |                                |                                  |
| Storage elevation                                                                                                   | 0 to +15,000 m (0 to +50,000 ft)                                            |                                                |                                |                                  |
| Electromagnetic immunity                                                                                            | IEC 801-2 level IV, 801-4 level IV, 801 -5 level III                        |                                                |                                |                                  |
| Audible noise at 1 m (3 ft.)                                                                                        | <45 dBA                                                                     |                                                |                                |                                  |
| Size (H x W x D)                                                                                                    | 17.1 x 17.1 x 16.5 cm<br>(6.75 x 6.75 x 6.5 in)                             | 22.2 x 22.8 x 21.6 cm<br>(8.65 x 9.0 x 8.5 in) |                                |                                  |
| Weight - Net (Shipping)                                                                                             | 4.7 (5.2) Kg<br>10.1 (11.4) Lb                                              | 6.9 (8) Kg<br>15.4 (17.6) Lb                   | 7.5 (8.4) Kg<br>16.4 (18.6) Lb | 10.2 (11.2) Kg<br>22.4 (24.7) Lb |
| Safety and approvals                                                                                                | Listed to UL 1778 Compliance to CSA 22.2                                    |                                                |                                |                                  |
| EMC Verification                                                                                                    | FCC Class B certified                                                       |                                                |                                |                                  |

## CONFIGURABLE PARAMETERS & SETTINGS

(These items require optional software or hardware)

| FUNCTION                     | FACTORY DEFAULT                  | USER CHOICES                                            | DESCRIPTION                                                                                                                                                                                                                             |
|------------------------------|----------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UPS ID                       | MBK Series                       | Up to 64 characters to define the UPS                   | Use this function to uniquely identify the UPS in your network configuration                                                                                                                                                            |
| Battery install date         | Date of manufacture              | Date of battery replacement - day/month/year XX/XX/XXXX | Enter the current date when replacing batteries                                                                                                                                                                                         |
| Battery life in days         | 1826                             | Up to 5 characters                                      | At first battery replacement, reset to reflect actual number of days experience in your environment or leave factory default.                                                                                                           |
| Enable/ Disable auto restart | Enabled                          | Enable or disable                                       | When enabled, the UPS will automatically restart from a low battery shutdown when normal A/C returns                                                                                                                                    |
| Set audible alarm state      | Enabled                          | Enabled, at low battery, disabled                       | Enabled - the UPS will emit a short beep when in the battery mode. At Low Battery the UPS will emit two tones from low battery warning until shutdown. Disabled - Use only when software is controlling the UPS or to silence the alarm |
| t                            |                                  |                                                         |                                                                                                                                                                                                                                         |
| Set low voltage Xfer point   | 105 VAC (200 for 230 VAC models) | 98 or 91 VAC (185 or 170 VAC for 230 VAC models)        | Changes the voltage point at which the UPS switches to battery power                                                                                                                                                                    |

## LIMITED PRODUCT WARRANTY

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Para Systems Inc. (Para Systems) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of three years from the date of manufacture. For equipment sites within the United States and Canada, this warranty covers repair or replacement of defective equipment at the discretion of Para Systems. Repair will be from the nearest authorized service center. Replacement parts and warranty labor will be borne by Para Systems. For equipment located outside of the United States and Canada, Para Systems only covers faulty parts. Para Systems products repaired or replaced pursuant to this warranty shall be warranted for the unexpired portion of the warranty applying to the original product. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.

The warranty shall be void if (a) the equipment is damaged by the customer, is improperly used, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; (b) the equipment is repaired or modified by anyone other than Para Systems or Para Systems-approved personnel; or (c) has been used in a manner contrary to the product's operating manual or other written instructions.

Any technical advice furnished before or after delivery in regard to use or application of Para Systems's equipment is furnished without charge and on the basis that it represents Para Systems's best judgment under the circumstances, but it is used at the recipient's sole risk.

EXCEPT AS PROVIDED HEREIN, PARA SYSTEMS MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation of implied warranties; therefore, the aforesaid limitation(s) may not apply to the purchaser.

EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL PARA SYSTEMS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, Para Systems is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, claims by third parties, or otherwise. The sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Para Systems's products and the only obligation of Para Systems hereunder, shall be the repair or replacement of defective equipment, components, or parts; or, at Para Systems's option, refund of the purchase price or substitution with an equivalent replacement product. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Longer term and F.O.B. job site warranties are available at extra cost. Contact Para Systems (1-972-446-7363) for details.

## DECLARATION OF CONFORMITY

Application of Council Directive(s): 89/336/EEC, 7/23/EEC

Standard(s) to which Conformity is declared: EN50091-2, EN60555-2, EN61000-3, EN50091-1

Manufacturer's Name: Para Systems, Inc. (Minuteman Power Supplies)  
Manufacturer's Address: 1455 LeMay Drive  
Carrollton, Texas 75007 USA

Type of Equipment: Uninterruptible Power Supplies

Model No: MBK 300YYY, MBK 320YYY, MBK 520YYY, MBK 680YYY,

Year of Manufacture: Beginning September 1, 1998

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s).

Place: Carrollton, Tx USA

Shawn Delavar  
(Signature)

Date: September 1, 1998

Shawn Delavar  
(Full Name)

Regulatory Compliance Engineer  
(Position)

**MINUTEMAN**  
UNINTERRUPTIBLE POWER SUPPLIES

[www.minuteman-ups.com](http://www.minuteman-ups.com)

**1455 LeMay Dr.**  
**Carrollton, Texas 75007**  
**Phone: (972) 446-7363**  
**Fax (972) 446-9011**