

**Model 81335B**

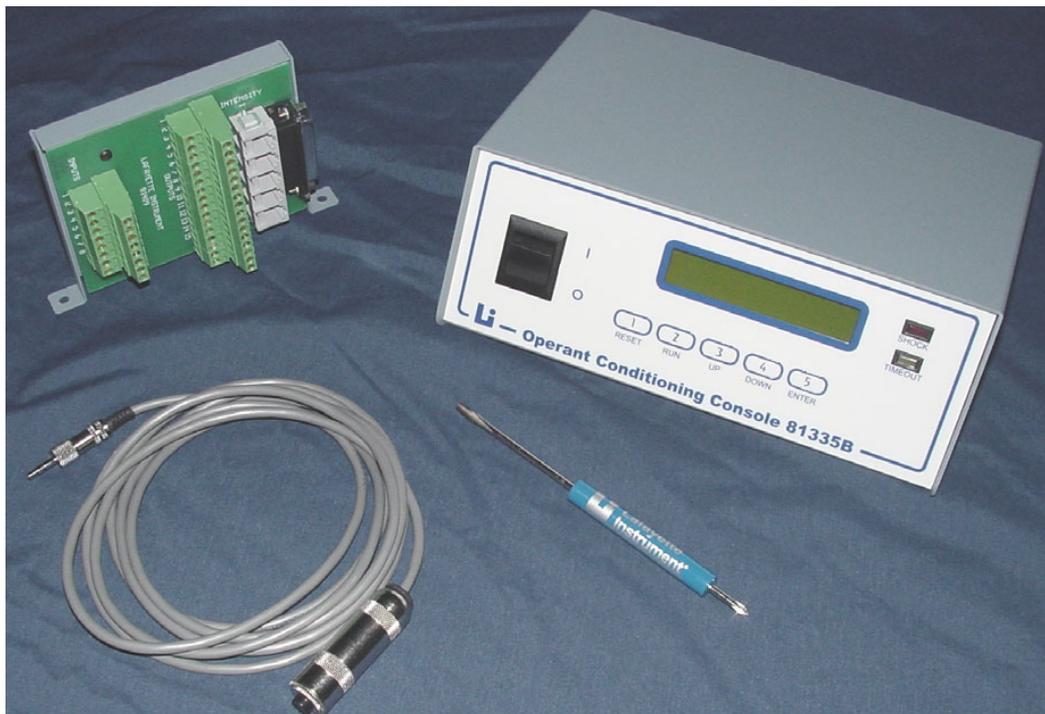
# **OPERANT CONDITIONING CONSOLE USER'S MANUAL**



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## *Conditioning Console Includes:*

- Conditioning console
- 30V Power supply and cable
- Shaping push button
- DB-25 cable
- Double-ended screwdriver

## *System Description:*

The 81335B Operant Conditioning Console is a fully integrated animal-learning control instrument used for laboratory studies. All schedules can be easily programmed and implemented in a variety of environments. Manual shaping activation and student participation is also provided.

The 81335B has the capability to be used with the following devices:

|   |       |
|---|-------|
| Pellet Dispenser  | 80208 |
| Liquid Dispenser  | 80201 |
| Air Stimulus  | 80108 |
| 4 Press Bars  | 80110 |
| 4 Control Stimulus (CS) Lights                          | 80221 |
| 4 CS Tones  | 80223 |
| 4 Auxiliary Outputs (refer to Auxiliary Output Control) |       |

## System Specifications:

- Power:** 30VDC 2A Power Supply @ 120/240VAC 50/60Hz  
- Power Source is included
- Fuse:** 2A Slow-Blow (internal)
- Shock:** Internal 0-2.4ma @ 0-225VAC
- Inputs:** Shaping Push button
- Outputs:** DB-25 Chamber Connection  
Shock Output  
+28VDC  
GND  
Auxiliary Outputs 1-4

## Setup Instructions:

1. All Lafayette Instrument systems come factory assembled for immediate operation. Connect the supplied DB-25 cable to the 81335B. Connect the shaping push button to the back panel. If the shock reinforcement will be used, connect its supplied cable to the back panel.
2. Auxiliary connections 1-4 may be used for further manipulation. Additional instructions for the use of these connections are explained within the auxiliary output control section of this manual.
3. The setup for all operant chamber connections should be according to the operant chamber instructions.
4. Connect the power cord from the control unit to any suitable grounded outlet. The 81335B can operate on 110VAC - 240VAC using its' supplied power supply.
5. Turn power on to the 81335B.



## *Summary of Controls:*

### 1. **Reset:**

Within Schedule Setup:

When pressed once, the unit will be reset to the schedule selection menu.

Within Schedule Operation:

When pressed once, the unit will pause operation. "RUN" control will continue schedule operation.

When pressed twice, the unit will be reset to the schedule selection menu.

Within Test Menu:

When pressed once, the unit will be reset to the schedule selection menu.

### 2. **Run:**

When asked to press, "RUN", schedule operation will begin immediately.

### 3. **Scroll up:**

Within Schedule Selection Menu:

When pressed once it will scroll up to see the different schedule selections.

Within Schedule Setup:

When pressed once it will activate a device and display a "Y".

When pressed once at any interval control or stimulus intensity, it will increase an interval or stimulus intensity.

Within Schedule Operation:

When pressed once it will scroll up to view different display messages.

### 4. **Scroll down:**

Within Schedule Selection Menu:

When pressed once it will scroll down to see the different schedule selections.

Within Schedule Setup:

When pressed once it will deactivate a device and display an "N".

When pressed once at any interval control or stimulus intensity, it will decrease an interval or stimulus intensity.

Within Schedule Operation:

When pressed once it will scroll down to view the different display messages.

### 5. **Enter:**

Within Schedule Selection Menu:

When pressed, "Enter" will start the displayed schedule, and advance you to schedule setup.

Within Schedule Setup:

When pressed, "Enter" will forward the user to the next schedule setup option.

## *Table of Responses, Stimuli:*

**FLB** - Front Left Bar  
**FRB** - Front Right Bar  
**BLB** - Back Left Bar  
**BRB** - Back Right Bar  
**ODL** - Omni-Directional-Lever  
**SHAPE** - Shaping Push Button  
**CS LT** - Control Stimulus Light  
**CS TN** - Control Stimulus Tone  
**FL LT** - Front Left Light  
**FR LT** - Front Right Light  
**BL LT** - Back Left Light  
**BR LT** - Back Right Light  
**INT 1** - Interval 1  
**INT 2** - Interval 2

## *Summary of Schedules:*

**CRF:** *Continuous Reinforcement*

**Objective:** A positive reinforcement is given for each acceptable response.

**PRF:** *Partial Reinforcement*

**Objective:** A positive reinforcement is given for each acceptable response when the shaping pushbutton is pressed.

**CHN:** *Chain*

**Objective:** A positive reinforcement is given after two acceptable responses are received.

**EXT:** *Extinction*

**Objective:** A positive reinforcement is given only when the shaping push button is pressed.

**DSC:** *Discrimination*

**Objective:** A positive reinforcement is given for an acceptable response in the presence of a control stimulus (CS).

**ESC:** *Escape*

**Objective:** A negative reinforcement is given when the shaping push button is pressed.

### *Summary of Schedules (continued):*

**FR:** *Fixed Ratio*

**Objective:** A positive reinforcement is given for the  $n^{\text{th}}$  acceptable response, set as interval 1 (INT 1).

**VR:** *Variable Ratio*

**Objective:** A positive reinforcement is given for a random number of acceptable responses, where the mean is set as interval 1.

**FI:** *Fixed Interval*

**Objective:** A positive reinforcement is given for the first acceptable response to occur after  $t$  seconds, set as interval 1.

**VI:** *Variable Interval*

**Objective:** A positive reinforcement is given for the first acceptable response after random period of time, where the mean is set as interval 1.

**DRL:** *Differential Reinforcement of Low Response Rates*

**Objective:** A positive reinforcement is given for the first acceptable response after  $t$  seconds, except that responses occurring within  $t$  seconds reset interval 1.

**DRH:** *Differential Reinforcement of High Response Rates*

**Objective:** A positive reinforcement is given for each acceptable response occurring within  $t$  seconds, set as interval 1.

**AVD:** *Avoidance*

**Objective:** After Interval 1 (INT 1) expires, a control stimulus turns on, and Interval 2 begins. If no acceptable response occurs during Interval 2 (INT 2), a negative reinforcement is applied.

**TEST:** *Test Menu*

**Objective:** The following can be tested using the test menu:

- 1) Shaping push button
- 2) All responses (Press Bars & Omni-Directional-Lever (ODL))
- 3) Pellet & Liquid Dispenser (Positive Reinforcements)
- 4) Shock & Air (Negative Reinforcements)

## Summary of Schedule Options and Selections:

| Schedule | Press Bars | ODL | Shaping PB | Pellet | Liquid | Shock | Air | CS LT | CS TN | INT 1 | INT 2 | AUX 3,4 |
|----------|------------|-----|------------|--------|--------|-------|-----|-------|-------|-------|-------|---------|
| CRF      | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | N     | N     | Y       |
| PRF      | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | N     | N     | Y       |
| CHN      | Y          | Y   | Y          | Y      | Y      | N     | N   | Y     | Y     | N     | N     | Y       |
| EXT      | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | N     | N     | Y       |
| DSC      | Y          | Y   | Y          | Y      | Y      | N     | N   | Y     | Y     | N     | N     | Y       |
| ESC      | Y          | Y   | Y          | N      | N      | Y     | Y   | N     | N     | N     | N     | Y       |
| FR       | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | Y     | N     | Y       |
| VR       | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | Y     | N     | Y       |
| FI       | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | Y     | N     | Y       |
| VI       | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | Y     | N     | Y       |
| DRL      | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | Y     | N     | Y       |
| DRH      | Y          | Y   | Y          | Y      | Y      | N     | N   | N     | N     | Y     | N     | Y       |
| AVD      | Y          | Y   | Y          | N      | N      | Y     | Y   | Y     | Y     | Y     | Y     | Y       |
| TEST     | Y          | Y   | Y          | Y      | Y      | Y     | Y   | N     | N     | N     | N     | Y       |

## Schedule Descriptions:

### 1. CRF: *Continuous Reinforcement*

- a. Reinforcement is given for each bar press.
- b. The shaping push button also delivers reinforcement.
- c. The response counter is incremented by each bar press.
- d. The reinforcement counter is incremented by both the bar press and shaping push button.
- e. The CS and Shock are off.

### 2. PRF: *Partial Reinforcement*

- a. Reinforcement is given for each bar press only if the shaping push button is pressed simultaneously.
- b. The shaping push button controls the availability of reinforcement. It is used to manually control your schedule if ever required.
- c. The response counter is incremented by each bar press.
- d. The reinforcement counter is incremented only when the reinforcement is actually delivered.
- e. The Control Stimulus (CS) and Shock are off.

### *Schedule Descriptions (continued):*

#### **3. CHN: Chain**

- a. The CS is initiated at the first activation of an acceptable response 1. The CS has an intensity range from 0-20, 0 being off and 20 being full on.
- b. The shaping push button mimics the function of an acceptable response 1, and may be used to shape the new response.
- c. Only when the CS is initiated will reinforcement be delivered for the first activation of an acceptable response 2. The first activation of acceptable response 2 also turns off the CS, thus restarting the schedule.
- d. The response counter is incremented by each bar press.
- e. The reinforcement counter is incremented only when reinforcement is actually delivered.
- f. The Shock is off, the CS is on.

#### **4. EXT: Extinction**

- a. Reinforcement is not given for any response.
- b. The shaping pushbutton may be used to deliver reinforcement.
- c. The response counter is incremented by each response.
- d. The reinforcement counter will be incremented if reinforcement is given via the shaping pushbutton.
- e. The CS and Shock are off.

#### **5. DSC: Discrimination**

- a. Reinforcement is given only for an acceptable response 1 occurring in the presence of the CS.
- b. The CS may be adjusted by successive depressions of the shaping push buttons. The CS has an intensity range from 0-20. 0 being off and 20 being full on.
- c. The response counter is incremented only by an acceptable response occurring while the CS is off.
- d. The reinforcement counter is incremented only by an acceptable response occurring while the CS is on.
- e. The Shock is off, the CS is on.

#### **6. ESC: Escape**

- a. The shaping push button will turn the Shock on.
- b. The shaping push button when pressed a second time will turn the Shock off.
- c. Activation of an acceptable response may also turn the Shock off.
- d. The response counter is incremented for each bar press.
- e. The reinforcement counter is incremented each time the Shock is applied.
- f. The CS is off, the Shock is on.

#### **7. FR: Fixed Ratio**

- a. Reinforcement is given only for the  $n^{\text{th}}$  response, where  $n$  is the number set as ratio control 1. Ratio control 1 has a range of 1-99.
- b. The shaping push button will deliver a reinforcement and initiates a new trial.
- c. The response counter is incremented by each bar press.
- d. The reinforcement counter is incremented each time reinforcement is delivered.
- e. The CS and Shock are off.

### *Schedule Descriptions (continued):*

#### **8. VR: Variable Ratio**

- a. Reinforcement is given for a random number of acceptable responses where the mean is set as ratio control 1. The distribution is quasi-gaussian with a lower limit of  $\frac{1}{2}$  x mean. Although the upper limit is open, the probability of obtaining a value greater than 2x mean is very low. Ratio control 1 has a range of 1-99.
- b. The shaping push button will deliver a reinforcement and initiates a new trial.
- c. The response counter is implemented by each bar press.
- d. The reinforcement counter is incremented each time reinforcement is delivered.
- e. The CS and shock are off.

#### **9. FI: Fixed Interval**

- a. Reinforcement is given for the first acceptable response to occur after t seconds, set as interval 1. Interval 1 has a range of 0.1-99.9 seconds.
- b. A green LED on the front panel indicates when the interval has timed out.
- c. A reinforced response initiates a new timing sequence and trial.
- d. The shaping push button will deliver reinforcement at any time and will reset the interval timer to zero.
- e. The response counter is incremented by each bar press.
- f. The reinforcement counter is incremented each time reinforcement is delivered.
- g. The CS and Shock are off.

#### **10. VI: Variable Interval**

- a. Reinforcement is given for the first acceptable response to occur after a random period of time where the mean interval is set as interval 1. The distribution is quasi-gaussian with a lower limit of  $\frac{1}{2}$  x mean. Although the upper limit is open, the probability of obtaining a value greater than 2 x mean is very low. Interval 1 has a range of 0.1-99.9 seconds.
- b. A green LED on the front panel indicates when the interval has timed out.
- c. A reinforced response initiates a new timing sequence and trial.
- d. The shaping push button will deliver reinforcement at any time and will reset the interval timer to zero.
- e. The response counter is incremented by each bar press.
- f. The reinforcement counter is incremented each time reinforcement is delivered.
- g. The CS and Shock are off.

#### **11. DRL: Differential Reinforcement of Low Response Rates**

- a. Reinforcement is given for the first acceptable response to occur after t seconds, where t seconds is set as interval 1. Interval 1 has a range of 0.1-99.9 seconds.
- b. Any responses occurring during the time interval will reset the interval timer to zero without delivering reinforcement and initiate a new timing sequence.
- c. A green LED on the front panel indicates when the interval has timed out.
- d. A reinforced response resets the interval timer and initiates a new timing sequence.
- e. The shaping pushbutton will deliver reinforcement at any time and will reset the interval timer to zero.
- f. The response counter is incremented by each bar press.
- g. The reinforcement counter is incremented each time reinforcement is delivered.
- h. The CS and Shock are off.

## *Schedule Descriptions (continued):*

### **12. DRH: *Differential Reinforcement of High Response Rates***

- a. Reinforcement is given for each acceptable response occurring within t seconds, where t seconds is set as interval 1. Once an interval has timed out, two responses must be given within t seconds to receive reinforcement. Interval 1 has a range of 0.1-99.9 seconds.
- b. A green LED on the front panel indicates when the interval has timed out. Responses occurring with the light off are reinforced; responses occurring with the light on are counted but not reinforced.
- c. A reinforced response resets the interval timer to zero, and initiates a new timing sequence.
- d. The shaping push button will deliver a reinforcement at any time and will reset the interval timer to zero.
- e. The response counter is incremented by each bar press.
- f. The reinforcement counter is incremented each time a reinforcement is delivered.
- g. The CS and Shock are off.

### **13. AVD: *Avoidance***

- a. Interval 1 is started as soon as the schedule is started.
- b. When interval 1 times out, a CS will be activated for t seconds, where t is set as interval 2. The CS has an intensity range from 0-20, 0 being off and 20 being full on.
- c. Intervals 1 and 2 have the range of 0.1-99.9 seconds.
- d. Following t seconds, the reinforcement is turned on.
- e. Responses during the CS or reinforcement reset Interval 1, turn the CS and the reinforcement off, and initiate a new trial sequence.
- f. The shaping push button resets all time intervals, turns off CS and reinforcement, and initiates a new trial sequence.
- g. The response counter is incremented by each bar press
- h. The reinforcement counter is incremented by each reinforcement application.
- i. The CS and Shock are on.

### **14. TEST: *Test Menu***

- a. This schedule tests out the press bars, shaping push button, ODL, and reinforcements.
- b. The response counter is incremented by each bar press.
- c. The shaping push button controls the application of reinforcement.
- d. Auxiliary Outputs 3, 4 can be tested.

## *Auxiliary Output Control:*

The Auxiliary Outputs, Aux 1-4, located on the back panel are used as switch closures for external devices. The following are specifications, which will help reference the control of each Auxiliary Output.

### *Specifications:*

Volts: 0-250VAC/VDC \*  
Current: 0-8A \*

**Aux 1:** On/Off control is set from Control Stimulus Light 1, CS LT1, within appropriate schedules. CS LT1 must be fully activated.

**Aux 2:** On/Off control is set from Pellet Reinforcement within appropriate schedules.

**Aux 3:** On/Off control is set at the beginning of each schedule.

**Aux 4:** On/Off control is set at the beginning of each schedule.

\* If any Auxiliary Outputs use the +28VDC source from the console, do not connect a device that draws more than 1A . When using the +28VDC source, the total current draw of all auxiliary outputs can be no more than 1A .

## *Auxiliary Output Application 1: House Lamp Control Example*

### *Specifications:*

Voltage = 28VDC  
Current = 250mA

### *Description:*

Set the house lamp as the auxiliary output desired. Aux 1 will turn the house lamp on in the event that CS LT1 is fully activated. Aux 2 will turn the house lamp on in the event that the pellet dispenser is activated. Aux 3 and 4 will turn the house lamp on in the event that the Aux 3 or 4 output is respectfully turned on.

### *Connections:*

Connect the house lamp to the +28VDC source on the chamber.

Connect the ground from the house lamp to one of the desired Auxiliary connections.

Connect a jumper wire from the second Auxiliary connection to GND on the chamber.

## Auxiliary Output Application 2: Pigeon Feeder

### Specifications:

Voltage = 120VAC

Current = 2A

### Description:

Set the pigeon feeder as the auxiliary output desired. Aux 1 will turn the pigeon feeder on in the event that CS LT1 is fully activated. Aux 2 will turn on the pigeon feeder in the event that the pellet dispenser is activated. Aux 3 and 4 will turn on the pigeon feeder in the event that Aux 3 or 4 output is respectfully turned on.

### Connections:

With the voltage and current requirements of the pigeon feeder, power and ground source for the device must be obtained from another supply. The 81335B +28VDC supply and GND source cannot be used. In this example it is recommended that Auxiliary connections be made as switches, turn on/turn off, for the pigeon feeder.

## House Lamp:

### Specifications:

Voltage = 28VDC

Current = 250mA

### Description:

For continuous operation of a house lamp, while the 81335B is turned on.

### Connections:

Connect power from the house lamp to the +28VDC source on the chamber.  
Connect the ground from the house lamp to the GND source on the chamber.



## Test Menu Application:

At the schedule selection menu, scroll to the test menu. Press "Enter" to begin testing. Activate or deactivate Aux 3 using the scroll up or down buttons. Press "Enter" to advance to Aux 4. After activating or deactivating Aux 4, press "Enter" to view the press bar results. Generate results by pressing on the bars. Scroll down to see more press bar results. Scroll down to test reinforcements. Press "Run" to start testing, and follow instructions on the display. Exit the test menu at any time by pressing the reset button once.

## Operant Chamber 80003 Wire Connections for 81335B:

### +28VDC Connects to:

Red Wires of Stimulus Lights  
Red Wires of Sonalert Speakers  
Red wire of Pellet Dispenser  
White wire of Liquid Dispenser

### Ground Connects to:

Black Wires of Press Bars  
Black Wire of Omni-Directional Lever (ODL)  
Black Wire of Pellet Dispenser  
Black Wire of Liquid Dispenser

### Output terminal:

1: CS LT1 - FR LT  
2: CS LT2 - FR LT  
3: Pellet - White Wire  
4: Liquid - Green Wire  
5: CS LT3 - BL LT  
6: CS LT4 - BR LT  
7: NC - NO CONNECTION  
8: CS TN1 - FL TN  
9: CS TN2 - FR TN  
10: CS TN3 - BL TN  
11: CS TN4 - BR TN  
12: Air

### Input Terminal:

1: FLB - Front Left Bar  
2: FRB - Front Right Bar  
3: ODL - Omni-Directional-Lever  
4: BLB - Back Left Bar  
5: BRB - Back Right Bar  
6: NC - Not Connected  
7: NC - Not Connected  
8: NC - Not Connected



*Notes:*

# Lafayette Instrument Operant Conditioning Console

## Model 81335B User's Manual

### Ordering Information:

All phone orders must be accompanied by a hard copy of your order. All must include the following information:

- 1) Complete billing and shipping addresses
- 2) Name and department of end user
- 3) Model number and description of desired item(s)
- 4) Quantity of each item desired
- 5) Purchase order number or method of payment
- 6) Telephone number

#### DOMESTIC TERMS

There is a \$50 minimum order. Open accounts can be extended to most recognized educational institutions, hospitals and government agencies. Net amount due 30 days from the date of shipment. Enclose payment with the order; charge with VISA, MasterCard, American Express; or pay COD. We must have a hard copy of your order by mail or fax. Students, individuals and private companies may call for a credit application.

#### INTERNATIONAL PAYMENT INFORMATION

There is a \$50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfer to our account; charge with VISA, MasterCard, American Express; or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

#### RETURNS

Equipment may not be returned without first receiving a Return Goods Authorization Number (RGA).

When returning equipment for service, please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to: Lafayette Instrument Company, 3700 Sagamore Parkway North, Lafayette, IN 47904, U.S.A. Shipments cannot be received at the PO Box. The items should be packed well, insured for full

value, and returned along with a cover letter explaining the malfunction. Please also state the name of the Lafayette Instrument representative authorizing the return. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence.

#### WARRANTY

Lafayette Instrument guarantees its equipment against all defects in materials and workmanship to the ORIGINAL PURCHASER for a period of one (1) year from the date of shipment, unless otherwise stated. During this period, Lafayette Instrument will repair or replace, at its option, any equipment found to be defective in materials or workmanship. If a problem arises, please contact our office for prior authorization before returning the item. This warranty does not extend to damaged equipment resulting from alteration, misuse, negligence or abuse, normal wear or accident. In no event shall Lafayette Instrument be liable for incidental or consequential damages. There are no implied warranties or merchantability of fitness for a particular use, or of any other nature. Warranty period for repairs or used equipment purchased from Lafayette Instrument is 90 days.

#### DAMAGED GOODS

Damaged equipment should not be returned to Lafayette Instrument prior to thorough inspection.

When a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. When damage is not detected at the time of delivery, contact the carrier and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for a return authorization for repair or replacement of the damaged merchandise.



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