

**CHICAGO** **welding**  
**ELECTRIC** **systems**

# AUTO-DARKENING WELDING HELMET with ANSI-Approved Lens

**Models 91212, 91214, 94336, 94337**

## SET UP AND OPERATING INSTRUCTIONS



**NOTE:** YOUR Helmet may appear different from the Helmet pictured in this manual. Aside from the slight differences noted in this manual, the warnings, operation instructions, and maintenance procedures will remain the same.

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Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.  
Failure to do so can result in serious injury.  
SAVE THIS MANUAL.**

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**For technical questions or replacement parts, please call 1-800-444-3353.**

Manual revised 10c

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## SAVE THIS MANUAL

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Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

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## IMPORTANT SAFETY INFORMATION

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In this manual, on the labeling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

### WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

### CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### NOTICE

NOTICE is used to address practices not related to personal injury.

## CAUTION

CAUTION, without the safety alert symbol, is used to address practices not related to personal injury.

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## SAFETY WARNINGS AND PRECAUTIONS


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**WARNING:** When using helmet, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

### Read all instructions before using this helmet!



1. **Do not use the Welding Helmet if the lens is cracked, if the lens or sensors are dirty, or if the lens or front retaining frame is loose.**
2. **Keep work area clean.** Cluttered areas invite injuries.
3. **Observe work area conditions.** Do not use welding helmets in damp or wet locations. Do not expose to rain. Keep work area well lit. Do not use auto-darkening helmets in the presence of flammable gases or liquids.
4. **Keep children away.** Children must never be allowed in the work area. Do not let them handle this helmet.
5. **Store idle equipment.** When not in use, helmets must be stored in a dry location to inhibit rust. Always lock up helmets and keep out of reach of children.

6. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective gear is essential to protect against welding rays, some examples are: a leather welding apron, welding sleeves, jeans without cuffs, work boots. Wear restrictive hair covering to contain long hair.
7.  **Use eye and ear protection. When welding, wear ANSI-approved impact safety goggles under the Welding Helmet.** Wear a NIOSH-approved respirator and hearing protection when welding.
8. **Stay alert.** Watch what you are doing, use common sense. Do not weld when you are tired.
9. **Check for damaged parts.** Before using any helmet, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the helmet if any switch does not operate properly.
10. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts can render helmet ineffective, possibly causing eye damage, and will void the warranty. Only use accessories intended for use with this helmet. Approved accessories are available from Harbor Freight Tools.
11. **Do not weld if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not weld.
12. **Maintenance.** For your safety, service and maintenance should be performed regularly only by a qualified technician.
13. **This helmet provides protection for intended purposes only.** There are certain applications for which this helmet was designed. Do not modify this helmet and do not use this helmet for a purpose for which it was not intended.
- The Welding Helmet is not suitable for laser welding processes.
  - The Welding Helmet will not protect against severe impact hazards, including fragmenting grinding disks; do not use Welding Helmet when grinding.
  - The Welding Helmet will not protect against explosive devices or corrosive liquids.
14. **Use only at temperatures within the operating range for your model as stated on the specifications chart in this manual.**
15. **Maintain the helmet and lens correctly to help ensure reliable protection.**
- **Clean filter's surfaces regularly.** Keep sensors and solar cells clean using a clean lint-free tissue/cloth. Do not use any solvents on filter's screen or helmet components. Protect filter from liquid and dirt contact. Do not immerse the filter in water.
  - **Should the Auto-Darkening Welding Helmet not darken upon striking an arc, stop welding immediately and have the helmet checked by a qualified service technician.**
  - **Regularly replace the Front Lens Cover if it becomes cracked, scratched, pitted, or otherwise damaged.**

- **Do not make any modifications to either the Auto-Darkening Filter or the rest of the helmet, other than those specified in this manual.** Do not use any replacement parts other than those specified in this manual. Unauthorized modifications and replacement parts will void the warranty and expose the user to the risk of personal injury. **Do not open or tamper with the Auto-Darkening Filter.**

16. **Do not place the Welding Helmet's Auto-Darkening Filter on a hot surface.**
17. **SEVERE PERSONAL INJURY and/or BLINDNESS may occur if the user fails to follow the aforementioned warnings and/or fails to follow the operation instructions.**

**⚠ WARNING**

**INHALATION HAZARD:  
Welding and Plasma Cutting Produce  
TOXIC FUMES.**

Exposure to welding or cutting exhaust fumes can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding or plasma cutting exhaust fumes are:

- Early onset of Parkinson's Disease
- Heart disease
- Damage to the reproductive organs
- Inflammation of the small intestine or stomach
- Respiratory diseases such as emphysema, bronchitis, or pneumonia
- Ulcers
- Kidney damage

Use natural or forced air ventilation and wear a respirator approved by NIOSH to protect against the fumes produced to reduce the risk of developing the above illnesses.

## SPECIFICATIONS

Model	91212	91214	94336	94337
Shell Designs	Blue	Flames	Eagle	Skull
Power Source	Solar Cells (rechargeable battery included, no additional battery required)		3V CR2450 battery (lifetime ~6,000 hours)	
Viewing Area	3.86" x 1.73"		3.74" x 2.44"	
Operating Temp.	23 to 158° F		14 to 158° F	
Clear State	4 DIN		3.5 DIN	
Weight	1.3 lb.		1.6 lb.	
Shade Range	9 to 13			
Ultraviolet / Infrared Protection	up to shade 16 all the time			
Welding Protection Types	For All Arc Welding Processes; Not for Laser Welding or Oxyacetylene Welding/Cutting			
Shell Material	High Impact-Resistant Plastic Polyamide Nylon			
Lens	Switching Speed (Clear to Dark): 1/25,000 second ANSI Z87.1-2003 - approved Lens			
Power ON / OFF	Fully Automatic			
Storing Temperature	-4 to 158° F			

## SHADE GUIDE CHART

Welding Process	Arc Current (Amperes)																		
	5	10	15	20	30	40	60	80	100	125	150	175	225	250	275	300	350	450	500
Stick/Arc					9	10			11				12				13		14
Mild Steel MIG (argon shielded)								10	11				12				13		14
Mild Steel MIG, (CO <sub>2</sub> shielded)						10		11	12				13			14			
Aluminum MIG								10	11			12		13			14		
TIG		9		10		11			12			13				14			
Flux Core									10	11	12		13	14					
Plasma Cutting									11	12			13						
Plasma Welding		8	9	10	11			12		13			14						

### UNPACKING

When unpacking, make sure that the item is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at 1-800-444-3353 as soon as possible.

### BEFORE FIRST USE

1. **The Auto-Darkening Welding Helmet needs to be charged prior to use and after extended storage.** Leave the solar panel on the helmet facing the sun for at least 4 hours before first use.
2. Remove the protective film from both sides of the front lens (if not already done).
3. Follow the **Before Each Use** instructions below.

### BEFORE EACH USE

1. Check the Front Lens Cover to make sure that it is clean, and that no dirt is covering the two sensors on the front of the Filter Cartridge. Also, check the Front/Inside Lens Cover and the Front Lens Retaining Frame, and make sure

that they are secure in place. Check for light tightness before each use.

2. Inspect all operating parts before each use for signs of wear or damage. Any scratched, cracked, or pitted parts should be replaced immediately before using again to avoid severe personal injury.
3. Turn the shade knob to the correct shade for the application as shown in the chart above. If a selection of shades are recommended for your application, **try the darkest setting first.**
4. Adjust headband so that the helmet is seated on the head as low as possible and close to your face. Adjust helmet's angle when in the lowered position by turning the adjustable limitation washer.

**IMPORTANT NOTE:** Test the helmet auto-darkening filter lens before welding. While wearing the helmet, briefly strike an arc, keeping your face and eyes turned slightly away, and to one side. The lens should darken evenly when not directly facing the arc. If it does not darken properly, do not use the Welding Helmet.



## PRODUCT FEATURES/ OPERATION

At the moment the welding operation is started, the filter screen automatically changes from clear to dark in only 1/25,000th of a second.

**Dark to clear delay adjustment:** Operator can vary the time for the filter to return to clear state. At the moment welding is stopped, the filter screen automatically changes from dark to clear state according to the time setting you select.

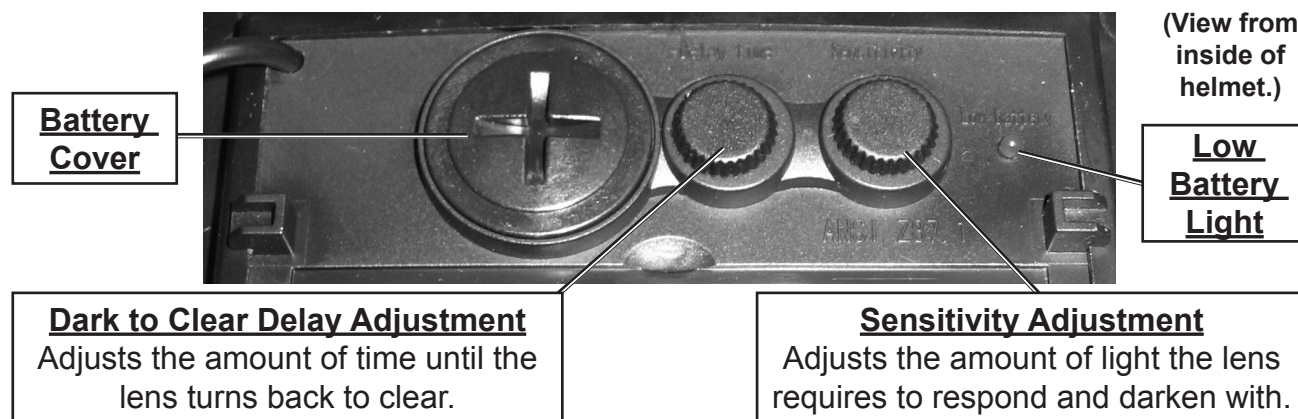
**Switch Sensitivity Adjustment:** The operator can adjust the amount of light needed to cause the Lens to darken.

This Welding Helmet utilizes high performance solar cells as power supply, and has built-in battery(ies) as power backup, see below. Under normal welding conditions, users can expect a battery lifetime of more than 6 years.

User-selectable variable shades from 9 to 13 are adjusted at the turn of a shade knob (shade variable). This product is in full conformity with related DIN, ISO, EN379 safety standards and ANSI Z87.1-2003 standard.

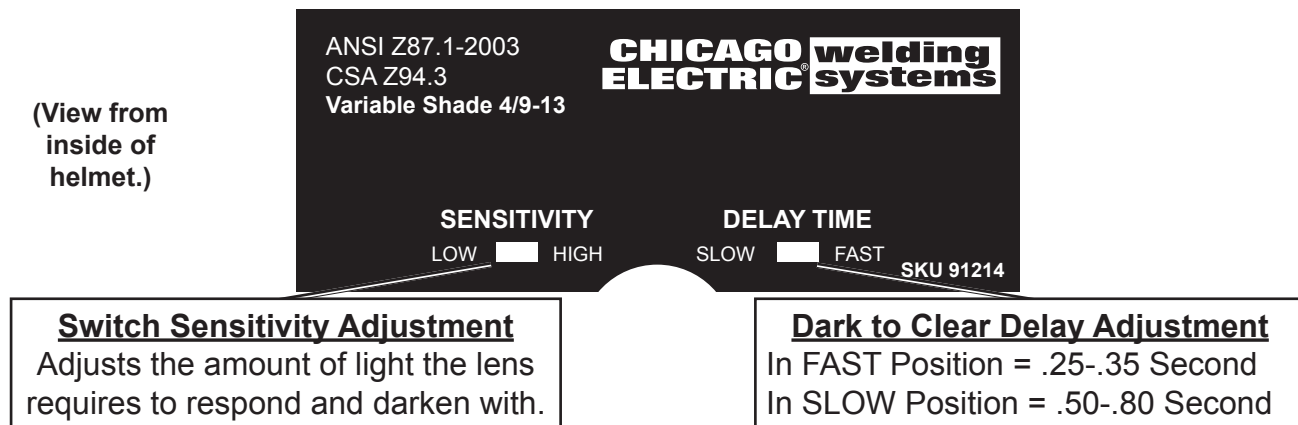
Auto-darkening filters provide protection against UV and IR radiation to the user's eyes and face, even in the clear state.

### Models 94336 & 94337



These models include one built-in 3V CR2450 battery. Low Battery Light will illuminate when replacement is needed.

### Models 91212 & 91214



These models include built-in batteries. Battery removal/replacement is not possible.

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## TROUBLESHOOTING

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1. **Irregular Darkening or Dimming**
  - a. Headband has been set unevenly on the two sides of the helmet (unequal distances from the eyes to the filter's lens).
  - b. Reset headband to reduce the difference in distances to filter, if necessary.
2. **Auto-Darkening Filter Does Not Darken Or Flickers**
  - a. Helmet was not properly charged before first use.
  - b. Front Lens Cover is soiled or damaged (change the Lens Cover).
  - c. Sensors are soiled (clean surface of the sensors).
  - d. Welding current is too low (increase the delay time, if necessary).
3. **Slow Response**

Operating temperature is too low (see specification chart).
4. **Poor Vision**
  - a. Front/Inside Lens Cover and/or filter soiled (change it).
  - b. Insufficient ambient light.
  - c. Shade number is incorrectly set (reset shade number).
5. **Welding Helmet Slips**

Headband is not adjusted properly (must be lowered).

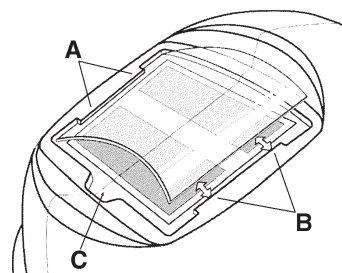
**WARNING: Stop using the Auto-Darkening Welding Helmet *IMMEDIATELY* if any of the above-mentioned problems can't be corrected.**

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## MAINTENANCE

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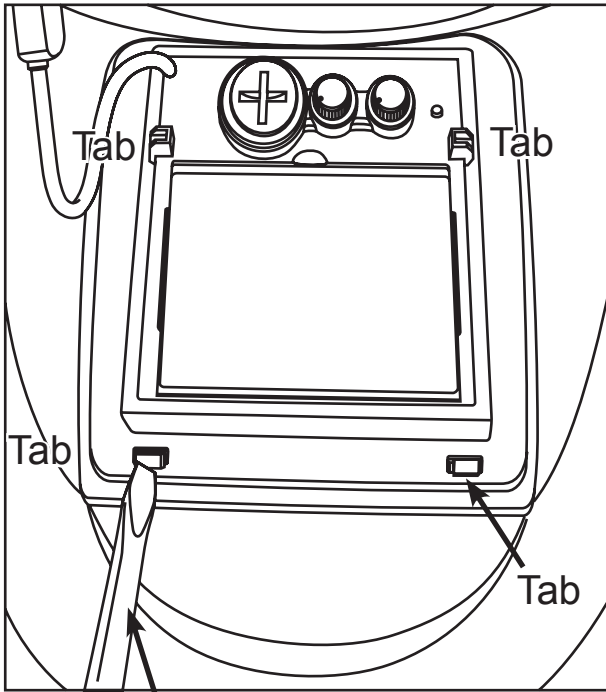
### **REPLACING THE LENS COVER FOR SKU 91212 AND 91214**



1. **Replace the Front Lens Cover (2) if it is damaged (cracked, scratched, soiled or pitted). Refer to the illustration above.**
  - a. Remove the Front Lens Cover (2) by gently pulling up the central part of the Lens.
  - b. Remove the protection film from both sides of the new Lens if it comes with the film on. Place the new Lens into the right position by bending it *slightly* enough to fit in between the tabs at each side of the lens and putting the lens in place.
  - c. Check and make sure that the Lens is securely installed.
2. Clean the Filter Lens with a clean lint-free tissue or cotton cloth.
3. Do not immerse the lens in water or any other liquid. Do not use abrasives, solvents or oil based cleaners.
4. To remove the Auto-Darkening Filter (3): Open the Spring (15) inside the helmet, remove the Shade Knob (4), loosen the nut holding the shade dial to the helmet, and remove the dial and filter. **Do not try to open the Auto-darkening Filter (3).**
5. Storage temperature: -4 to 158° F.

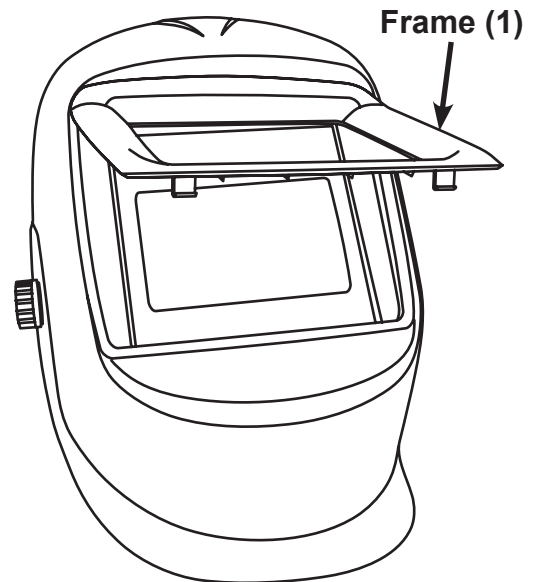
## REPLACING THE LENS COVER FOR SKU 94337 AND 94336.

1. Replace the Front Lens Cover (2) if it is damaged (cracked, scratched, soiled or pitted).



Press tabs up with a screwdriver to remove Frame (1).

- a. To remove the Front Lens Cover (2) first remove the frame (1). Inside the helmet on the cartridge there are 4 tabs, (two on the top and two on the bottom). Use a small flat-head screwdriver to pry the frame (1) off the helmet.

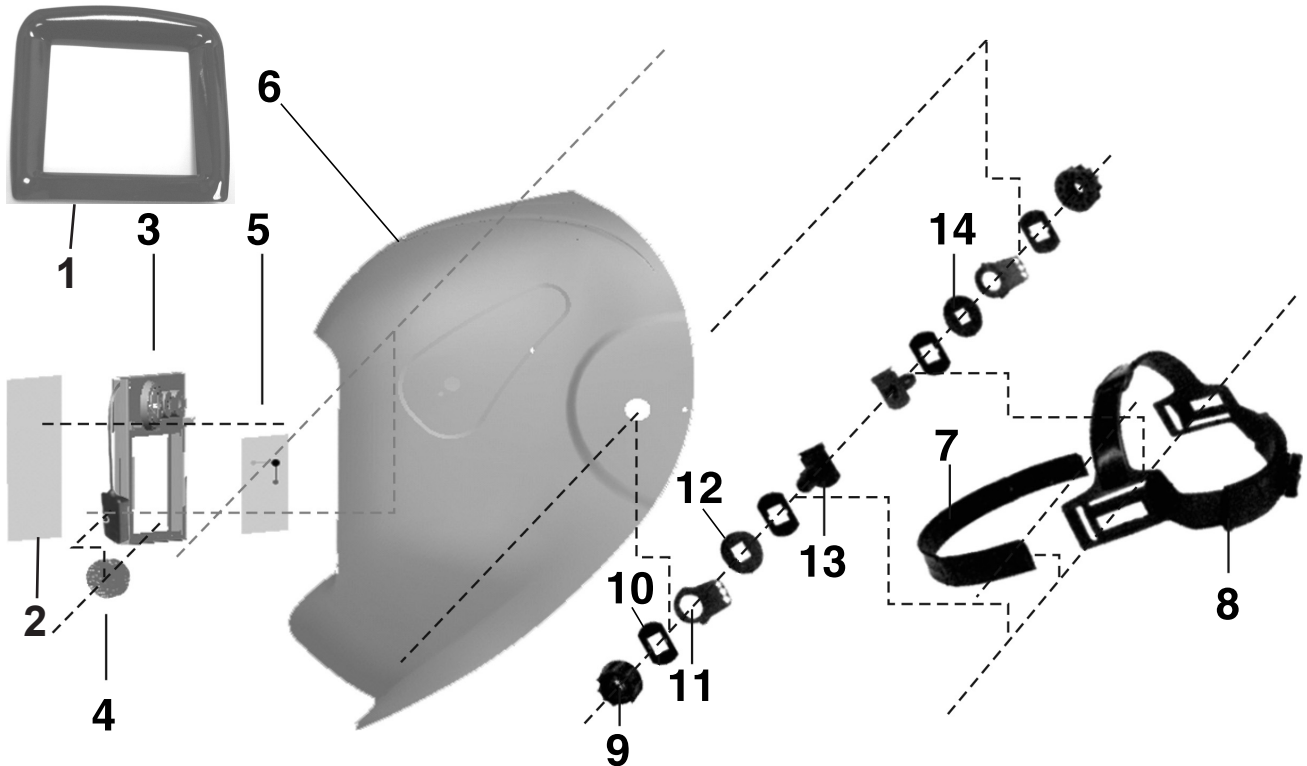


- b. Pull off the Frame (1).
  - c. Remove the protection film from both sides of the new Lens if it comes with the film on. Place the new Lens into the right position by bending it *slightly*, enough to fit in between the tabs at each side of the lens and putting the lens in place.
  - d. Check and make sure that the Lens is securely installed.
2. Clean the Filter Lens with a clean lint-free tissue or cotton cloth.
  3. Do not immerse the lens in water or any other liquid. Do not use abrasives, solvents or oil based cleaners.
  4. To remove the Auto-Darkening Filter (3): Open the Spring (15) inside the helmet, remove the Shade Knob (4), loosen the nut holding the shade dial to the helmet, and remove the dial and filter. **Do not try to open the Auto-darkening Filter (3).**
  5. Re-attach the frame by pressing it back on over the cartridge from the front. Secure it using the tabs inside the helmet.
  6. Storage temperature: -4 to 158° F.



## PARTS LIST AND ASSEMBLY DIAGRAM

**IMPORTANT:** Parts are not necessarily interchangeable. When ordering parts, always specify which model they are for.



Part	Description	Q'ty
1	Frame (sku 94336 & 94667 only)	2
2	Front Lens Cover	1
3	Auto-Darkening Filter Cartridge*	1
4	Shade Knob	1
5	Inside Lens Cover	1
6	Shell (Welding mask)	1
7	Front Headband	1
8	Adjustable Headband	1

Part	Description	Q'ty
9	Block Nut	2
10	Washer	4
11	Adjustable Limitation Washer	2
12	Left Limitation Washer	1
13	Screw	2
14	Right Limitation Washer	1
15	Lens Retaining Spring (not shown)	1

\*Includes Delay and Sensitivity Dials/Switches

**NOTE:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

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To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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