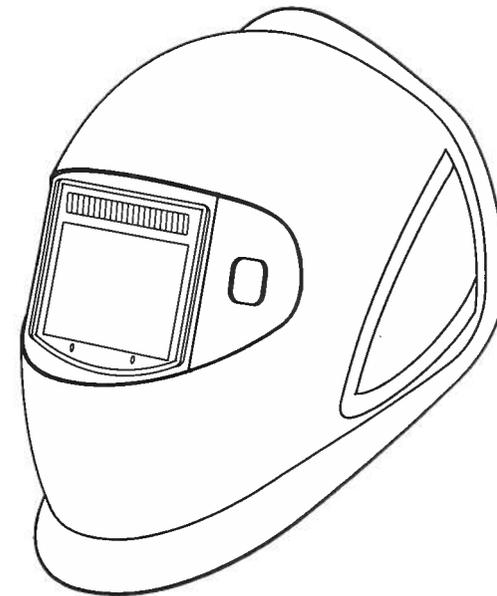


*Auto-Darkening Welding Helmet*

**User's Manual**



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## SECTION 1 - SAFETY WARNINGS – READ BEFORE USING

 **ARC RAYS FROM WELDING CAN BURN EYES AND SKIN. A damaged helmet or auto-darkening filter (ADF) can reduce the protection against harmful rays (intense visible light, ultraviolet and infrared) and result in serious injury.**

- Before welding, always inspect the complete helmet and the filter to ensure that they are not damaged. Also check and select the right shade and other filter settings.
- Check both the front and back cover lens to see whether they are clean, clear, undamaged and securely attached to the helmet and cover the auto-darkening filter. They are for the protection of the ADF. Never weld without the cover lenses on.
- Replace any worn or damaged parts immediately.
- Damages to ADF caused by abuse such as excessive temperatures, cracks from impact, and pitting from spatter caused by poor maintenance will void warranty.

 **WELDING HELMETS DO NOT PROVIDE UNLIMITED EYE, EAR AND FACE PROTECTION.**

- Wear impact resistant safety spectacles or goggles and ear protection at all time when using this helmet.
- Do not use this helmet for “overhead” welding, laser welding or laser cutting.
- Do not use the helmet when working with or around explosives or corrosive liquids.

 **WELDING ALSO PRODUCES SOME OTHER HAZARDS SUCH AS FUME, NOISE, SPARKS, AND SPATTER. Other safety precautions are also needed.**

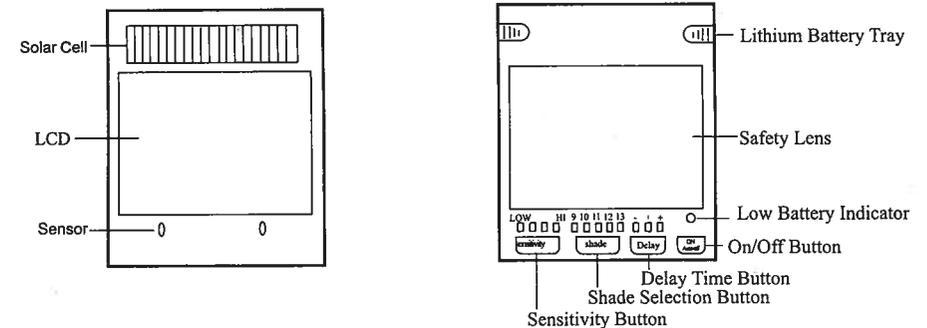
- Wear protective clothing and footwear made from durable and flame resistant materials.
- Provide adequate ventilation and breathing protection against welding fumes.
- Use protective screens or barriers to protect others from flash and glare.
- Warn others not to watch the arc.

## SECTION 2 – PRODUCT SPECIFICATION

|                               |   |
|-------------------------------|---|
| <b>Viewing Area</b>           | 100 x 60 mm/3.94" x 2.36"                           |
| <b>Cartridge Size</b>         | 114 x 133 x 10 mm/4.49" x 5.24" x 0.39"             |
| <b>Switching Time (s)</b>     | 1/30,000 (Second)                                   |
| <b>Light Shade</b>            | 4   |
| <b>Dark Shade</b>             | 9-13  |
| <b>Sensitivity Control</b>    | Low to Hi (4 Levels)                                |
| <b>Dark to Light Delay</b>    | 0.1S/0.6S/1S  |
| <b>Automatic Power Off</b>    | 15-20 minute  |
| <b>Sensors</b>                | 2   |
| <b>Power</b>                  | Solar Cell + 2 Replaceable CR2450 Lithium Batteries |
| <b>Low Battery Indicator</b>  | Yes   |
| <b>UV/IR Protection Level</b> | Up to Shade 16                                      |
| <b>Operating Temperature</b>  | 23 F-131F/-5° C - +55° C                            |
| <b>Storage Temperature</b>    | -4F-158F/-20° C - + 70° C                           |
| <b>Helmet Material</b>        | PP  |
| <b>Total Weight</b>           | 520 g   |
| <b>Standards</b>              | ANSI/CSA/CE   |

US Patent: D565800 S

## SECTION 3- AUTO-DARKENING CARTRIDGE CONTROLS



**On/Off Button:** Press it to activate the filter, and current settings of Sensitivity, Shade and Delay will flash. Press it again to turn off the filter. The filter will auto-off (returning to light shade No. 4) after 15-20 minutes of inactivity. If the filter is auto-off, one needs to press the On/Off button again to resume welding.

**Shade Selection Control:** Use the Shade Guide chart to select proper shade setting based on your welding application. We recommend starting at Shade 12 or Shade 13, and adjust it down according to the welding process and personal preference.

### SHADE GUIDE TABLE

| Welding process | Arc Current (Amperes) |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
|-----------------|-----------------------|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|---|----|----|----|----|----|
|                 | 0.5                   | 2.5 | 10 | 20 | 40 | 80 | 125 | 175 | 225 | 275 | 350 | 450 |   |    |    |    |    |    |
| SMAW            |                       |     |    |    |    |    |     |     |     |     |     |     | 9 | 10 | 11 | 12 | 13 | 14 |
| MIG (heavy)     |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
| MIG (light)     |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
| TIG GTAW        |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
| MAG/CO2         |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
| SAW             |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
| PAC             |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |
| PAW             |                       |     |    |    |    |    |     |     |     |     |     |     |   |    |    |    |    |    |

Note: \*SMAW-Shielded Metal Arc Welding.

\*MIG (heavy)-MIG on heavy metals.

\*MIG (light)-MIG on light alloys.

\*TIG,GTAW-Gas Tungsten Arc Welding .

\*SAW-Shielded Semi-Automatic Arc Welding.

\*PAC-Plasma Arc Cutting. \*PAW-Plasma Arc Welding.

**Sensitivity Control:** Use it to adjust the filter to different light levels in various welding process. We recommend a Mid-range sensitivity setting for most applications.

When adjusting the sensitivity to accommodate different lighting conditions or if the filter is flashing On and Off.

- Press On/Off button to turn the filter on.
- Face the helmet in the direction of use, exposing it to the surrounding light conditions.
- Set sensitivity according to lighting condition:  
LOW: The surrounding light is bright      HI: The surrounding light is dim
- Select sensitivity according to welding current  
LOW: High current welding      HI: Low current welding

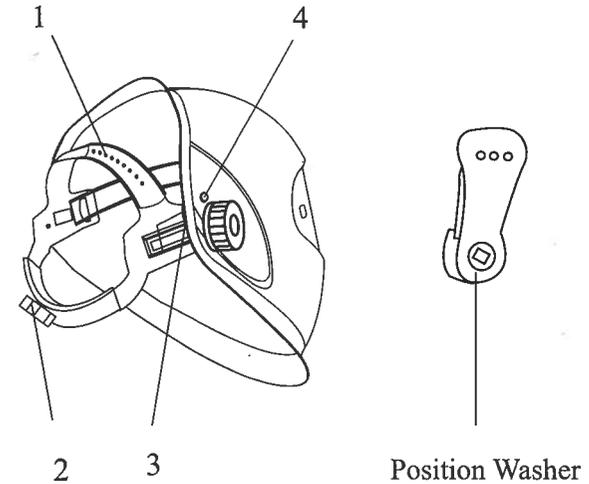
**Delay Control:** Use it to slow the switching time from dark state to clear state after welding. The delay control is particularly useful in eliminating bright after-rays present in high amperage applications where the molten puddle remains bright momentarily after welding. The delay adjustments are 3 levels: “-“ for 0.2 s, “I” for 0.6 s and “+” for 1 s. We recommend “+” setting for high amperage welding or for the situation where the lens may be temporarily blocked from seeing the welding arc.

### Test the ADF Filter Prior to Welding

Test the ADF filter before welding by facing the front of the filter toward a bright source of light, and then using one hand to cover and uncover the sensors rapidly. The filter shall darken momentarily as the sensors are exposed. A torch striker can also be used.

**⚠ Stop working immediately if the filter does not turn dark when striking a welding arc. Check all settings and solve all problems before trying again.**

## SECTION 4 – HEADGEAR ADJUSTMENT



**One can adjust the headgear in 4 ways.**

- 1. Head Depth Adjustment:** This is on the top of the headgear. Snap in the pin on the left band into the hole on the right band to select the proper depth on the head for balance and stability.
- 2. Headgear Tightness Adjustment:** Push in the Ratchet Knob on the back of the headgear, and turn to desirable comfort level.
- 3. Distance (Face to Filter) Adjustment:** loosen both outside tension knobs. Move forward or backward to desired position and then retighten the tension knobs. Both sides must be equally positioned for proper vision.
- 4. Helmet Angle (or Tilt) Adjustment:** Position washers with 3 holes on both side of the headgear are used for adjusting the forward tilt of the helmet. To adjust, loosen both outside tension knobs, and move the position washers on both sides into the desired holes (two washers must be in the same position). Retighten the tension knobs.

## SECTION 5 – REPLACEMENT OF COVER LENSES

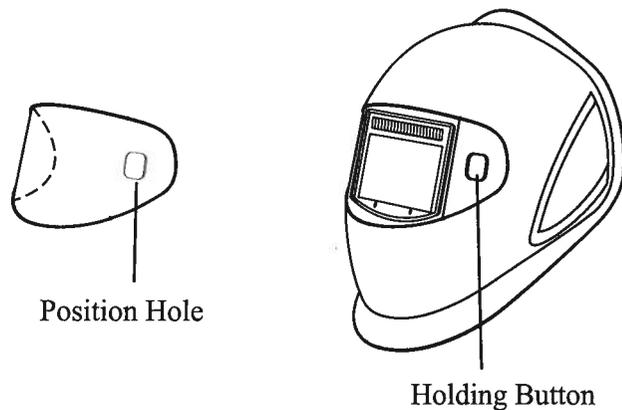
**⚠ Front and back cover lenses are for the protection of the auto-darkening filter. Never use the ADF without these cover lenses properly installed. Welding spatter will damage the auto-darkening filter and void the warranty.**

**Inspect the cover lenses frequently and change the damaged one (cracked, pitted, spattered etc.) immediately.**

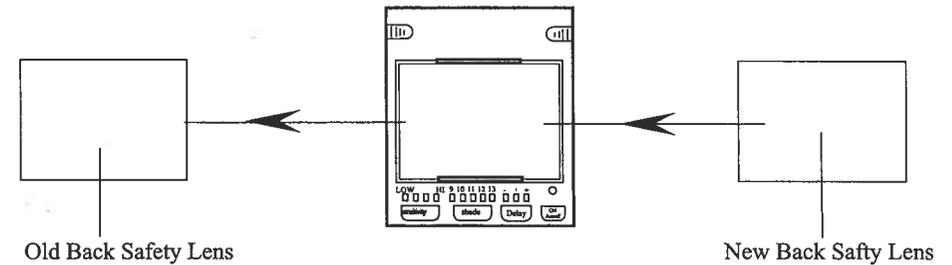
**Replacing the Front Cover Lens:** Use one thumb to press down one of the holding buttons whilst the thumb on the other hand pushing down the front cover lens. The lens will be off the button. Remove the cover lens.

Slide new cover lens into one holding button first. Then use one hand to press down the lens over the other holding button whilst the other hand inside the helmet to push up the holding button into the lens hole.

The cover lens is strong and will not break by pressing or pushing with the fingers.

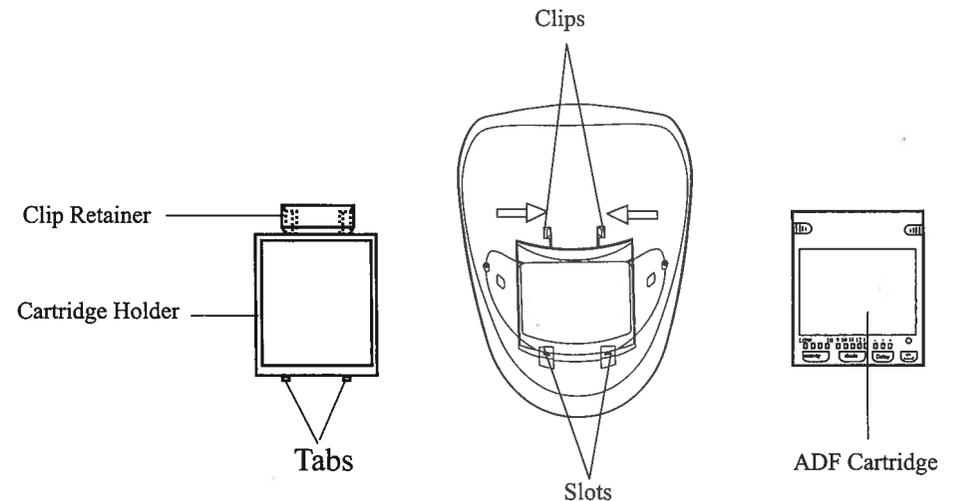


**Replacing the Back Cover Lens:** Take out the filter cartridge. Slide the old back safety lens out as shown in the figure below, and then slide a new lens back.



## SECTION 6 – REMOVING AND INSTALLING ADF CARTRIDGE

The cartridge is secured to the helmet by two clips on top of the helmet and a cartridge holder with two tabs at bottom and a clip retainer on top.



**Removing ADF Cartridge:** Slightly press down the middle of the clip retainer and pull it upward from the left side. Use two fingers to push the clips to the middle in the direction shown by the arrows. Pull upward the top end of the cartridge holder to remove it and the cartridge.

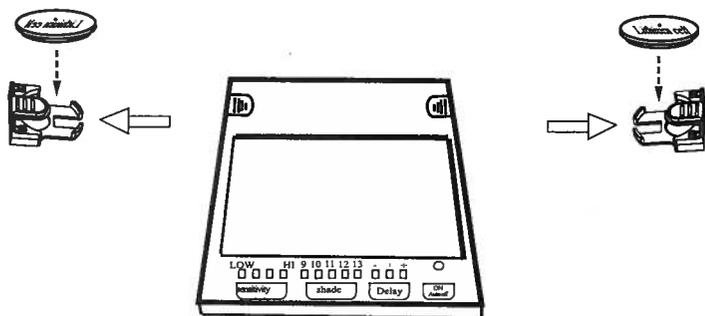
**Installing ADF Cartridge:** Insert the two tabs at the bottom of the cartridge holder into the slots in the cartridge housing first, and then reverse the above removing process to put the cartridge back.

**Important !** After installing the cartridge, please double check whether the two tabs are totally inserted into the slots of the cartridge housing. If not, press down the bottom part of the cartridge holder to force the tabs totally in.

Otherwise, the cartridge may not be securely attached to the helmet and may fall off easily.

## SECTION 7 – REPLACEMENT OF BATTERY

The ADF filter uses two CR2450 lithium batteries. Please change the battery immediately when LOW BATTERY indicating light is on.

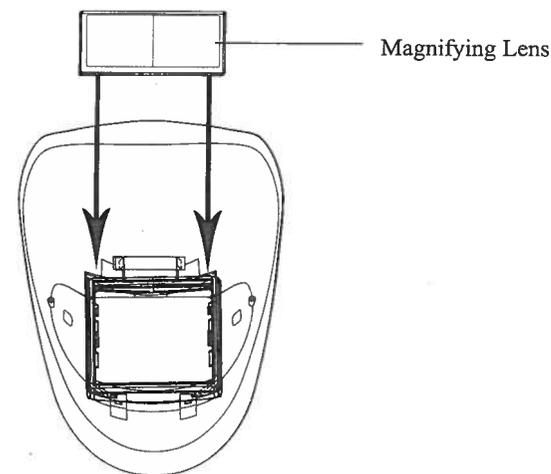


Open the battery compartment in the direction shown above. Replace the old battery cells with the new ones. The positive end (+) of the battery must face up. Insert the battery tray back to the cartridge, and then test whether the filter works properly.

## SECTION 8 – INSTALLING MAGNIFYING LENS

Simply insert the magnifying lens from top down as shown in the figure below, and then slide it into the desired position in the retaining brackets.

To prevent lens fogging, install flat side of magnifying lens toward auto-darkening filter.



## SECTION 9 – MAINTENANCE

**Helmet and Cover Lens:** Periodically clean them by using a soft cloth dampened with a mild soap and water solution. Allow to air dry.

**ADF Filter:** Occasionally clean it with a lint-free tissue or dry soft cloth or eye glass wipes. Do NOT submerge it in water or other solution.

## SECTION 10 – STORAGE

The helmet and ADF filter shall be stored in dry and well ventilated place. When stored in extremely cold temperature, warm helmet to ambient temperature before welding.

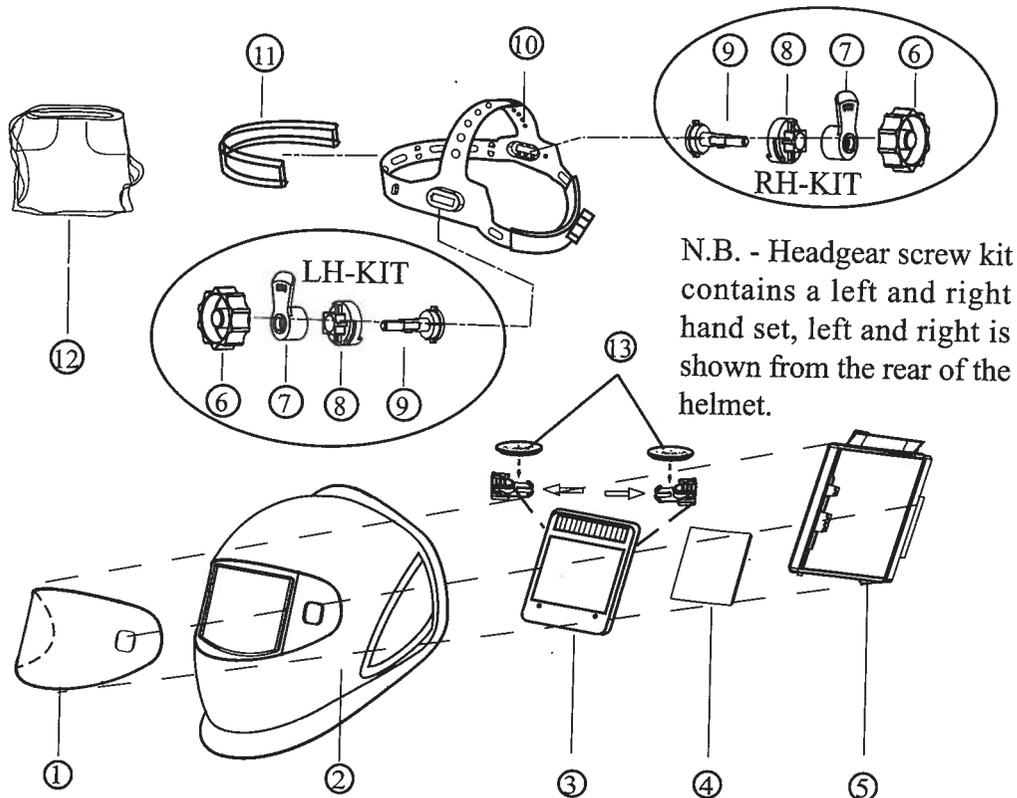
**SECTION 11 – TROUBLE SHOOTING**

| Symptom  | Possible Causes  | Solutions   |
|--|--|---|
| <b>Filter Not on (for more see "Staying dark" and "Staying light" below)</b>                   | Battery contact may not be good, and/or the battery may not be new or fully charged.   | Check batteries; Check and clean the battery contact; Check the On/Off button for operation.  |
| <b>Filter Not Switching (staying light and not darkening when welding)</b>                     | 1. Obstruction of the light to the sensors by a dirty cover lens.  | 1.Clean and/or replace the cover lens; clean sensors in front of the lens.  |
|  | 2.The angle of the sensor to the light is too big. If the unit is turned away from the arc at an angle of 45 degrees or more, the unit will not switch to dark.  | 2.Position the filter so that the sensors face the arc. The optimum is a direct position in front of the arc.   |
|  | 3. Airborne contaminants such as smoke prevent the sensors from receiving sufficient light to switch (darken).   | 3.Ensure there is adequate ventilation in the work area.  |
| <b>Filter Not Switching (staying dark after the arc is extinguished, or no arc is present)</b> | This may be caused by the ambient lighting or sunlight. The sensor is designed not to react to sunlight but once the filter is switched to dark, sunlight may be bright enough to prevent it from switching back to light state again. | Turn the filter unit away from any source of light and/or pass you hand in front of the sensors briefly. Fine tune sensitivity to lower level.  |
| <b>Filter Switching or Flicking</b>  | If the filter switches to dark and then turns to light again while there is still an arc, the sensitivity level may not be properly selected or there is some obstruction of light from the arc to the sensors.                        | 1.Increase the sensitivity level; 2.Move the filter closer to the arc (1-2 feet from the arc is optimum)-but not close. 3.Make sure that the filter is pointed directly at the arc, and that the sensors are not blocked from direct exposure to the arc (including not blocked by your arm, welding torch gun or nozzle); 4. Make sure that the cover lens is clean. |

| Symptom  | Possible Causes   | Solutions   |
|--|---|---|
| <b>Lighter shaded areas at the edge and corner of the filter lens</b>                        | The auto-darkening filter uses liquid crystal which exhibits an angle of view effect. In the dark state, it is normal for welder to notice slighter lighter shaded areas at the edge and corners of the filter lens. This does not represent any health or safety hazard. The optimum viewing angle of the auto-darkening filter is designed to be perpendicular to the surface of the filter lens. | No corrective action is needed  |
| <b>Spots in the filter lens. The shape and/or spots may appear to "grow" in the lens</b>     | It occurs after the lens has been shut off. The liquid crystal within the filter unit loses its electrical polarity after the electrical current is cut off. The liquid crystal, therefore, "relaxes" and causes the shape/spot to appear. It is a normal condition, and has no impact on the operation of the lens.  | Push the On/Off button and the shapes/spots will disappear.   |
| <b>Partial light/shading</b>   | There appears to be a distinct shade difference in portion of the filter lens and there is no crack in the unit. It may be caused by the leakage of light in the filter unit or reflection of light from light clothing into the helmet or the angle of looking through the lens, or optical illusion caused by "visible light" when wearing bifocals.  | 1.Make sure the filter unit is properly installed; 2. Wear dark clothing; 3.Make sure the welding helmet is adjusted properly so that the welder is looking straight and directly through the lens; 4.Welder who wears bifocals may notice a lighter shade in the bottom of the filter lens.This is normal and an optical illusion caused by "visible light". No correction is needed for this symptom. |
| <b>Sections of the filter not going dark, distinctive lines between light and dark areas</b> | The ADF filter may be cracked. The crack can be caused by dropping or hitting the helmet or by welding spatter on the filter.   | Stop welding immediately, and replace the filter if cracked.  |
| <b>Short Battery Life</b>  | If the batteries last only a few days even when usage is not intense, either the battery is wrong type or the battery contact is not good.  | Check the battery, and battery contact. The batteries shall be CR2450 lithium batteries.  |

## SECTION 12 – REPLACEMENT PARTS

| Item No. | Description                   | Part Number | QTY |
|----------|-------------------------------|-------------|-----|
| 1        | Front Cover Lens              | 200 001     | 1   |
| 2        | Helmet Shell, Silver          | 200 002     | 1   |
|          | Helmet Shell, Blue            | 200 003     | 1   |
|          | Helmet Shell, Silver gray     | 200 004     | 1   |
|          | Helmet Shell, Claret          | 200 005     | 1   |
|          | Helmet Shell, Orange          | 200 006     | 1   |
|          | Helmet Shell, Other designs   | 200 007     | 1   |
| 3        | Auto-darkening Filter         | 200 008     | 1   |
| 4        | Back Safety Lens              | 200 009     | 1   |
| 5        | Filter Holder                 | 200 010     | 1   |
| 6-9      | Nut/Washer/Screw Kit          | 200 011     | 2   |
| 10       | Headgear Assembly             | 200 012     | 1   |
| 11       | Sweatband                     | 200 013     | 1   |
| 12       | Helmet Carrying Bag           | 200 014     | 1   |
| 13       | Battery Tray Kit (Left/Right) | 200 015     | 2   |
|          | Battery, Lithium (CR2450)     | 200 016     | 2   |



## SECTION 13 – LIMITED WARRANTY

**Limited Warranty:** All the auto-darkening filters are warranted for two (2) years from the date of purchase against any manufacturing defects resulting from material or workmanship. Proof of purchase establishing the date of sale and filter serial number (located in the top right corner of the filter) must be provided, shall a warranty claim be submitted. A copy of the original invoice is considered proof of purchase; therefore, it is imperative this be retained. The purchaser's only remedy under this limited warranty shall be limited to supplier's sole option to repair or replace.

This warranty is void in the case of unauthorized modification, tampering, and damage due to misuse, abuse (spatter, cracks, melted plastics, etc.), inadequate maintenance or improper storage. External visible damage, separation of electronically sealed cassette or cracked lens constitutes improper use, storage or maintenance.

This warranty is not transferable from the original purchaser to a secondary owner.

**Exclusions to Limited Warranty:** This limited warranty is exclusive and in lieu of any other warranty, written or oral, expressed or implied.

**Limitation of Liability:** Supplier shall in no event be liable or responsible for any injury, damage or loss resulting either directly or indirectly from the use or misuse of this product. The remedy set forth herein is exclusive.