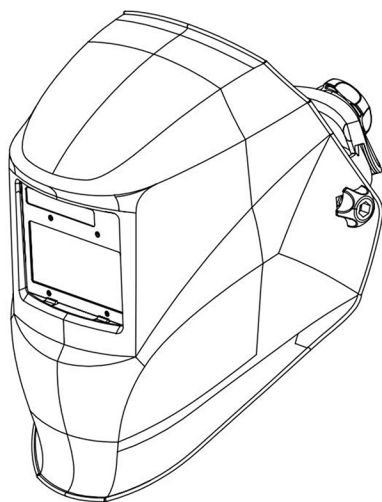


Hilco SparkShield ADF Welding Helmet



USER MANUAL

CE / ANSI / CSA / AS / NZS

Please read and understand all instructions before use.
Retain this manual for future reference.



Scan for user manual in:
English, Español, Français, Português

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SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

- ! **Protect yourself and others from injury — read, follow, and save these important safety precautions and operating instructions.**

1-1. Symbol Usage

- ! **DANGER!** – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.



This group of symbols means Warning! Watch Out! Electric Shock, moving parts and hot parts hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards

- ! **Only qualified persons should install, operate, maintain, and repair this equipment.** A qualified person is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project and has received safety training to recognize and avoid the hazards involved.



ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

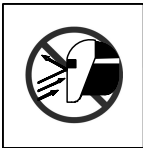
- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching. Refer to Lens Shade Selection table in Section 1 - 4.
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare, and sparks; warn others not to watch the arc.
- Wear body protection made from durable, flame-resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Before welding, adjust the auto-darkening filter sensitivity setting to meet the application.
- Stop welding immediately if the auto-darkening filter does not darken when the arc is struck.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



WELDING HELMETS do not provide unlimited eye, ear, and face protection.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Use helmet for welding/cutting applications only. Do not use helmet for laser welding/cutting.
- Use impact resistant safety spectacles or goggles and ear protection at all times when using this welding helmet.
- Do not use this helmet while working with or around explosives or corrosive liquids.
- Do not weld in the overhead position while using this helmet.
- Inspect the auto-darkening filter frequently. Immediately replace any scratched, cracked, or pitted cover lenses or auto-darkening filter.
- Lens and retention components must be installed as instructed in this manual to ensure compliance with protection standards.



READ INSTRUCTIONS.

- Read and follow all labels and the User Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.

- Use only genuine replacement parts from the manufacturer.
- Perform installation, maintenance, and service according to the User Manual, industry standards, and national, state, and local codes.



FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- Ventilate the work area and/or use local forced ventilation at the arc to remove welding fumes and gases. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

1-3. Auto Darkening Filter Shade Selection Table

Table A.3 –Recommended use of the different scale numbers for arc welding

Process	Current A																					
	1,5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500	600	
Covered electrodes	8							9		10		11		12			13			14		
	8							9		10		11			12			13			14	
MAG	8							9		10		11			12			13			14	
TIG	8				9			10		11			12			13						
MIG with heavy metals																						
	9							10		11			12			13		14				
MIG with light alloys																						
	10										11		12		13		14					
Air-arc gouging																						
	10										11		12		13		14		15			
Plasma jet cutting																						
	9							10		11		12			13							
Micro-plasma arc welding																						
	4		5		6		7		8		9		10		11		12					
	1,5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500	600	
NOTE The term "heavy metals" applies to steels, alloy steels, copper and its alloys, etc.																						

NOTE The term "heavy metals" applies to steels, alloy steels, copper and its alloys, etc.

Reference: EN ISO 16321

- * Start with a shade that is too dark to see the weld zone. Then, go to a lighter shade which gives a sufficient view of the weld zone without going below the minimum.

1-4. Safety Of Battery Use

1. Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
2. Even used batteries may cause severe injury or death.
3. Call a local poison control center for treatment information.
4. Non-rechargeable batteries are not to be recharged.
5. The compatible battery type CR2450.
6. The nominal battery voltage 3V.
7. Do not force discharge, recharge, disassemble, heat above 140°F or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.
8. Ensure the batteries are installed correctly according to polarity(+ and -).
9. Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
10. Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
11. Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

 WARNING	
• INGESTION HAZARD: This product contains a button cell or coin battery. • DEATH or serious injury can occur if ingested. • A swallowed button cell or coin battery can cause Internal Chemical Burns in as little as 2 hours. • KEEP new and used batteries OUT OF REACH of CHILDREN • Seek immediate medical attention if a battery is suspected to be swallowed or inserted inside any part of the body.	

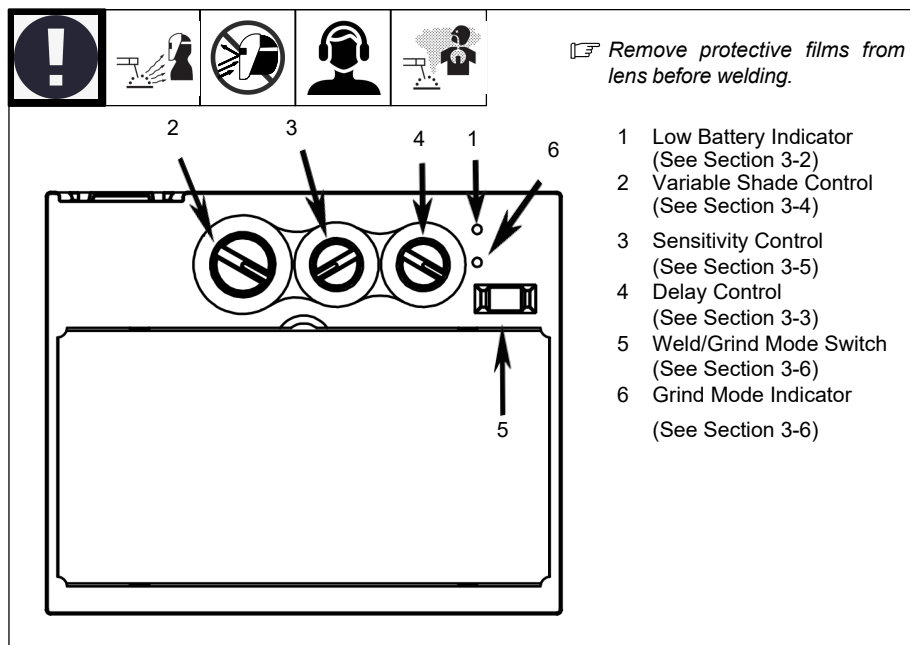
This symbol means:
INGESTION HAZARD: This product contains a button cell or coin battery.

SECTION 2 – SPECIFICATIONS

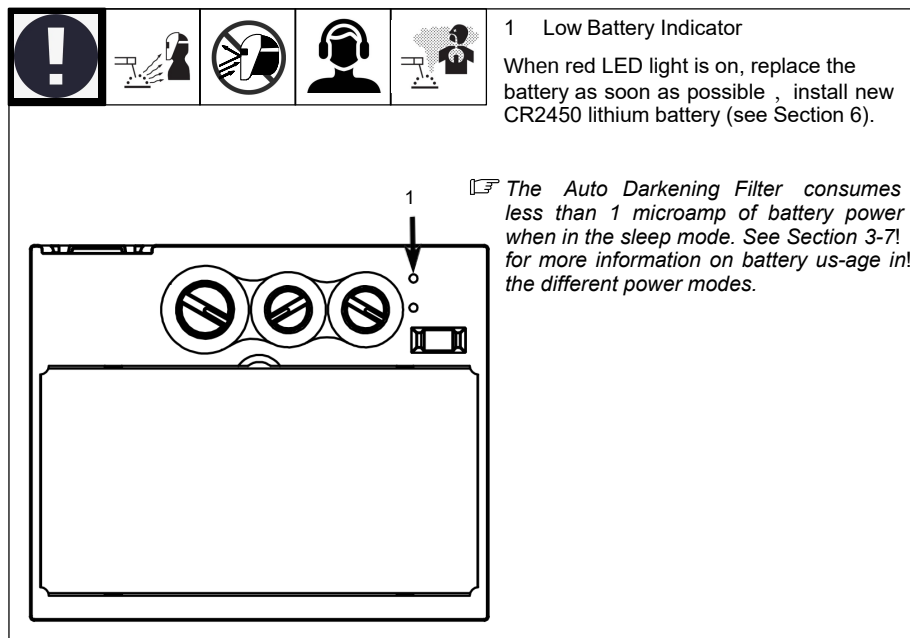
Viewing Field	97x 47 mm (3.82 x 1.85 in.)
Switching Time	0.04ms (ANSI)
Available Shades	Darkened State: No. 9–13 Light State: No. 3
Grind Mode	Yes
Sensitivity Control	Lo-Hi Adjustment For Varying Ambient Light And Welding Arc
Delay Control	Min-Max Adjustment Slows Lens Dark-To-Light State Between 0.1 And 2.0 Seconds
Power	Auto-On/Auto-Off
Low Battery Indicator	Yes,when red LED light is on, replace the battery as soon as possible
Power Supply	Solar cell 1 x CR2450 Lithium Battery Replaceable
Outer Protection Lens	Size: 118×97×1mm (4.65×3.82×0.04in.)
Inner Protection Lens	Size: 104.7×53.8×1mm (4.12×2.12×0.04in.)
Sensors	4
Operating Temperature	14°F to 149°F / –10°C to +65°C  <i>When stored in extremely cold temperatures, warm! helmet to ambient temperature before welding.</i>
Standards	EN ISO 16321, ANSI Z87.1, CSA Z94.3, AS/NZS 1338.1
Warranty	2 Years From Date Of Purchase (see Section 11)

SECTION 3 – OPERATING INSTRUCTIONS

3-1. Helmet Controls



3-2. Low Battery Indicator



3-3. Variable Shade Control (No. 9–13)

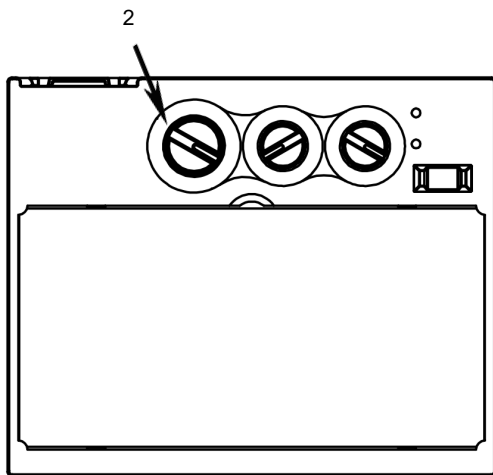


☞ Place Weld/Grind mode switch in Weld position (Section 3-6).

2 Variable Shade Control (No. 9–13)

Use the control to adjust the lens shade in the darkened state. Use the table in Section 1-4 to select proper shade control setting based on your welding process.

Start at the highest setting and adjust lighter to suit the welding application and your personal preference.



3-4. Sensitivity Control



☞ Place Weld/Grind mode switch in Weld position (Section 3-6).

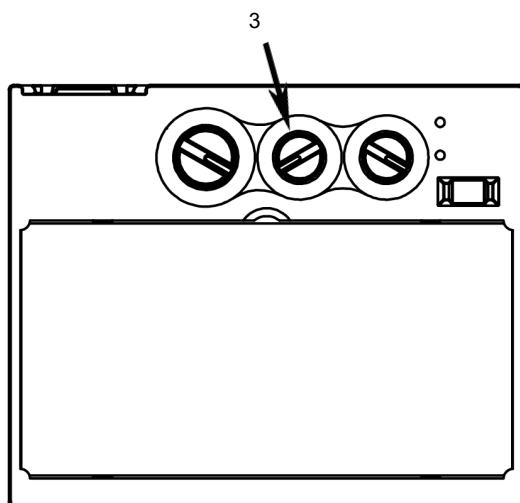
3 Sensitivity Control

Use control to make the lens more responsive to different light levels in various welding processes. **Use a Mid-Range or 50–70% sensitivity setting for most applications.**

It may be necessary to adjust helmet sensitivity to accommodate different lighting conditions or if lens is switching on and off. Adjust helmet sensitivity as follows:

☞ Adjust helmet sensitivity in lighting conditions helmet will be used in.

- Before welding (lens in light state), face the helmet in the direction of use. If the lens switches on and off, it is being affected by the surrounding light. Decrease sensitivity setting.
- If lens switches on and off during welding, the sensitivity setting is too low. Increase sensitivity setting. Helmet is now ready for use. Slight readjustment may be necessary for certain applications or if lens continues to switch on and off.



3-5. Delay Control

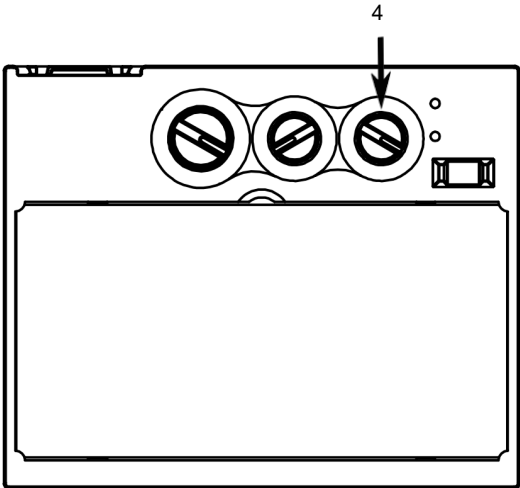


☞ Place Weld/Grind mode switch in Weld position (Section 3-6).

4 Delay Control

The Auto Darkening Filter delay control is used to adjust the time for the Auto Darkening Filter to switch to the clear state after welding.

The delay is particularly useful in eliminating bright after-rays present in higher amperage applications where the molten puddle remains bright momentarily after welding. Auto Darkening Filter delay adjusts from min (0.1 second) to max (0.9 second).



Recommended Sensitivity Settings	
Stick Electrode	Mid-Range
Short Circuiting (MIG)	Low/Mid-Range
Pulsed And Spray (MIG)	Mid-Range
Gas Tungsten Arc (TIG)	Mid/High-Range
Plasma Arc Cutting/Welding	Low/Mid-Range
Grinding	Place Weld/Grind Mode Switch In Grind Position

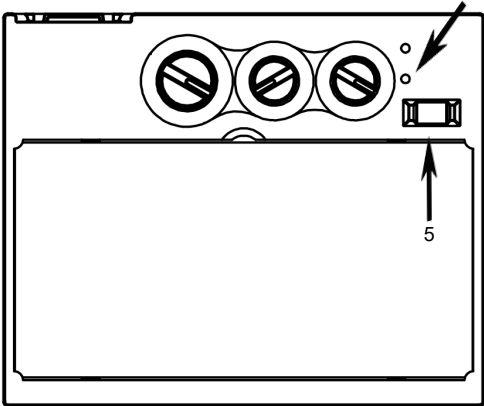
3-6. Weld/Grind Mode Switch



- 5 Weld/Grind Mode Switch
- 6 Grind Mode Indicator

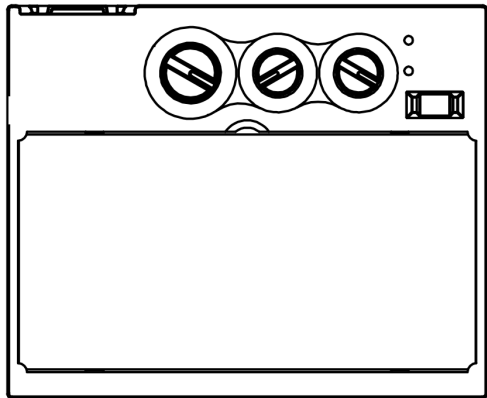
Place switch in Grind mode for grinding applications. To resume welding, place switch in Weld mode. The Grind Mode indicator will blink when helmet is in Grind mode.

6



Do not weld in the Grind mode; the lens will not darken.

3-7. Power Modes



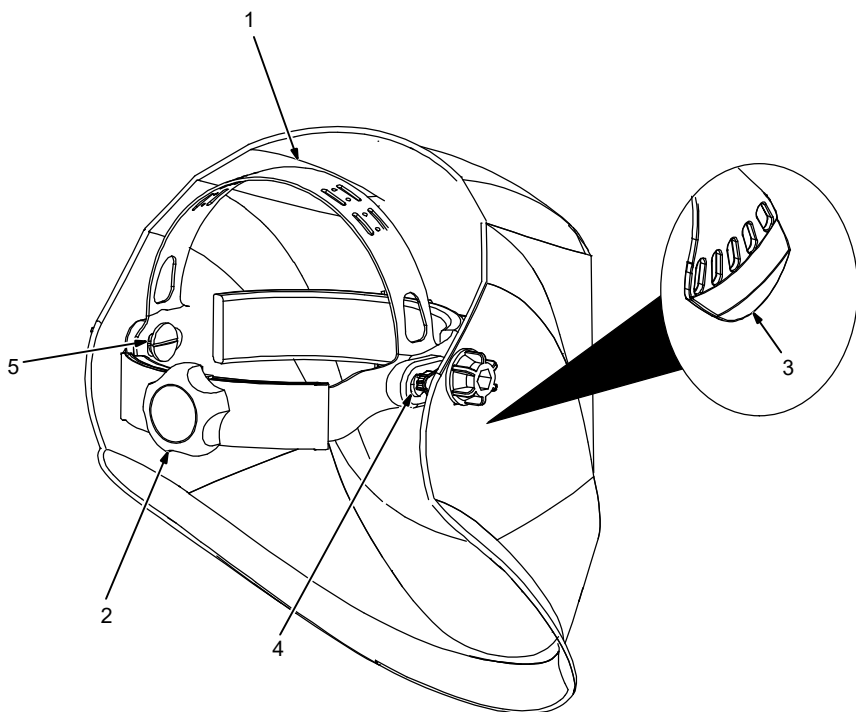
The Auto Darkening Filter has three power modes: sleep (off), standby, and on. The lens goes to sleep automatically when ambient light is low (less than 3 lux). The lens consumes less than 1 microamp of battery power when in the sleep mode.

When ambient light exceeds 10 lux, the lens automatically changes to the standby mode and is ready for welding. The lens relies on the solar cell for power when in standby mode.

When welding begins, the lens automatically turns on (darkens). In most cases, the solar cell provides enough power to operate the lens during welding. However, the lens may use both solar and battery power when shade control is at a high setting.

The lens returns to standby mode immediately after welding stops, and then enters sleep mode if ambient lighting is low (less than 3 lux).

SECTION 4 – ADJUSTING HEADGEAR



There are four headgear adjustments: headgear top, tightness, angle adjustment, and distance adjustment.

1 Headgear Top Adjustment

Adjusts headgear for proper depth on the head to ensure correct balance and stability.

2 Headgear Tightness Adjustment

To adjust, turn the adjusting knob located on the back of the headgear left or right to desired tightness.

3 Angle Adjustment

Slots on the right side of the headband provide adjustment for the forward tilt of the helmet. To adjust, lift and reposition the control arm to the desired position.

4 Distance Adjustment

5 Headgear Screw

Adjusts the distance between the face and the lens. To adjust, loosen headgear screws and slide headgear forward or backward to one of the three slots on the slider. Tighten screws. (Both sides must be equally positioned for proper vision.)

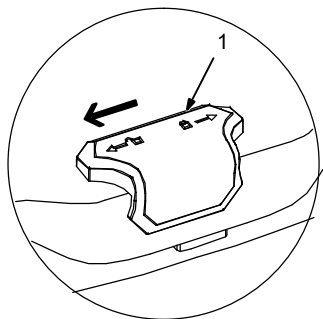
SECTION 5 – REPLACING THE PROTECTION LENS

5-1. Replacing Outer Protection Lens



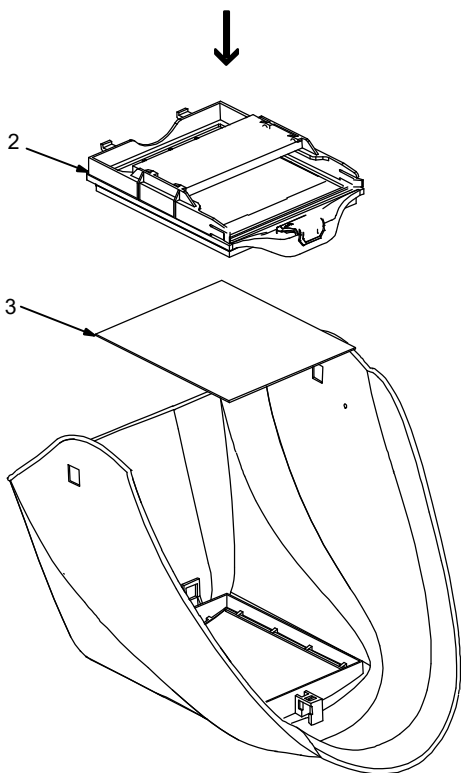
⚠ Never use the Auto Darkening Filter without the inner and outer protection lens properly installed. Welding spatter will damage the Auto Darkening Filter and void the warranty.

- 1 Locking Tab
- 2 Outer Protection Lens Assembly
- 3 Outer Protection Lens



Remove lens assembly by sliding the locking tab to the left. Remove cartridge and protection lens.

Install new protection lens.
Install protection lens assembly and slide locking tab to the right.



5-2. Replacing Inner Protection Lens

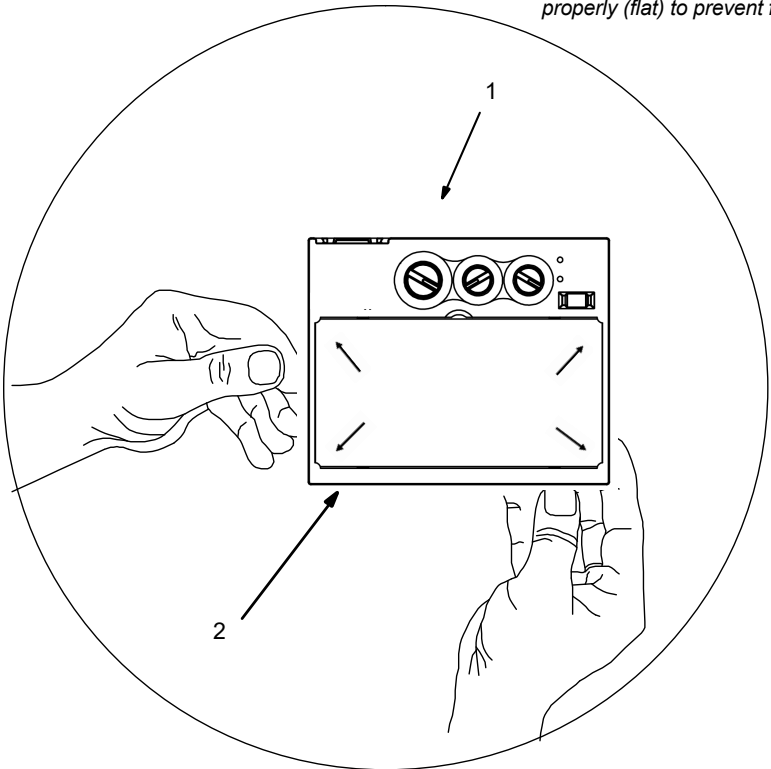


⚠ Never use the Auto Darkening Filter without the inner and outer protection lens properly installed. Welding spatter will damage the Auto Darkening Filter and void the warranty.

- 1 Lens Assembly
- 2 Inner Protection Lens

Remove the inner protection lens holder. Remove the inner protection lens by prying the cover up at thumbnail opening at top side of the cover. Insert the inner protection lens slowly at the four corners of the frame. Replace protection lens and reinstall the assembly in the helmet by reversing the above procedure.

ℹ Be sure the cover lens is seated properly (flat) to prevent fogging.



SECTION 6 – REPLACING THE BATTERY

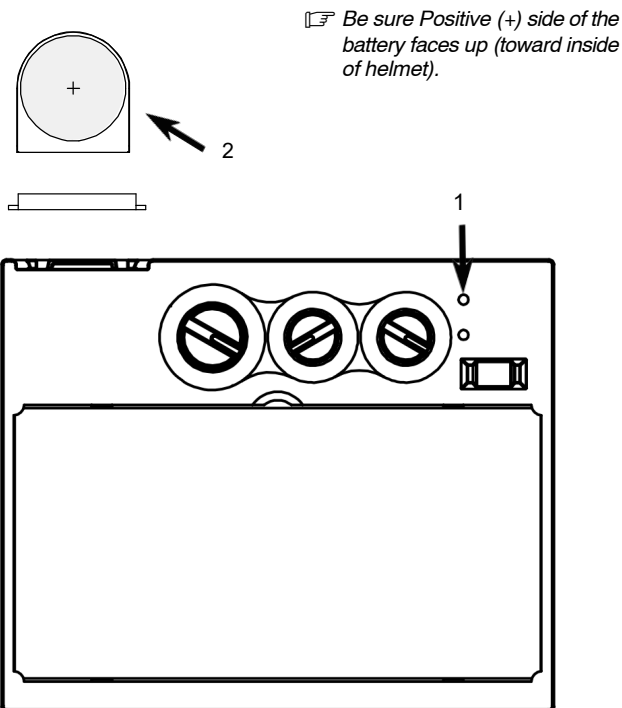


The helmet is powered by solar cells and one 2450 lithium battery.

1 Low Battery Indicator

The low battery indicator lights when 2 –3 days of battery life remain.

If battery power is low, install one new CR2450 lithium battery.



 Be sure Positive (+) side of the battery faces up (toward inside of helmet).

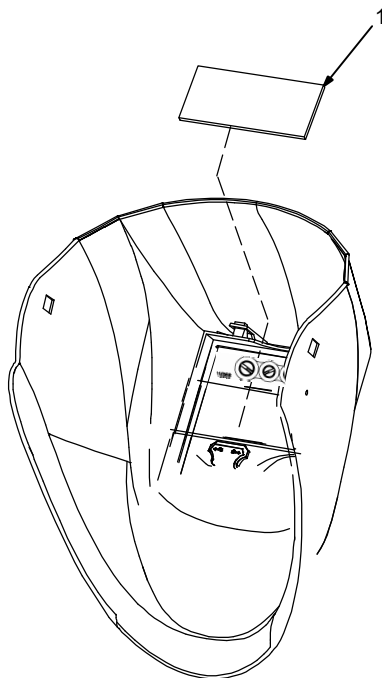
SECTION 7 – INSTALLING OPTIONAL MAGNIFYING LENS



1 Optional Magnifying Lens

Slide magnifying lens into the helmet retaining brackets as shown. Align the magnifying lens with the auto-darkening filter assembly.

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



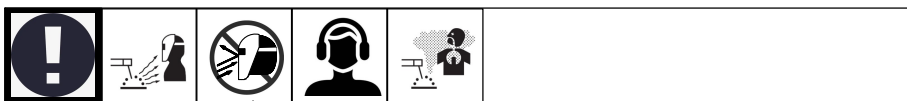
SECTION 8 – MAINTENANCE

NOTICE – Never use solvents or abrasive cleaning detergents.

NOTICE – Do not immerse the lens assembly in water.

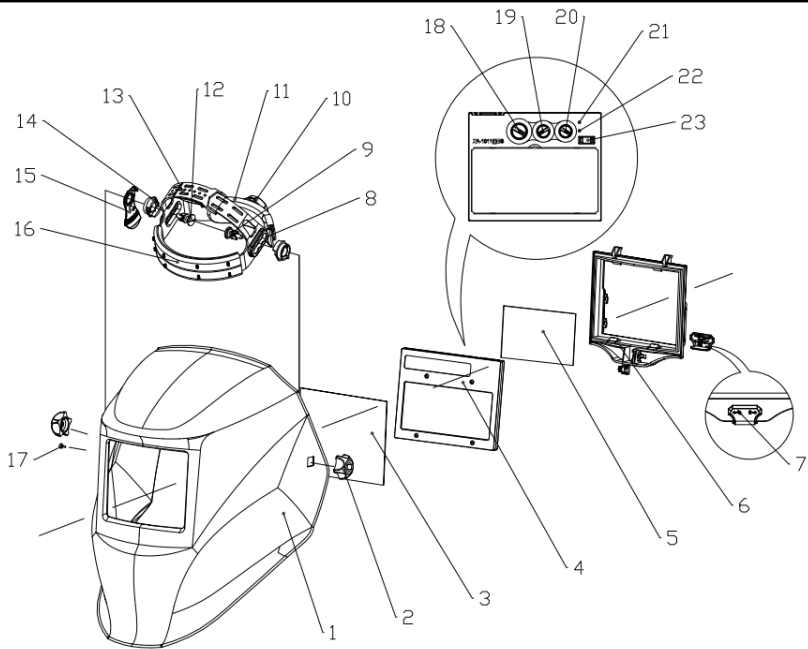
The helmet requires little maintenance. However, for best performance clean helmet after each use. Using a soft cloth dampened with a mild soap and water solution, wipe the cover lenses clean. Allow to air dry. Occasionally, the auto-darkening filters and sensors should be cleaned by gently wiping with a soft, dry cloth.

SECTION 9 – TROUBLESHOOTING



Trouble	Remedy
Not switching – auto-darkening filter will not darken when welding.	Stop welding immediately. If power is on, review the sensitivity recommendations and adjust sensitivity. Make sure helmet is not in Grind mode. Clean lens cover and sensors of any obstructions. Make sure the sensors are facing the arc; angles of 45° or more may not allow the arc light to reach the sensors. Check batteries and verify they are in good condition and installed properly. Also, check battery surfaces and contacts, and clean if necessary. Check batteries for proper contact and gently adjust contact points if necessary. This is particularly important if the helmet has been dropped.
Not Switching – auto-darkening filter stays dark after the weld arc is extinguished, or the auto-lens stays dark when no arc is present.	Fine-tune the sensitivity setting by making small adjustments to the control by turning it toward the LO setting. In extreme light conditions, it may be necessary to reduce the surrounding light levels.
Sections of the auto-darkening filters are not going dark, distinct lines separate the light and dark areas.	Stop welding immediately: The auto-darkening filter may be cracked which can be caused by the impact of dropping the helmet. Weld spatter on the auto-darkening filter may also cause cracking. (The lens may need to be replaced; most cracked lenses are not covered by warranty).
Switching or Flickering – the auto-darkening filter darkens then lightens while the welding arc is present.	Review the sensitivity setting recommendations and increase the sensitivity if possible. Be sure the arc sensors are not being blocked from direct access to the arc light. Check the lens cover for dirt and spatter that may be blocking the arc sensors. Increasing Lens Delay slightly may also reduce switching.
Inconsistent or lighter auto-darkening filter shading in the dark-state, noticeable on the outside edges and corners.	Referred to as an angle of view effect, auto-darkening filters have an optimum viewing angle. The optimum viewing angle is perpendicular or 90° to the surface of the auto-darkening filters. When that angle of view varies in the dark-state, welders may notice slightly lighter areas at the outside edges and the corners of the lens. This is normal and does not represent any health or safety hazard. This effect may also be more noticeable in applications where magnifying lenses are used.

SECTION 10 – PARTS LIST



1. Helmet shell
2. Block nut
3. Outer protection lens
4. ADF
5. Inner protection lens
6. ADF frame
7. ADF frame lock
8. Headgear slider(with 3 slots)
9. Headgear screw(with 3 slots)
10. Headband tightness adjusting knob
11. Headgear connector
12. Headgear screw(long,on right)
13. Headband adjusting buttons
14. Block washer(on right)
15. Segmental position plate(on right)
16. Sweatband
17. Positioning point for the segmental plate
18. Shade adjustment knob
19. Sensitivity knob
20. Delay knob
21. Low battery warning light
22. Grind flash light
23. Welding & grinding function switch button

SECTION 11 – LIMITED WARRANTY

LIMITED WARRANTY – Subject to the terms and conditions below, Hilarius Haarlem Holland B.V. warrants to its original retail purchaser that the new equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is purchased at the retailer. **THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.**

Auto-Darkening Welding Helmets are warranted for two (2) years from the date of purchase. Proof of purchase is required for warranty transactions so it is im-perative that a copy of the original invoice or sales receipt be retained.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There is no handwriting or other markings on the paper.