



# Auto-Darkening Helmet

## User's Manual

### **R-Tech True Colour XXL**



CE

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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.



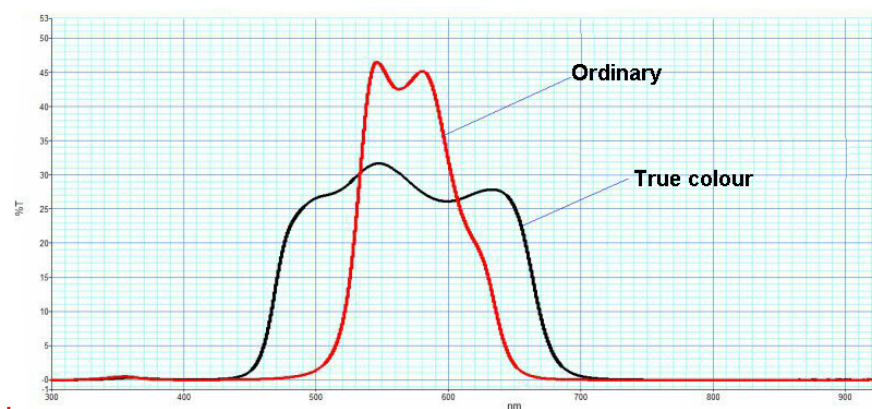
**WELDING ALSO PRODUCES SOME OTHER HAZARDS SUCH AS FUME, NOISE, SPARK, AND SPATTER.** Other safety precautions are also needed.

- 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

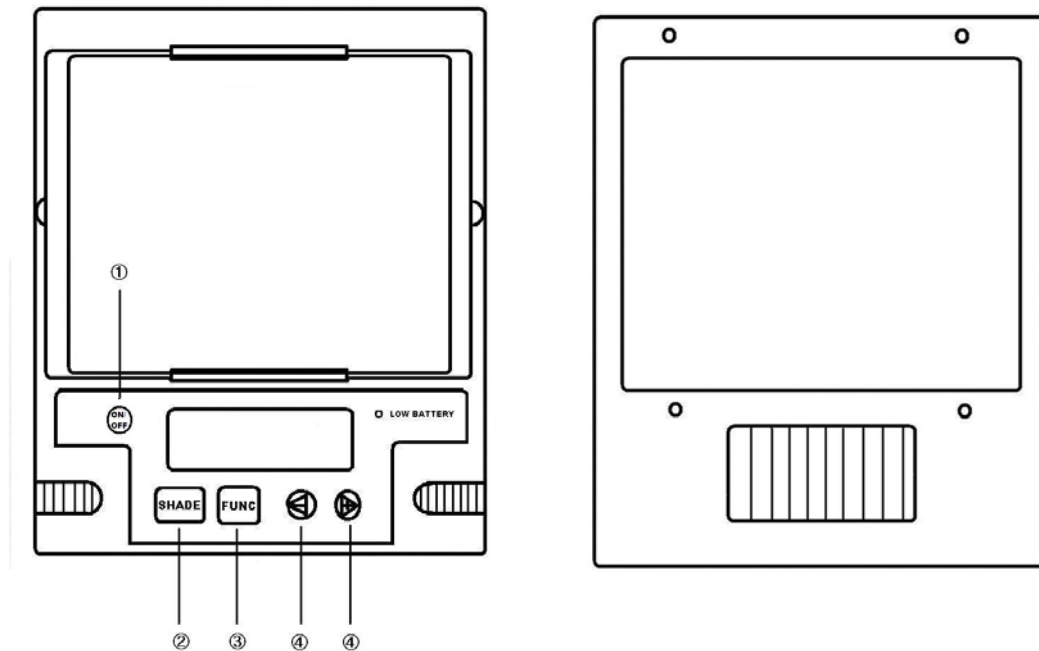
<b>Viewing Area</b>	100 x 80 mm
<b>Cartridge Size</b>	115 x 136 x 10 mm
<b>True Colour</b>	YES
<b>Switching Time (s)</b>	1/25,000 (Second)
<b>Light Shade</b>	DIN 4
<b>Dark Shade</b>	DIN 5-8/9-13
<b>Sensitivity Control</b>	1-10 level
<b>Dark to Light Delay</b>	0.1-1 Second (1-10 level)
<b>Automatic Power Off</b>	10-15 minutes after power on but no Arc present
<b>Manual Power Off</b>	YES
<b>Sensors</b>	4 PCS
<b>Power</b>	Solar Cell + 2 Replaceable CR2450 Lithium Batteries
<b>Lowest Welding Current</b>	Less than 5 Ampere
<b>Cutting/Torching Mode</b>	Yes
<b>Grinding Mode</b>	Yes
<b>Low Battery Indicator</b>	Yes
<b>UV/IR Protection Level</b>	> DIN 15
<b>Operating Temperature</b>	14 F-131F/-10° C - +55° C
<b>Storage Temperature</b>	-4F-158F/-20° C - + 70° C
<b>Helmet Material</b>	PA
<b>Total Weight</b>	510 g (1lb 2 oz.)
<b>Standards</b>	ANSI/CE

## SECTION 3- TRUE COLOUR



True colour glass filter is achieved by improved filter manufacture technology. Advanced UV/IR filter offers a more realistic viewing experience improve vision with less eye strain & provides greater comfort

## SECTION 4- AUTO-DARKENING CARTRIDGE CONTROLS



### ① **ON / OFF Button:**

Turn on - 1 second press, displays the current setting;  
Turn off - 3 seconds long press; or 10-15mins after non-usage – will automatically turn off;  
Holds 5 seconds after turn-off, press the ON/OFF button to turn on again.

② **MODE Button:** Press it to select the right mode for the work (Squared Cursor indicates the selected mode). **3 MODES:**

- **WELD Mode:** Used for most welding application. Shade range is Shade 9-13;
- **CUT Mode:** Used for cutting application; Shade range is Shade 5-8;
- **GRIND Mode:** Used for metal grinding. Fixed Shade 4

③ **FUNC Button:** Press it to select **Shade, Sensitivity and Delay** within each Mode (Squared Cursor indicates the selected function).

④ **Up / Down Button:** Use them to select the required level after entering Shade, Sensitivity and Delay function.

**Shade Selection:** Press MODE button to enter required mode, and then press FUNC button to select Shade function. Use up/down buttons to select the required shade.

Use the Shade Guide below to select proper shade based on your welding application. We recommend starting at Shade 13, and adjust it down according to the welding process and personal preference.

## SHADE GUIDE TABLE

Welding process Or related techniques	Current internally in amperes																	
	0.5	2.5	10	20	40	60	80	125	175	225	275	350	450					
	1	5	15	30	60	100	150	200	250	300	400	500						
E manual Flux core electrodes Fluxed stick electrodes					9	10	11	12	13	14								
MIG / Metal-Inert-Gas Argon (Ar/He) Steels, alloyed steels, Copper & its alloys etc.							10	11	12	13	14							
MIG / Metal-Inert-Gas Argon (Ar/He) Aluminium, copper, nickel And other alloys.							10	11	12	13	14	15						
TIG / Tungsten-Inert Gas Argon (Ar/He) All weldable metals such as: steels, aluminium, Copper, nickel and their alloys.					9	10	11	12	13									
MAG / Metal-active Gas (Ar/Co2) (Ar/Co2/He/H2) Construction Steel, hardened & tempered steels Cr-Ni-steel, Cr-steel & other alloyed steels.						10	11	12	13	14	15							
Electric arc compressed air joining (Melt joining) carbon electrodes (O2) Flame grooving compressed air (O2)								10	11	12	13	14	15					
Plasma cutting (fusion cutting) All weldable metals see WIG Centre and outer gas: Argon (Ar/H2) (Ar/He)							11	12	13									
Plasma cutting (Fusion cutting) Micro-plasma welding Centre and outer gas: Argon (Ar/H2) (Ar/He)	2.5	5	6	7	8	9	10	11	12	13	14	15						
	4																	
	0.5	2.5	10	20	40	60	80	125	175	225	275	350	450					

Depending upon the application conditions, the next highest or next lowest protection level can be used.  
The darker fields correspond to those areas in which the corresponding welding process cannot be used.

**Sensitivity Selection:** Press MODE button to enter proper mode, and then press FUNC button to select Sensitivity function. Use up/down buttons to choose the right sensitivity level.

Sensitivity is for adjusting the filter to different light levels in various welding process. The ADF has 10 levels arranging from 1-10.

- 1-3: LOW range
- 4-7: Mid-range
- 8-10: High range

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,

- Use up/down buttons to turn sensitivity level to the lowest setting;
- Face the filter in the direction of use, exposing it to the surrounding light conditions.
- Increase the sensitivity until the lens darkens, and then lower it down until reaching the level where the lens is clear. Slight readjustment may be necessary for certain application or if the filter is flashing on and off.

**Important!** When the lens is flashing, the Sensitivity level is at the threshold and the lens will be auto-off after 1-2 minutes to protect the lens. You will need to turn on the lens and adjust the sensitivity until lens stops flashing.

**Delay Control:** Press MODE button to enter weld mode, and then press FUNC button to select Delay function. Use Up/Down buttons to choose the desired delay level.

Delay is used to slow the switching time from dark state to clear state after welding. It is particularly useful in eliminating bright after-rays present in high amperage applications where the molten puddle remains bright momentarily after welding. The filter delay runs from 1 (0.2 second) to 10 (1 second). We recommend higher setting for higher amperage welding or for the situation where the lens may be temporarily blocked from seeing the welding arc.

#### **Lens Operation Procedures:**

**Step 1:** Turn on the lens;

**Step 2:** Select Mode: WELD, CUT, GRIND (cursor around the selected mode);

**Step 3:** Select Shade by pressing FUNC button (cursor around Shade), and then Up/Down buttons;

**Step 4:** Select Sensitivity by pressing FUNC button (cursor around Sensitivity), and then Up/Down buttons;

**Step 5:** Select Delay by pressing FUNC button (cursor around Delay), and then Up/Down buttons;

**Step 6:** Begin work.

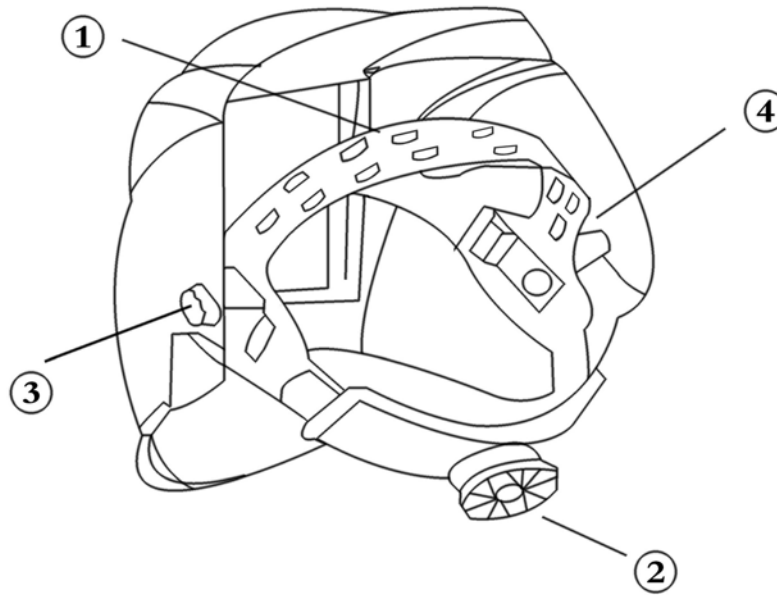
#### **Test the ADF Filter Prior to Welding**

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 5 – HEADGEAR ADJUSTMENT



You can adjust the headgear in 4 ways.

① **Head Depth Adjustment:** This is on the top of the headgear. Snap in the pins on the left band into the holes 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.

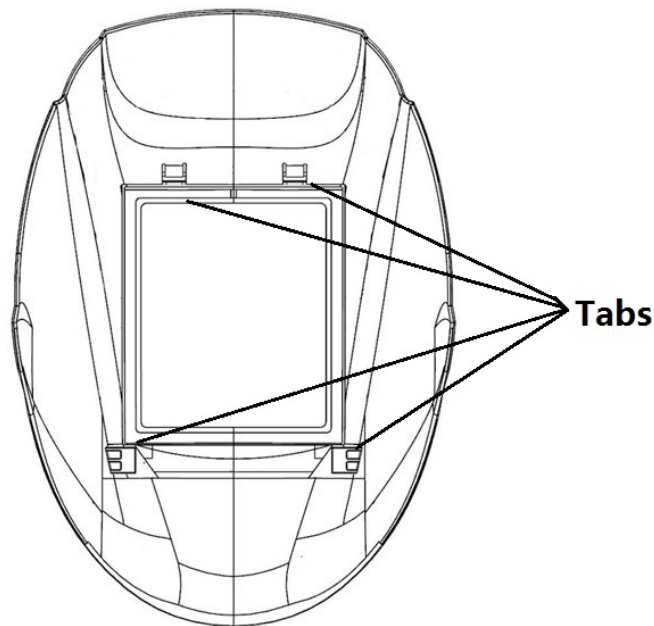
③ **Distance (Face to Filter) Adjustment:** Loosen both outside tension knobs. Move forward or backward to desired position and then retighten the tension knobs. Both sides must be equally positioned for correct vision.

④ **Helmet Angle (or Tilt) Adjustment:** Position washers with 5 holes on the one 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). Re-tighten the tension knobs.



## SECTION 6 – REMOVING AND INSTALLING ADF CARTRIDGE


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



**Removing ADF Cartridge:** Use one finger to press down the tab and at the same time another finger to push off the retainer on the helmet. Start from the bottom and then the top. Remove the cartridge holder and the cartridge.

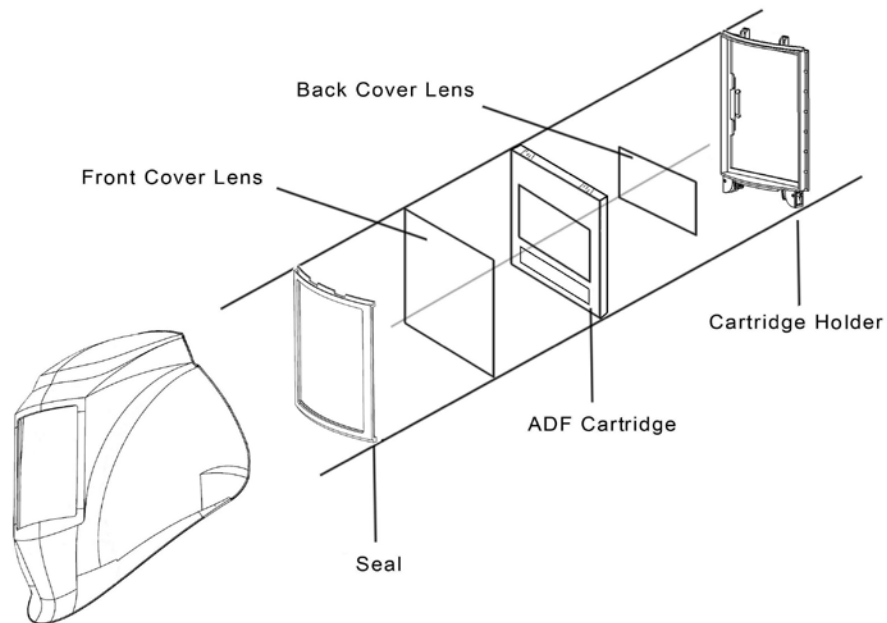
**Installing ADF Cartridge:** Insert the tab on the top to the retainer first, and then press down the bottom of the holder and push back the retainers to click on the tabs at the bottom.

## SECTION 7 – REPLACEMENT OF COVER LENSES

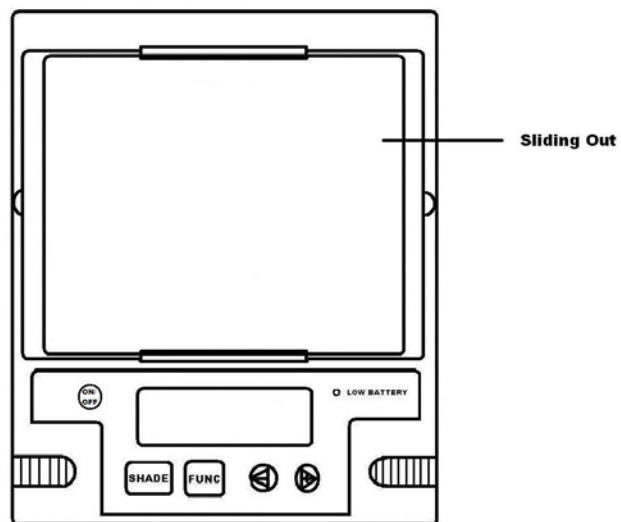
 **Front and back cover lenses are for the protection of the auto-darkening filter. Never use the ADF without these cover lenses properly installed. Welding spatter will damage the auto-darkening filter and void the warranty.**

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

**Replacing the Front Cover Lens:** Remove the ADF cartridge from the helmet, take out the front lens gasket and the front cover lens. Install the new front cover lens by reversing the above process.



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



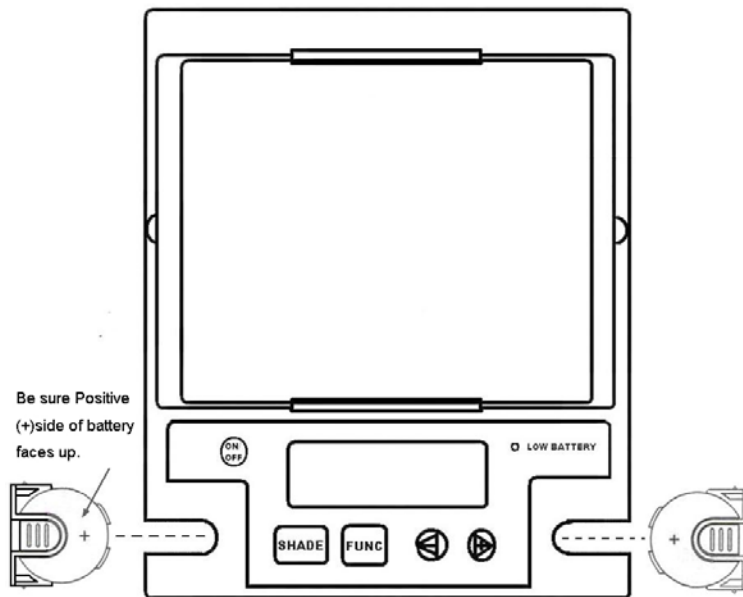
Front cover lens (Outer Lens) Part Number: RT-WMASK2-V2-OL

Back cover lens (Inner Lens) Part Number: RT-WMASK5-IL

## SECTION 8 – REPLACEMENT OF BATTERY

When following situations occur, the lithium batteries need be replaced immediately.

- When the lens is on, the Low Battery light is flashing (only 8 hours of battery power left).
- When pressing the ON button, no settings appear on the LCD display.
- The setting does appear on the LCD display, but you cannot adjust any setting by pressing any control button (the display seems “locked”).
- The words or numbers on the LCD display are faded or not clear.

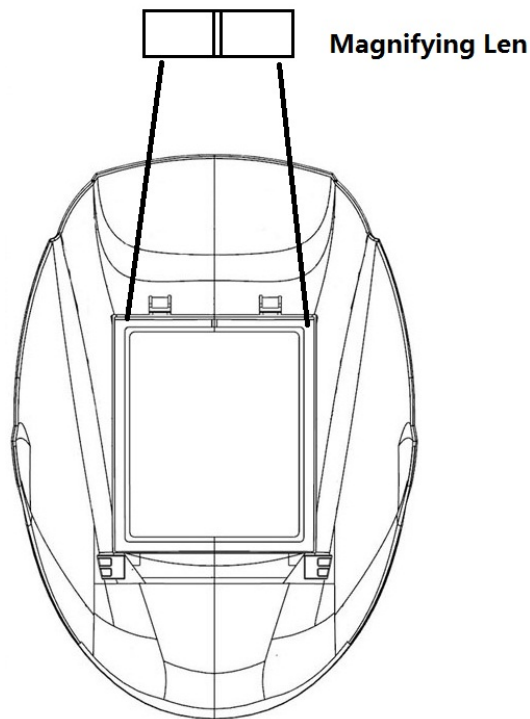


The ADF filter uses two CR2450 lithium cell batteries. Open the battery compartment by sliding the battery tray out. Replace the old battery cells with the new ones. The positive end (+) of the battery must face up. Insert the battery tray back to the cartridge, and then test whether the filter works properly.

## SECTION 9 – 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 10 – 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 11 – 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 12 – TROUBLE SHOOTING

Symptom	Possible Causes	Solution
<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 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.
<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 slightly 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

Symptom	Possible Causes	Solution
<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	No corrective action is needed.
<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 should be CR2450 lithium batteries.