



# USER INSTRUCTION MANUAL Auto-Darkening Filters

## Singles®



S540



S450



S240

## INDUSTRIAL®



X35V



X60V



X60V



X450V



X540V



X54Vi



X54Di



INTELLIGENT  
DARKENING  
FILTER™



IDF81

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**ArcOne®** auto-darkening filters protect the user against harmful ultraviolet and infrared rays, both in the dark and light state. No matter what shade the filter is set to, the UV/IR protection is always there. When used properly, the filter will prevent your eyes from being burned due to optical radiation. User's eyes can be severely burned if welding with a damaged lens (cracked, pitted, etc.).

**ANSI (American National Standards Institute)** defines all welding helmets as secondary eye protection from optical radiation and impact. For complete safety, additional protection, such as spectacles or goggles should be worn with welding helmets. Protective clothing and accessories such as leather bibs attached to the welding helmet will protect the user from spatter and optical radiation indirectly entering from areas behind the helmet.

C5

**NOTE:** Not for use in overhead welding.

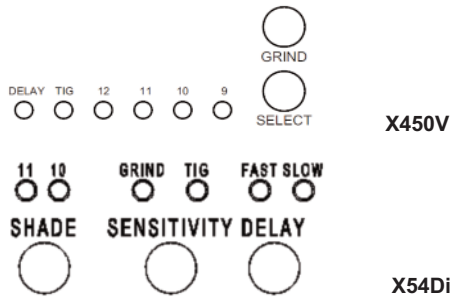
**ACGIH (American Conference of Governmental Industrial Hygienists)** has established a TLV-TWA of 5mg/m3 for welding fumes. Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the alloy being welded and the process and electrodes used. Consult an Industrial Hygienists to ensure all your safety needs are being met.

## Shade

S240, SS240, S450, S540 and XT540: No adjustments; shade is fixed per model shade number.

X450V: Press (**Do Not Hold**) the Select button, an LED will indicate the current setting. Press and hold the button to change the setting (see Fig. 1).

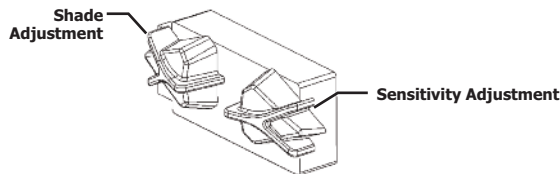
X54Di: Press (**Do Not Hold**) the SHADE button until the LED indicates the desired shade setting (see Fig. 1).



**Figure 1: Controls with LED Indicators**

X35V, X540V, X54V, X60V, X81V, and X54Vi: Press the “M” mode button until “Shade” flashes then use the “+” and “-” buttons to adjust the shade number (see Fig. 3). **Note:** the function buttons may be located to either side of the digital display depending on the model. Refer to the front cover of this manual for the configuration of each model.

iDF81: Adjust the shade using the shade adjustment knob (see Fig 2) on the helmet, the LCD readout will indicate the shade number.



**Figure 2: External Controls (iDF81)**

## Sensitivity and Delay

S240, S450, S540 and XT540: No adjustments; sensitivity and delay are fixed.

SS240: Press (Do Not Hold) the buttons labeled Sensitivity or Delay to turn that setting on or off.

Delay mode is used in most welding applications except spot welds. Long delay at <20A to keep filter dark.

X450V: Press and hold the Select button, to change sensitivity from standard sensitivity to TIG; a LED will indicate when TIG and/or Delay modes are activated (see Fig 1).

X54Di: Press the SENSITIVITY button to change sensitivity from standard sensitivity to TIG; an LED will indicate when TIG mode is activated (see Fig 1). Press the DELAY button to change the delay setting; an LED will indicate either FAST or SLOW. (See Fig 1).

X35V, X540V, X54V, X60V, X81V, and X54Vi: Press “M” button till “Sensitivity” flashes. Use the “+” and “-” buttons to increase or decrease; more bars equals higher sensitivity. Press “M” button till “Delay” flashes. Use the “+” and “-” buttons to change delay from 0.1 to 3.5 seconds (see Fig 3). **Note**: the function buttons may be located to either side of the digital display depending on the model. Refer to the front cover of this manual for the configuration of each model.



**Figure 3: Controls with LCD Readout (X35V, X540V, X54Vi, X54V, X60V and X81V)**

iDF81: Change the sensitivity with external control (see Fig 2). Sensitivity Level is not displayed on iDF81 LCD readout. Press Delay button to change delay bars from 0.1 to 3.5 seconds (see Fig 4).

## Grind

X54Di: Press the SENSITIVITY button until the LED indicates GRIND. Press (DO NOT HOLD) again to turn off (see Fig 1).

X450V: Press and hold the GRIND button until the LCD flickers to indicate the change to grind mode. Press (DO NOT HOLD) again to turn off grind mode; the LCD will not flicker (see Fig 1).

X35V, X540V, X54V, X60V, X81V, and X54Vi: Press the “M” button until “Sensitivity” flashes; while flashing, press the “-” button until the word “Grind” appears. Adjust sensitivity until you see at least one (1) bar to reactivate the lens (see Fig. 3).

iDF81: Turn sensitivity knob counter-clockwise until it clicks and the LCD readout displays Grind.

(\*\*\*NOTE: Other modes will not work when in Grind Mode, see Fig 4).

## Intelligent Darkening Filter (iDF) Modes (see Fig 4)

The iDF comes equipped with two modes: Auto-Variable and iTig. To switch from one mode to the other Press AND Hold down the Mode button for two seconds. To cycle through modes continue depressing the Mode button.



**Figure 4: LCD Readout (iDF81)**

**Auto-Variable Mode**: LCD displays “AUTO” (see Fig. 4). Filter automatically responds to the intensity of the welding arc and sets the filter to the appropriate dark shade. The user can further adjust the dark shade up or down for comfort while the “(·)” flashes. The setting will be saved in a memory slot. This mode has 8 memory slots, one for each shade number 7 thru 14; i.e. shade 7 = memory 1, shade 8 = memory 2, etc. The user can reset all memory slots by Pressing and holding both Mode and Delay buttons for two seconds.

**iTIG Mode**: Upon entering iTIG mode, where LCD displays “TIG” icon and flashing “(·)” (see Fig. 4), user first sets the lower desired shade while the “(·)” flashes. After approximately 5 seconds of not turning the shade knob the flashing stops and the user can then set the desired upper shade. The user can reset memory by Pressing and holding both Mode and Delay buttons for two seconds.

## Care and Maintenance

Your new filter requires virtually no maintenance other than periodic cleaning when the lens becomes dirty or clouded from smoke. **ArcONE**® auto-darkening filters are water-resistant and may be cleaned by using a soft cloth with soapy water solution, or standard window cleaner. By changing cover plates frequently you will extend the life of your filter and guarantee the best operation possible. Additional front and rear cover plates are available from your **ArcONE**® distributor (see Table 1). Do not submerge filter in water or solution. Storage Temperature 14 - 100°F (-10 - 38°C).

**WARNING! Using the wrong cover plates may damage your product, compromise UV/IR protection, and VOID WARRANTY. Use genuine ArcONE® replacement parts to ensure quality and fit.**

**idf81:** The battery located in the external control center will last 3-6 months depending on usage. When the battery voltage is low, a low battery symbol will flash in the upper left corner of the digital display (see Fig.5). Replace with battery of same size (typically AA) and voltage (1.5 V). The lens will not darken with a weak or dead battery.



**Fig. 5: Low Battery Indicator**

**Special note for XT540 EVA® :** The extended viewing area is made of highly polished optical material. It has been hard coated with a scratch resistant finish; however it is **not** scratch proof. Clean your XT540 as directed. Please be careful to use a soft clean cloth or eyeglass wipes. Abrasive particles, such as those in an unclean cloth, could scratch the polished surface. Install **ArcONE**® cover plates on both sides of the filter to protect from spatter damage and scratches.

## Spatter Protection

### SPATTER DAMAGE IS NOT COVERED BY WARRANTY

There are many reasons why spatter can damage the auto-darkening filter. Missing, incorrect, damaged, or distorted cover plates and excessive spatter build-up in and around the areas where the cover plates are retained are just a few examples. Any one or combination of these will allow spatter to enter the filter area and pit the filter glass.

All helmets take a 0.040" thick outside cover plate. A nominal 0.060" outside cover plate will **not** work.

The Hawk and Eagle Helmets are designed to accept polycarbonate cover plates from the outside of the helmet without removing other components. This design allows for quick and easy cleaning and cover plate replacement. The use of an incorrect cover will distort the helmet and result in spatter entering the filter area.

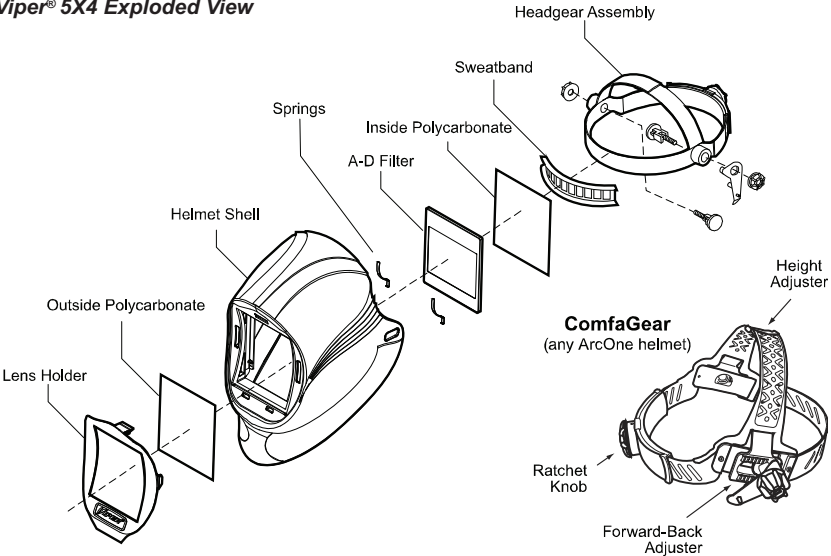
**NOTE:** Change your cover plate when it loses its flexibility and/or becomes bowed or distorted. Clean any build-up from the area where the cover plate is retained.

Flip front designs must use 0.060" thick inner cover plates for protection from particles produced when chipping or grinding.

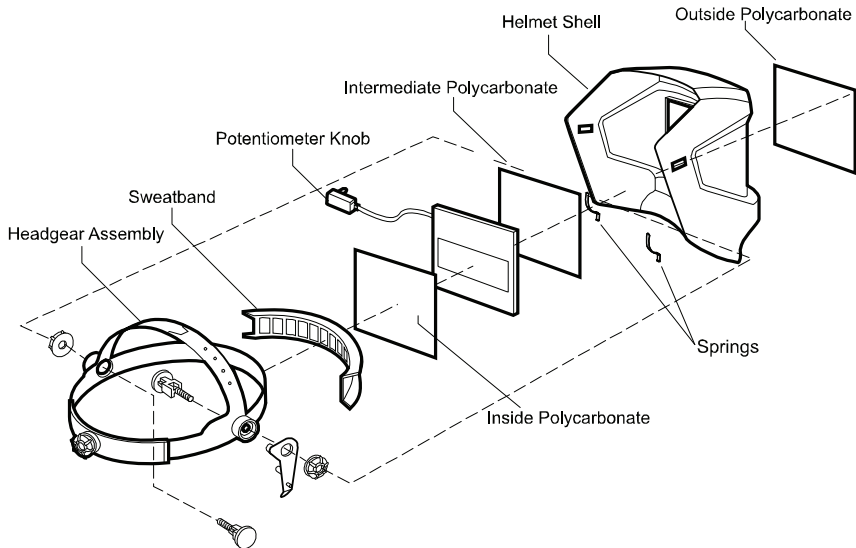
A 0.03" thick inside cover plate may be used to protect the inside surface of 5X4 auto-darkening filters. This size is ideal for digital lenses to allow easy operation of the function buttons.

# Figure 6: Exploded Views of Select Helmets

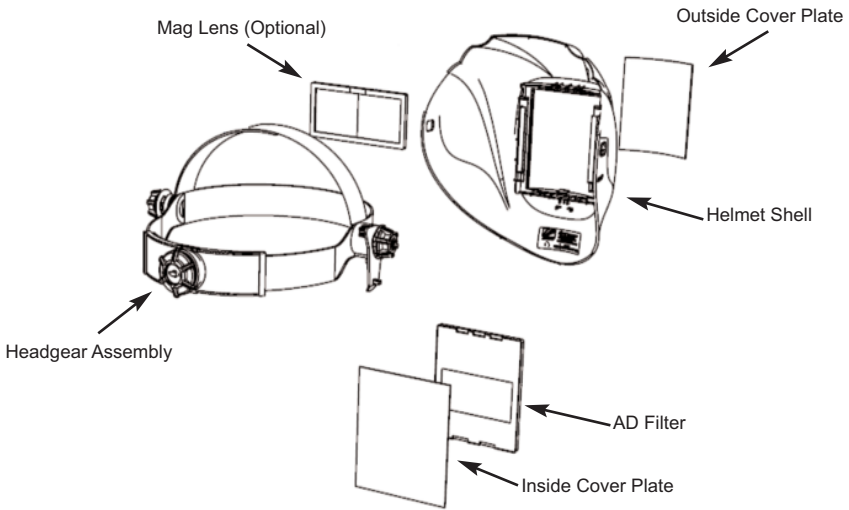
## Viper® 5X4 Exploded View



## Hawk® 2 x 4 Exploded View



**Vision® 5X4 Exploded View**



**Table 1: Parts Selection Guide**

<b>Part Number</b>	<b>Description</b>
02-OP	0.04" Thick Inside or Outside Cover Plate for 4X5 or 5X4 Helmets
02-OP-AF	0.04" Thick Inside or Outside Anti-fog Cover Plate for 4X5 or 5X4 Helmets
03-OP	0.04" Thick Inside or Outside Cover Plate for 2X4 Helmets
08-IP	0.03" Thick Inside Cover Plate for 4X5 or 5X4 Helmets
02-HG	Economical Ratchet Headgear with Cloth Sweatband
06-HG	ComfaGear Ratchet Headgear with Deluxe Sweatband
SPR-01	Small Springs for Hawk® Helmets (10 pack)
SPR-02	Large Springs for Viper®, Vision®, and Eagle® Helmets (10 pack)

For additional parts and accessories, visit our website and view our online brochure at [www.arc1weldsafe.com](http://www.arc1weldsafe.com).

## Trouble Shooting Guide

Contact **ARCONE®** Technical Service at (800) 223-4685 if any problem below persists after fixing.

### **It has become difficult to see through the filter:**

- Clean or replace cover plates when they become dirty or discolored.
- Clean auto-darkening filter with soft cloth and soapy water solution or standard window cleaner.

### **The auto-darkening filter will not darken after striking an arc:**

- Clean/replace cover plate. auto-darkening filter sensors and solar panels are unobstructed, clean, not broken, or discolored. Cease using this product if problem persists.
- Test the auto-darkening filter to a TV or VCR remote (click any button while pointing at front of filter). The filter should darken momentarily then switch back to the light state. Avoid blocking the solar panels. Once sure that filter is functional you are ready to begin welding.
- Make sure filter is not in Grind mode.
- Make sure filter settings match application.
- Put into TIG or increase sensitivity setting. Alternatively, try rotating the filter 180 degrees so sensors and solar panel are located at the bottom. The sensor will have a completely different view of weld.

### **The auto-darkening filter is slow to darken:**

- Colder temperatures will slow the switching speed of an auto-darkening filter. Once the heat from welding process warms up the components, switching speeds will increase. auto-darkening filters work best at room temperatures.

### **The auto-darkening filter goes light or flickers on/off while welding:**

- Clean or replace outer clear polycarbonate lens if it becomes soiled or cloudy.
- Check sensors and solar panels are not damaged, dirty, or covered with smoke. Clean filter as directed.

### **Flickers on and off sometimes while MIG and TIG welding.**

- MIG and TIG applications utilize “GUN” or “Torch” that has a nozzle with the electrode protruding only slight from it. “Gun” or “Torch” nozzle can block the welding arc from sensors.

### **The auto-darkening filter stays dark after you stop welding:**

- Exceeding the temperature limitations may also cause the LCD to stay dark. Let the filter cool down and try not to overheat it again by viewing the arc from the side and not directly above or by increasing the distance the filter is in relationship to the arc. Your filter may remain dark after welding if you are facing a bright light or the sun. If this is the case either look away or pass your hand between the source of the light and the sensors. By doing this the light source will be interrupted and the filter will clear.

### **The auto-darkening filter has a crack running through the front viewing area:**

- UV/IR protection may be compromised resulting in burns caused by ultraviolet or infrared radiation. Cease using this product if the problem exists and contact **ARCONE®** Technical Service.

The auto-darkening filter appears dark in the center and lighter around the edges:

- You are most likely experiencing a common characteristic of an LCD known as angle dependency.

### **Spatter is causing damage to the filter:**

- There are many reasons why spatter can damage the auto-darkening filter. Missing incorrect damaged, or distorted cover plates, and excessive spatter build-up in and around the area where the cover plates are retained are just a few examples. Any one or a combination of these will allow spatter to enter the filter area and pit the filter glass. Do not operate this product if this condition exists. The UV/IR protection may be compromised. Unfiltered welding light may penetrate through the filter and may result in severe eye damage and burns.

## LIMITED WARRANTY

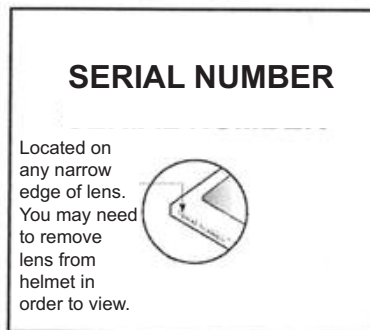
**ARCONE**® warrants all digital auto-darkening filters listed in this manual for a period of three (3) years and all non-digital auto-darkening filters listed in this manual for a period of two (2) years from the date of purchase against all manufacturing defects resulting from materials or workmanship. Other components are warranted for a period of ninety (90) days. Proof of purchase establishing the date of sale and filter serial number must be provided, should a warranty claim be submitted. The purchaser's only remedy under this limited warranty shall be limited to **ARCONE**® sole option to repair, replace or refund (not to exceed the purchase price). This warranty is void in the case of unauthorized modification, tampering, and damage due to misuse, abuse, inadequate maintenance or improper storage. Some indications of operator abuse include, but are not limited to, spatter, chips, dents or cracks. This limited warranty is not transferable from the original purchaser to a secondary owner. **ARCONE**® 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. This limited warranty is exclusive and is in lieu of any other warranty implied either oral or written. Please read the instruction manual carefully to avoid certain situations which may void this limited warranty. See the enclosed Warranty Registration Card for additional details.

### RETURN PROCEDURE

Please do not contact the distributor or retailer from whom you purchased the filter.

1. Remove the auto-darkening filter from the helmet. Record the model number and serial number which are located on the filter edge or back. Also record the date of purchase from your sales receipt.
2. Contact **ARCONE**® Technical Service (800-223-4685) for a Return Authorization Number.
3. Return the lens only, freight pre-paid, in a box with packaging material to prevent damage, no envelopes, please. Reference the Return Authorization Number on the box and any accompanying paperwork. Include your contact information and return address (no PO Boxes, please).

**Figure 8: Serial Number Location**



**ARCONE**® is a Division of A.C.E. International Company

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PLEASE VISIT OUR WEBSITE AND REGISTER: [www.arc1weldsafe.com](http://www.arc1weldsafe.com)