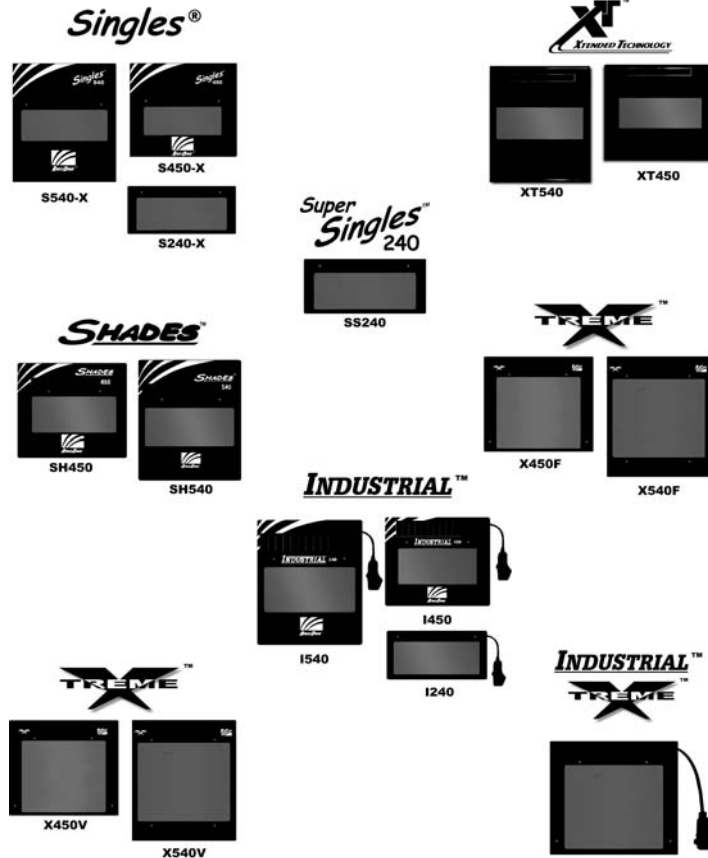




# USER INSTRUCTION MANUAL

## Single and Variable Shade Auto-Darkening Filters



**Products Which Improve Quality, Productivity,  
Safety & Performance**

**85 Independence Drive, Taunton, MA 02780**

Tel: 508-884-9600 Toll Free: (800) 223-4685 Fax (508) 884-9666 M-ADFilters-2004

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## **Operation and Comfort**

As soon as you strike an arc, your new **ARCONE**<sup>®</sup> welding filter will automatically darken. Our advanced optical detection system monitors your welding process to ensure that your filter remains in the dark state in a wide range of arc-welding applications. Protection from harmful ultra-violet / infrared radiation is always present whether in the light or dark state.

Your new filter energizes automatically as soon as the arc is struck. All models are solar powered so there are no on / off switches. There are no alkaline batteries to change and no corrosion caused by leaky batteries. All **ARCONE**<sup>®</sup> products have a lithium battery back up that supports the solar panels to ensure delay free operation even in totally dark conditions.

Your new filter is capable of working in virtually all arc-welding applications. The arc detection system is designed to detect an electronic welding arc and filter out other sources of light. **ARCONE**<sup>®</sup> welding filters are not designed for oxy-acetylene, laser, or very low amperage welding applications. It is virtually impossible to be specific as to how low an amperage the sensors can detect. Every welding application is different and there are other factors that may effect operation such as distance from the arc, welding frequency, electrode type, shielding gasses, and lighting conditions (see Table 1).

We also know the importance of comfort. Our welding helmets are not only engineered for safety and functionality but also for comfort. We have fully adjustable headgear that is very comfortable and virtually indestructible. **ARCONE**<sup>®</sup> offers many different helmet designs with many different styles and features. Whether you choose our lightest and extremely durable nylon Hawk helmet or our reinforced fiberglass Falcon helmet you will appreciate the noticeable difference our many designs offer (see table 3).

## **Preparations for Use**

Before you begin welding always inspect your helmet and filter to ensure they are not damaged. Check to see if the filter protection plates are clean, clear, and securely attached to the helmet and covering the auto-darkening filter both front and rear.

## Preparations for Use (continued)

**WARNING, never begin welding without first checking to see if the correct front and rear protection plates are in place (see table 7 for part numbers). Failure to protect your welding filter may cause damage and subsequently become a safety hazard should the UV/IR protection be compromised from spatter or cracked from impact. This type of damage is due to poor maintenance and/or abuse and will void warranty.**

The ratchet headgear is fully adjustable at both the brow and crown. While placing the helmet on your head, push in and turn the adjusting knob on the ratchet headgear to ensure a comfortable fit. The ratchet is designed to lock in place when released. The height of the helmet can be adjusted by increasing or decreasing the length of the crown strap. When making this adjustment remember to line your eyes up as centrally to the viewing area as possible. Proper alignment enables the best view possible.

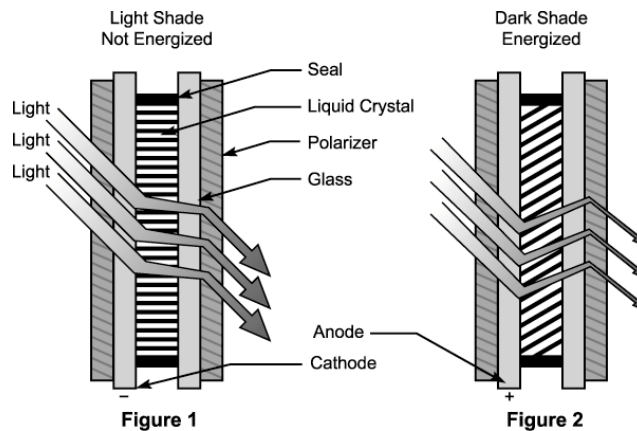
To test your filter, prior to welding, direct the front of the filter to a bright source of light then, using your fingers, rapidly cover and uncover the sensors. The filter will darken momentarily. Another means of testing is to utilize a torch striker or TV or VCR remote. These devices will also momentarily darken the filter. Once you are sure that the filter is working properly you are now ready to begin welding.

**WARNING, other safety precautions such as protective clothing, adequate ventilation, breathing protection (such as a Compact Air PAPR or equal), fire extinguisher, and protection for co-workers, should also be considered.**

## Technical Information

Passive welding filters have consistent shade darkness throughout the filter. The shading of a passive filter remains constant even when viewed at an angle to the filter's surface. Auto-darkening filters utilize a shutter type of LCD to decrease light penetration when energized. All electronic welding filters exhibit a characteristic known as angle dependency. This characteristic may make the lens appear to be darker in the center and lighter toward the outer edges when the lens is viewed at an angle not perpendicular to the filter's surface or not perpendicular to the arc (see Figure 1).

(Figure 1)



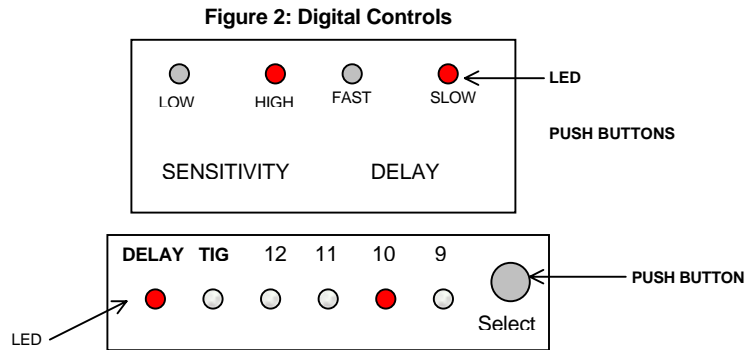
## Technical Information (continued)

**ArcONE**® auto-darkening filters protect the user against harmful ultra-violet 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. You can never burn your eyes due to optical radiation passing through the filter. The users eyes can be severely burned if he welds with a damaged lens (cracked, pitted, etc.) or optical radiation can possibly enter in from behind as a result of other welders in the immediate area.

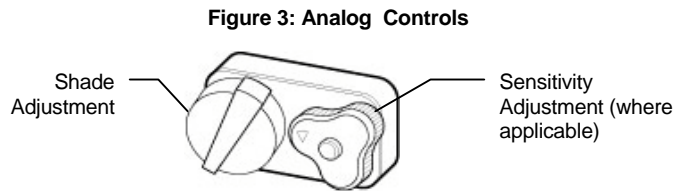
**ANSI** defines all welding helmets as secondary eye protection from optical radiation and impact. For complete safety, primary protection, such as spectacles or goggles, should be used in conjunction with welding helmets. Protective clothing and accessories such as leather bibs attached to the welding helmet will protect the user from spatter and optical radiation indirectly entering from areas behind the helmet.

**ACGIH** (American Conference of Governmental Industrial Hygienists) has established a TLV-TWA of  $5\text{mg}/\text{m}^3$  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.

**Digitally Controlled Variable Filters:** Press (do not hold) the Select button, an LED will indicate the current setting. **Press and hold** the button to change the setting (see figure 2).



**Analog Controlled Variable Filters:** manually control shade and sensitivity with the knob located on the outside of the helmet (see figure 3).



## Single Shade Filters

*Singles*<sup>®</sup>, *Super Singles 240*<sup>™</sup>, *XT*<sup>™</sup>, and *Xtreme*<sup>™</sup> (X450F & X540F) models are single shade auto-darkening welding filters. This means that when the arc is struck the lens automatically darkens to a specific predetermined shade.

- The *XT*<sup>®</sup> is available in a dark shade of 10 with a light shade of 2.5 (see table 5).
- The *Singles*<sup>®</sup> is available in 4 different dark shades. Shades 9, 10, and 11 are available with a light shade of 2.5 and shade 12 is available with a light shade of 3 (see table 5).
- The *Super Singles 240*<sup>™</sup> is available in a dark shade of 10.5 with a light state of 2.5 with a sensitivity and delay mode for TIG welding and a power off mode for grinding (see table 5).
- The *Xtreme*<sup>™</sup> X450F and X540F are available in a dark shade of 10.5 with a light shade of 2.5 with a sensitivity and delay mode for TIG welding and a power off mode for grinding (see table 5).

## Variable Shade Filters

- *Industrial Xtreme*<sup>™</sup> has a knob, located on the outside of the helmet, which can be rotated to decrease or increase the shade level 7-14, without the need to remove the helmet or gloves along with sensitivity and grinding adjustment. An on/off mode specifically designed to maintain the light state when grinding and set delay from dark to light (see table 6).
- The *Industrial*<sup>™</sup> has a knob located on the outside of the helmet, which can be rotated to decrease or increase the shade level, without the need to remove the helmet or gloves. The *I450* and *I540* has a shade selection 7 to 14 and the *I240* has a shade selection 9-13. Both with a light state of 3 (see table 6).
- The *Xtreme*<sup>™</sup> (X450V and X540V) filters have a button on the filter which allow you to easily change shades from 9 to 12 with a light state of 3. There is a heads-up display located above the viewing area, which allows the welder to quickly see the current shade and an on/off mode specifically designed to maintain the light state when grinding (see table 6).
- The *Shades*<sup>™</sup> 450 and 540 filters have a button on the filter which allows you to easily change shades from 9 to 12 with a light state of 3. There is a heads-up digital display at the bottom of the inner viewing area, which allows the welder to quickly see the current shade and mode (see table 6).

## Sensitivity and Delay adjustments (Super Singles 240<sup>™</sup>, Xtreme<sup>™</sup>, Shades, and Industrial<sup>™</sup> 450 and 540, and Industrial Xtreme<sup>™</sup> Filters Only)

In addition to adjusting the shade level, these filters have the ability to change the arc detection sensitivity from the general welding mode to a more sensitive TIG welding mode. A delay mode is also included and is typically on when performing most welding applications except spot welding. When the delay mode is off, or on fast, the filter switches quickly from the dark shade to the light shade and slower when the delay mode is in the "on" or "slow" position. When spot welding, the delay mode is off, or on fast, allowing the user to quickly move from one weld to the next without having to wait for the filter to lighten in order to see his next target. The delay mode is utilized for longer duration welds where the slower switching time, from the dark shade to the light shade, allows the weld puddle to cool and darken further reducing the glare to the welder's eye (see table 1).

**Recommended Welding Application (Table 1)**

Welding Application	"Heads Up" Display as seen by user		
SMAC, MIG, TIG, 40 amps and above	Delay		9, 10, 11, or 12
SMAC, MIG, TIG, 30 amps and above	Delay	TIG	9, 10, 11, or 12
Spot welding, 40 amps and above			9, 10, 11, or 12
Spot welding, 30 amps and above		TIG	9, 10, 11, or 12

Note: The above settings are meant to illustrate which welding applications are suggested for each configurable mode. Applications vary greatly so please experiment with the many available setting combinations in order to find the best combination of shade level, sensitivity and delay for your personal comfort and performance efficiency.

**Grinding Mode**

Super Singles 240: press and hold grind/delay until LCD flickers to indicate the change to grind mode. Press (DO NOT HOLD) and release again to turn off (LCD will not flicker).

Xtreme X540F & X450F: press and hold sensitivity button until "standard" LED flashes. Press (DO NOT HOLD) and release again to turn off (LCD will not flicker).

Xtreme X540V & X450V: Press and hold grinding button until the LCD flickers to indicate the change to grind mode. Press (DO NOT HOLD) again to turn off (LCD will not flicker).

Industrial 540 & 450: Turn the sensitivity knob located on the outside of the helmet clockwise to the lowest setting. This setting will work with most grinding applications. If this setting is not low enough, press and hold the delay/grind button until the LCD flickers. Press (DO NOT HOLD) again to turn off (LCD will not flicker).

Industrial Xtreme: Turn the sensitivity knob located on the outside of the helmet clockwise to the lowest setting. This setting will work with most grinding applications. If this setting is not low enough, press and hold the delay/grind button until the LCD flickers. Press (DO NOT HOLD) again to turn off (LCD will not flicker).

**Recommended Welding Amperage Ranges (Table 2)**

(The recommended range is based darkest shade available for the particular filter model)

Filter Model	Shade	Recommended Range
<i>Singles® 240, 450, and 540</i>	12	40 to 250
<i>XT®450 and 540</i>	10.5	40 to 200
<i>Super Singles 240™, Xtreme™ 450F and 540F</i>	10.5	30 to 210
<i>Xtreme™ 450V and 540V</i>	12	30 to 250
<i>Shades™ 450 and 540</i>	12	30 to 250
<i>Industrial™ 240</i>	13	35 to 250
<i>Industrial™ 450 and 540</i>	14	35 to 300
<i>Industrial Xtreme™</i>	14	30 to 300

*The recommended ranges stated above are to be used as a guideline. Lower welding amperages may be achieved and are directly influenced by the application. Upper range amperages can vary based on the comfort level that the user requires. Caution: Do not exceed the filter temperature range (-14 to 148 degrees F)*

**Welding Helmets (Table 3)**

	Eagle® (0200)	Hawk® (0300)	Falcon™ (0400)	Vision® (0500)	Hiderok (0600)	Viper (0900)
Material	Nylon	Nylon	Fiberglass	Nylon	Thermal Plastic	Nylon
Applicable Filters	<i>Singles® 450 XT® 450 Shades™ 450 Industrial™ 450 Xtreme™ 450</i>	<i>Singles® 240 Super Singles240™ Industrial™ 240</i>	<i>Singles® 540 XT® 540 Shades™ 540 Industrial™ 540</i>	<i>Singles® 240 Singles™ 540 Super Singles 240™ XT® 540 Shades™ 540 Industrial™ 240 Industrial™ 540 Xtreme™ 540</i>	<i>Singles® 240</i>	<i>Xtreme™ 540 Industrial™ 540 Industrial Xtreme™</i>
Weight (ounces)	16.25	14.75	17.25	17.6	13.75	
Usage	All applications except overhead	All applications except overhead	All applications	All applications except overhead	All applications except overhead	All applications except overhead

## 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 a 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 7 for part numbers).

**NOTE: Using the wrong cover plates may damage your product and VOID WARRANTY . Use genuine ArcOne replacement parts to ensure quality and fit.**

### **Special note for XT® users:**

The extended viewing area is made of highly polished optical material. It has been hard coated with a scratch resistant finish. **IT IS NOT SCRATCH PROOF!** The raised area, around the perimeter of the case, suspends the cover plates above lens surface therefore protecting the polished areas from abrasion. Clean your XT™ as directed. Please be careful to use a soft clean cloth or eyeglass wipes. Abrasive particles in a dirty cloth could scratch the polished surface. Install ArcOne cover plates on both sides of the filter to protect from spatter damage and further scratching.

**NOTE: To keep your XT® free from scratches Please take care of it as if it were your personal eye glasses or the paint job on your favorite car or motorcycle.**

## 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.

**Splatter Protection** (continued)

**The Hawk® and Eagle® take a special 0.040" thick cover plate.  
Using a nominal 0.060" cover plate will not work in this design.**

*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 on an incorrect cover will distort the helmet and result in splatter entering the filter area.*

Please use only ArcOne 0.040" inch cover plates in these products.

**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.**

All other helmet designs, other than the Hawk® and Eagle®, will accept either a 0.040" or a 0.060" cover plate. Flip front designs must use 0.060" thick inner cover plates for protection from particles produced when chipping or grinding.

*The Hawk® and Eagle® have been designed to accept an additional protective lens. This additional lens installs immediately in front of the auto-darkening filter and behind the outer polycarbonate clear lens thus adding an even greater level of splatter protection.*

**Users with excessive splatter applications can rely on the greater protection provided by this options. See information below.**

Part Numbers for Intermediate Cover Plates

<u>Helmet Model</u>	<u>Part No.</u>
Eagle (0200)	02-OP
Hawk (0300)	03-OP

**ANSI Shade Selection Guide (Table 4)**

Operation	Arc Current	Minimum Shade	Comfort Shade
<b>Stick (SMAW)</b>	< 60	7	---
	60 to 160	8	10
	160 to 250	10	12
	250 to 550	11	14
<b>MIG (GMAW)</b>	<60	7	---
	60 to 160	10	11
	160 to 250	10	12
	250 to 500	10	14
<b>TIG (GTAW)</b>	<50	8	10
	50 to 150	8	12
	150 to 500	10	14
	<b>Carbon Arc-light</b>	<500	10
<b>Carbon Arc-heavy</b>	500 to 1000	11	14
<b>Plasma Arc (PAW)</b>	< 20	6	8
	20 to 100	8	10
	100 to 400	10	12
	400 to 800	11	14
<b>Plasma Cutting</b>	< 300	8	9
	300 to 400	9	12
	400 to 800	10	14
<b>Carbon Arc (CAW)</b>	---	---	14



**Single Shade Filter Specifications (Table 5)**

	Singles® 240	Singles® 450 & 540	Super Singles 240™	XT® 450 & 540	Xtreme™ 450F & 540F
Viewing Area	1 3/8" by 3 3/4" 5.25 sq. in.	1 3/8" by 3 3/4" 5.25 sq. in.	1 3/8" by 3 3/4" 5.25 sq. in.	1 3/8" by 3 3/4" 5.25 sq. in.	12.5 sq. in.
Total Expanding Viewing Area	N/A	N/A	N/A	Approximately 20 square inches	NA
Grinding Mode	N/A	N/A	Yes	N/A	Yes
Filter Dimensions	2" by 4 1/4" 0.2" thick	4 1/2" by 5 1/4" or 5 1/4" by 4 1/2" 0.2" thick	2" by 4 1/4" 0.2" thick	4 1/2" by 5 1/4" or 5 1/4" by 4 1/2" 0.2" thick	4 1/2" by 5 1/4" or 5 1/4" by 4 1/2" 0.246" thick
ARC Sensing	2 sensors	2 sensors	2 sensors	2 sensors	4 sensors
Sensitivity and delay	N/A	NA	TIG and Production	N/A	TIG and Production
Switching Time Seconds	5/10,000 (0.5 milliseconds)	5/10,000 (0.5 milliseconds)	5/10,000 (0.5 milliseconds)	5/10,000 (0.5 milliseconds)	1/10,000 (0.1 milliseconds)
Primary Power	Solar Cells	Solar Cells	Solar Cells	Solar Cells	Solar Cells
Back-up Power	Lithium Battery	Lithium Battery	Lithium Battery	Lithium Battery	Lithium Battery
Operating / Storage Temperature	-14 to 148 degrees F	-14 to 148 degrees F	-14 to 148 degrees F	-14 to 148 degrees F	-14 to 148 degrees F
UV / IR Protection	Up to Shade 16	Up to Shade 16	Up to Shade 16	Up to Shade 16	Up to Shade 16
Dark to Light Delay	0.1 secs	0.1 sec	0.1 and 2 secs.	0.1 secs	0.1 and 2 secs
Light Shade	2.5   3	2.5   3	2.5	2.5	2.5
Dark Shade	9, 10, 11	9, 10, 11	10.5	10.5	10.5
Certification	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998

**Variable Shade Filter Specifications (Table 6)**

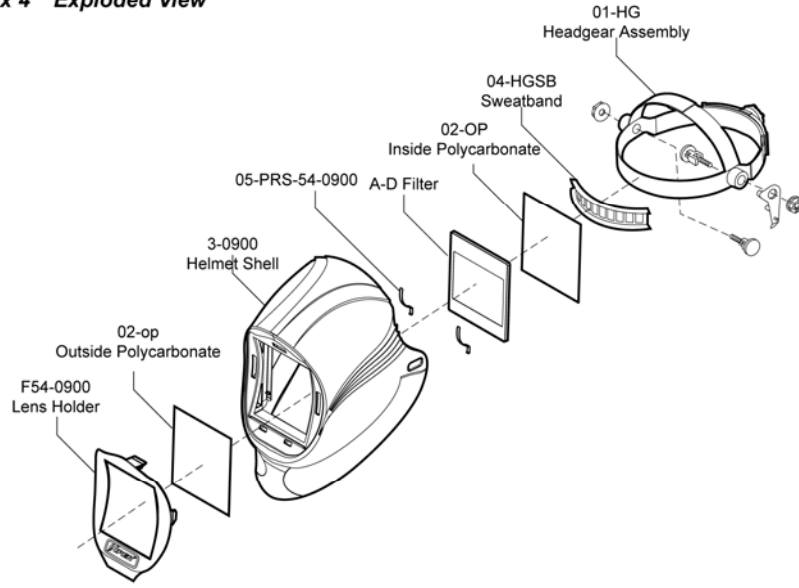
	Xtreme™ 450V & 540V	Shades™ 450 / 540	Industrial™ 240	Industrial™ 450 / 540	Industrial Xtreme™ 540V
Viewing Area	3 7/8" x 1 5/8" 12.5 sq. in.	3 7/8" x 1 5/8" 6.35 sq. in.	1 3/8" by 3 3/4" 5.25 sq. in.	3 7/8" x 1 7/8" 7.35 sq. in.	3 7/8" x 1 5/8" 12.5 sq. in.
Grinding Mode	Yes	N/A	N/A	Yes	Yes
Filter Dimensions	4 1/2"x5 1/4" or 5 1/4" x 4 1/2" 0.246" thick	4 1/2"x5 1/4" or 5 1/4" x 4 1/2" 0.270" thick	2" by 4 1/4" 0.25" thick	4 1/2" x 5 1/4" or 5 1/4" x 4 1/2" 0.25" thick	5 1/4" x 4 1/2" 0.312" thick
ARC Sensing	4 sensors	2 sensors	2 sensors	2 sensors	4 sensors
Sensitivity and Delay	Standard or TIG	Standard or TIG	Fixed	Standard or TIG	Standard or TIG
Switching Time Seconds	1/10,000 (0.1 milliseconds)	1/10,000 (0.1 milliseconds)	1/10,000 (0.1 milliseconds)	1/10,000 (0.1 milliseconds)	1/10,000 (0.1 milliseconds)
Primary Power	Solar Cells	Solar Cells	Solar Cells	Solar Cells	Solar Cells
Back-up Power	Lithium Battery	Lithium Battery	Lithium Battery	Lithium Battery	Lithium Battery
Operating & Storage Temp	-14 to 148 degrees F	-14 to 148 degrees F	-14 to 148 degrees F	-14 to 148 degrees F	-14 to 148 degrees F
UV / IR Protection	Up to Shade 16	Up to Shade 16	Up to Shade 16	Up to Shade 16	Up to Shade 16
Dark to Light Delay	0.1 and 2 secs.	0.1 and 2 secs	0.1 secs	0.1 and 2 secs	0.1 and 2 secs
Light Shade	3	3	3	3	4
Dark Shade	9 to 12	9 to 12	9 to 13	7 to 14	7 to 14
Certification	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998	ANSI Z87.1 - 1998

**PART SELECTION GUIDE – MAJOR COMPONENTS (TABLE 7)**

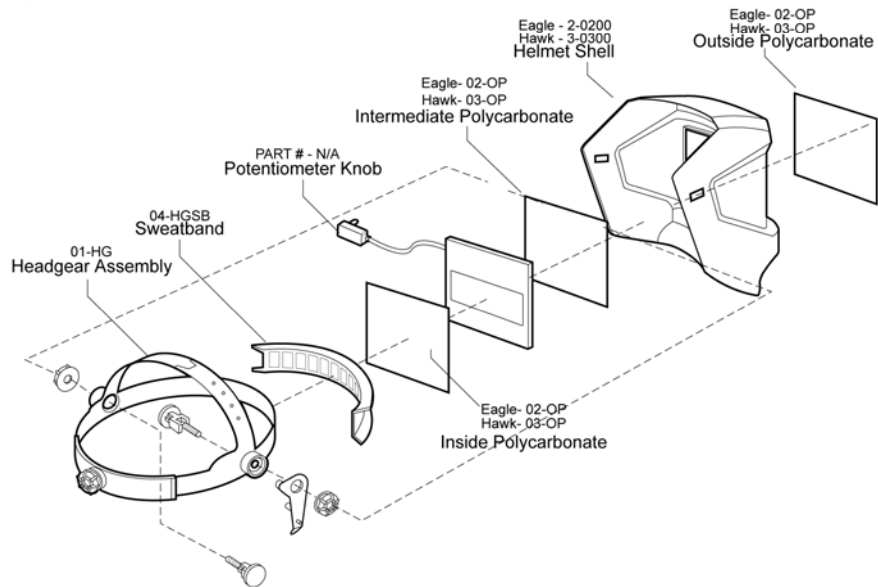
Part Numbers And Descriptions	Eagle® 0200 4 X 5 fixed front	Hawk® 0300 2 X 4 fixed front	Falcons® 400 5 X 4 fixed front	Vision® 0500 2 x 4 fixed front	Vision® L500 2 x 4 flip front	Vision® 0500 5 x 4 fixed front	Viper 0900™ 5 X 4 fixed front	Hiderok 0600 2 X 4 fixed front	Hiderok L600 2 X 4 flip front
<b>AUTO-DARKENING FILTERS</b>									
Singles® 240 (shade 9, 10, 11, or 12)		✓		✓	✓			✓	✓
Singles® 450 (shade 9, 10, 11, or 12)	✓								
Singles® 540 (shade 9, 10, 11, or 12)			✓			✓			
Super Singles™		✓		✓					
XT™ 450	✓								
XT™ 540			✓			✓			
Xtreme™ 450 (X450F & X450V)	✓								
Xtreme™ 540 (X540F & X540V)						✓	✓		
Shades™ 450	✓								
Shades™ 540			✓			✓			
Industrial™ 240		✓		✓					
Industrial™ 450	✓								
Industrial™ 540			✓			✓	✓		
Industrial Xtreme™							✓		
<b>HELMETS SHELLS</b>									
2-0200 black, 0210 silver, 0220 red	✓								
3-0200 black, 0210 silver, 0220 red	✓								
2-0300 black, 0310 silver, 0320 red		✓							
3-0300 black, 0310 silver, 0320 red		✓							
2-0400 black, 3-0400, 4-0400			✓						
2-0500 black, 0510 silver, 3-0500 black, 0510 silver				✓	✓	✓			
324-0600 black only								✓	
324-L0600 black only									✓
2-0900 black, 3-0900 black							✓		
<b>COVER PLATES</b>									
02-OP, Outside (4"x5"x0.040")	✓		✓			✓	✓		
03-OP, Outside (2"x4"x0.040")		✓		✓	✓			✓	✓
SSIP, Inside (2"x4"x0.040")				✓	✓				
SMIP, Inside (4"x5"x0.040")	✓		✓			✓	✓		
LF-IP, High impact for lift front models (2x4"x0.060")					✓				✓
<b>SHADE UPGRADES #1 &amp; #2</b>									
SMIP-1 and SMIP-2	✓		✓			✓	✓		
SSIP-1 and SSIP-2		✓		✓	✓			✓	✓
<b>HEADGEAR and COMPONENTS</b>									
01-HG, Complete headgear assembly	✓	✓	✓	✓	✓	✓	✓		
03-HGSB Fatboy Sweat band	✓	✓	✓	✓	✓	✓	✓	✓	✓
04-HGSB Headgear Sweat band	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>MISCELLANEOUS COMPONENTS</b>									
SSML Magnifying Lens (1 to 2.5 power) (modified)		✓							
VML Magnifying Lens (1 to 2.5 power) (standard)				✓	✓	✓	✓		
45ML Magnifying Lens with 4x5 adapter (1 to 2.5 power)	✓								
54ML Magnifying Lens with 5x4 adapter (1 to 2.5 power)			✓			✓	✓		
03-HH - Hard Hat with Adapter for Helmet	✓	✓	✓	✓	✓	✓	✓		
03-HGHH Hard Hat Adapter	✓	✓	✓	✓	✓	✓	✓	✓	
I-KAP, Shade Knob for Industrial Filters W/O SETSCREW	✓	✓	✓	✓		✓	✓		

## Exploded Views (Figure 2-A)

### Viper 5 x 4" Exploded View

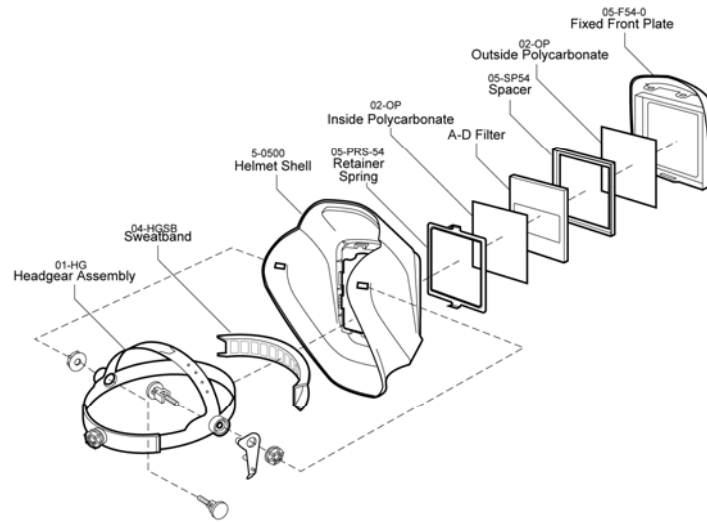


### Eagle 4" x 5" and Hawk 2" x 4" Exploded View

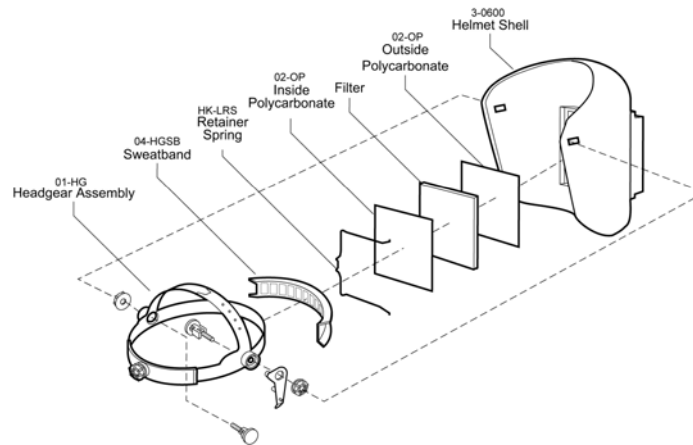


## Exploded Views (Figure 2- B)

*Vision 5" x 4" Fixed Front Exploded View*



*Hiderok 5" x 4" Exploded View*



## Trouble Shooting Guide

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

- Clean or replace cover plates when they become dirty or discolored.
- Clean the auto-darkening filter by using a cloth with soapy water solution or standard window cleaner

### The Auto-Darkening Filter will not darken after striking an arc:

- Test the auto-darkening filter to a bright light source and simply run your finger quickly over the sensor. The filter should darken momentarily then switch back to the light state. Avoid blocking the solar panels. Once you are sure that the equipment is functional you are now ready to begin welding.
- Make sure that the outer cover plate is clean, clear and unobstructed. Remove and inspect the auto-darkening filter making sure that the sensors and solar panels are unobstructed, clean, not broken, or discolored. Cease using this product if problem persists. Contact **ARCONE® Customer Service**.

### The Auto-Darkening Filter is slow to darken:

- **ARCONE® solar** powered auto-darkening filters are designed to operate on very low voltage. If the filter has not been used for a period of time, such as a day or more, the circuitry will enter a sleep state. In the sleep state the battery can retain full voltage potential. It will awaken when you test it or begin welding. For instance if the product is a shade 10, the first time it darkens it will initially darken to perhaps shade 8 then transition to shade 10. Then after that it will darken to shade 10 each and every time. **Note: As long as you are wearing your helmet with auto-darkening filter you are protected from UV/IR (ultra-violet/infrared) rays in the dark and light state and every shade in between.**
- 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 to make sure that the sensors and solar panels are not damaged, dirty, or covered with a smoky film. Clean filter as directed. Your new filter requires virtually no maintenance other than periodic cleaning if the lens becomes dirty or clouded from the smoke. Both the Shades and new Industrial Auto-Darkening Filters are water-resistant and may be cleaned by using a soft cloth with a soapy water solution, or standard window cleaner. Make sure that the cloth you use is clean. Abrasive particles in the cloth could scratch the highly polished lens surface.
- Make sure that the sensors and solar panels are not being blocked. Your arms, the welding torch or other objects can block the sensor or solar panels.
- The front of the auto-darkening filter should be perpendicular to the welding arc.  
application: MIG or TIG
- Observation/Complaint: Flickers on and off sometimes while MIG and TIG welding
- Possible cause of malfunction: Both MIG and TIG applications utilize "GUN" or "Torch" that has a nozzle with the electrode protruding only slight from it. Depending on the technique of the welder and the way that he positions the "Gun" or "Torch" the nozzle can block the welding arc from the sensors. Even though the welder can see the arc perfectly the sensors may only be able to see the nozzle and not the arc.  
**NO ARC – THE LENS WON'T WORK!**

**Possible Solution:** Please rotate the filter 180 degrees so that the sensors and solar panel are located at the bottom. In this configuration the sensors will have a completely different view of the application. Hopefully one that is unobstructed. If the Filter does not hold the dark shade contact **ARCONE® Customer Service**.

## Trouble Shooting Guide (continued)

### 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 over heat 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 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. Contact **ARCONE® Customer 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. See Technical Information on Angle Dependency (page 2)

### 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.

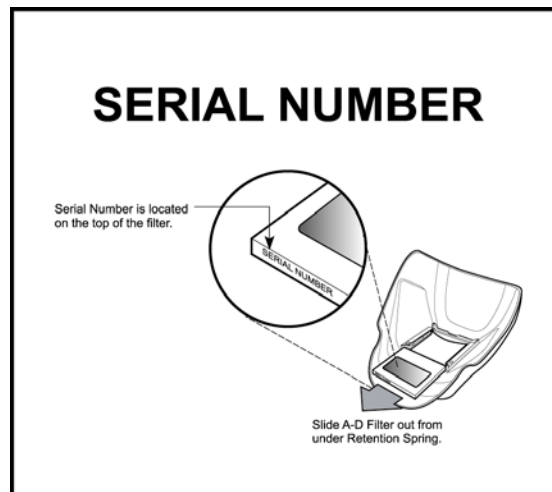
### The Auto-darkening Filter has severe spatter damage :

- 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

**\* Note: When using Mig and Tig applications, Mig and Tig utilize "Gun" or "Torch" that has a nozzle with the electrode protruding out slightly from it. Depending on the technique of the welder and the way that he positions the Gun or Torch the nozzle can block the welding arc from the sensors. Even though the welder can see the arc perfectly the sensors may only be able to see the nozzle and not the arc.**

Please rotate the filter 180 degrees so that the sensors and solar panel are located at the bottom. In this configuration the sensor will have a completely different view of the application.

Filter  
Diagram  
4)



Removal  
(Figure

# Warranty and Service Information

## LIMITED WARRANTY

**ARCONE**<sup>®</sup> warrants all auto-darkening filters for two (2) years from the date of purchase against manufacturing defects resulting from materials or workmanship. 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**'s sole option to repair, replace or refund (not to exceed the purchase price). This limited warranty is void in the case of unauthorized modification, tampering, and damage due to misuse, abuse, inadequate maintenance or improper storage. This limited warranty is not transferable from the original purchaser to a secondary owner. **ARCONE**<sup>®</sup> 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.

In the unlikely event that the auto-darkening filter malfunctions, the following procedures are to be used to receive efficient service and repair:

Determine if the product is damaged from abuse or misuse. Any pitted marks on the filter possibly from spatter, chips or dents, or cracks, etc., are some indications of operator abuse. In the case of operator abuse, the warranty is void.

If you need to return your filter follow the Return Procedure below.

## 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 (see figure 3). Record the model number and serial number which are located on the top edge above the solar panel, and also record the date of purchase from your sales receipt.
2. Contact **ARCONE**<sup>®</sup> Customer Service (800-223-4685) for a Return Tag Number. Please return only the auto-darkening filter unless the customer service representative requests otherwise. Pack the filter in a box with adequate packing so no additional damage can occur. Send only the auto-darkening filter, freight prepaid, directly to the **ARCONE**<sup>®</sup> Division, A.C.E. International, 85 Independence Drive, Taunton, MA. 02780.
3. Reference your assigned Repair Tag Number on the outside of the package and on all accompanying paperwork.
4. Provide your complete return address and telephone numbers.
5. Provide an accurate description of the problem along with welding application details such as MIG, TIG, etc., and amperage range.
6. Should there be any charges for non-warranty repairs, Visa, MasterCard, or checks are the only forms of payment accepted. In the case of credit cards purchases include credit card number expiration date, the full name as it appears on the card, and your signature as authorization for the total repair amount.
7. All returns, which follow the above procedures, will be processed within 2 business days.
8. All warranty repairs are covered for the balance of the original warranty period, which is established from your proof of purchase date.
9. All non-warranty repairs carry a 90-day, limited warranty. The period begins the date the product is returned to you.

**Note:**, SuperSingles & Xtreme are trademarks of A.C.E. International. ArcOne, Shades, Industrial, Single, XT, Eagle, Hawk, Falcon & Vision are registered trademark of A.C.E. International

## ArcOne Also Offers A Complete Line Of Respiratory Systems and Welding Machines

### PAPR & SAR Respiratory Systems

ArcOne's Powered Air Purifying and Supplied Air Respiratory Systems offer a high level of protection from particulates, fumes & vapors. One unit with a variety of interchangeable head tops, multiple welding helmets and auto-darkening filters to choose from. Depending on your work environment, ArcOne has the respiratory system to meet your welding or industrial needs.



ArcOne's 100 amp., 115 volt model and powerful 200 amp., 230 volt work horse are lightweight, and energy efficient. Made for DC TIG and stick applications they both come with hot start, anti-stick, lift arc and socket for remote amperage control. They will more than satisfy the most demanding welders. ArcOne also offers many accessories and options to make your job easier such as TIG torches, a variety of ground clamps and electrode holders to meet your amperage and cable length requirements.



ArcOne® is a Division of A. C. E. International Company

85 Independence Drive,  
Taunton, MA 02780

Tel: 508-884-9600 Toll Free: 800-223-4685 Fax: 508-884-9666

Web Site: [www.arc1weldsafe.com](http://www.arc1weldsafe.com)