



**SENTINEL™  
A50**



***Auto Darkening  
Welding Helmet***



# Professional Quality Welding Helmet

## SAFETY WARNINGS - READ BEFORE USING



### WARNING

Read & Understand All Instructions Before Using



Auto-Darkening welding helmets are designed to protect the eye and face from sparks, spatter and harmful radiation under normal welding conditions. Auto-Darkening filter automatically changes from light state to dark state when welding arc is struck, and it returns to the light state when welding stops.

**The Auto-Darkening welding helmet comes assembled. But before it can be used, it must be adjusted to fit the user properly. Check battery surfaces and contacts and clean it if necessary. Verify if the battery is in good condition and installed properly. Set up for delay time, sensitivity and shade number for your application.**

**The helmet should be stored in dry, cool and dark area and remember to remove the battery before long-time storage.**



### WARNING



- This Auto-Darkening welding helmet is not suitable for laser welding.
- Never place this helmet and Auto-Darkening filter on a hot surface.
- Never open or tamper with the Auto-Darkening filter.
- This Auto-Darkening welding helmet will not protect against severe impact hazards.
- This helmet will not protect against explosive devices or corrosive liquids.
- Do not make any modifications to either the filter or helmet, unless specified in this manual.
- Do not use replacement parts other than those specified in this manual. Unauthorized modifications and replacement parts will void the warranty and expose the operator to the risk of personal injury.
- Should this helmet not darken upon striking an arc, stop welding immediately and contact your supervisor or your dealer.
- Do not immerse the filter in water.
- Do not use any solvents on the filter screen or helmet components.
- Use only at temperatures: - 5 °C ~ +55 °C (23 °F ~ 131 °F).
- Storing temperature: -20 °C ~ +70 °C (- 4 °F ~ 158 °F). The helmet should be stored in dry cool and dark area, when not using it for a long time.
- Protect filter from contact with liquid and dirt.
- Clean the filter surface regularly; do not use strong cleaning solutions. Always keep the sensors and solar cells clean using a clean lint-free tissue.
- Regularly replace the cracked / scratched / pitted front cover lens.
- The materials which may come into contact with the wearer's skin can cause allergic reactions in some circumstances.
- The ADF shall only be used in conjunction with the inner cover lens.
- The eye-protectors against high speed particles worn over standard ophthalmic spectacles may transmit impacts, thus creating a hazard to the wearer.
- Toughened mineral filter oculars shall only be used in conjunction with a suitable backing ocular.
- If the symbols F or B are not common to both the ocular and the frame then it is the lower level which shall be assigned to the complete eye-protector.

• If the impact letter followed by letter "T", you can use it for protection against high speed particles at extremes of temperature. If the impact letter does not followed by letter "T", you should only use the eye protector for protection against high speed particles at room temperature.



### WARNING

Severe personal injury could occur if the user fails to follow the above mentioned warnings and/or fails to follow the operating instructions.



## COMMON PROBLEMS AND REMEDIES

### • Irregular Darkening Dimming

Headgear has been set unevenly and there is an uneven distance from the eyes to the filter lens (Reset the headgear to reduce the difference to the filter).

### • Auto-Darkening filter does not darken or flickers

1. Front cover lens is soiled or damaged (Change the cover lens).
2. Sensors are soiled (Clean the sensors surface).
3. Welding current is too low (Adjust the sensitivity level to higher).
4. Check battery and verify they are in good condition and installed properly. Also, check battery surfaces and contacts and clean if necessary. Please refer to the **"BATTERY INSTALLATION"** on page 2.

### • Slow response

Operating temperature is too low (Do not use at temperatures below -5 °C or 23 °F).

### • Poor vision

1. Front / inside cover lens and / or the filter is soiled (Change lens).  
There is insufficient ambient light.  
Shade number is incorrectly set (Reset the shade number).  
Check if removing the film on the front cover lens.

### • Welding helmet slips

Headgear is not properly adjusted (Readjust the headgear).



### WARNING

The user must stop using the auto-darkening welding helmet immediately if the above-mentioned problems cannot be corrected. Contact the dealer.



## INSTRUCTIONS FOR USE

**WARNING!** Before using the helmet for welding, ensure that you have read and understood the safety instructions.

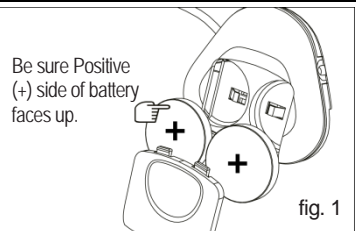
### • BATTERY INSTALLATION

Slide the battery cover out of the external control case, install the battery properly (see fig. 1), remember to slide back the cover after battery installation.

### • DIGITAL TOUCH SCREEN ACTIVATION

This auto darkening filter will automatically turn on when an arc is struck.

Option 1: Short press the "DISPLAY" button (see fig. 2a) to activate the digital screen. After 5 seconds, it will automatically turn to standby mode. Short press "DISPLAY" button again will activate the screen once more and previous settings will remain.



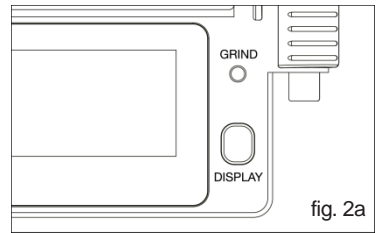


fig. 2a



fig. 2b

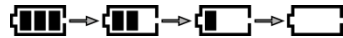




fig. 3

Option 2: Long press "GRIND" button on external control case for 3 seconds can also activate the digital screen (see fig. 2b). After 5 seconds, the screen will automatically turn to standby mode.

#### • BATTERY INDICATOR

This ADF cartridge is powered by solar cell and 2pc CR2450 lithium batteries. The symbol "  " shows the current state of the battery. The volume of batteries has four levels symbol to appear (see fig. 3). When the symbol shows "  ", please replace new batteries in time.

#### • OPTION SELECTED STATUS

There will be a yellow border on the option you select.

#### • SELECTING GRIND MODE

Option 1: Touch the "GRIND" on display screen to switch to grind mode (see fig. 4-A), touch the "GRIND" again will return to previous mode.

Option 2: After weld / cutting work, long press "GRIND" button on external control case for 3 seconds (see fig. 2b), the auto darkening filter will switch to grind mode. After 5 seconds, the screen will automatically turn to standby mode. Long press "GRIND" button for 3 seconds again, it will return to previous mode.

In grind mode, the lens shade is fixed shade 4 (see fig. 4-B), and the sensitivity and delay cannot be adjusted. The grind indicator will flash every 3 seconds under grind mode (see fig. 2a). Before restarting weld / cutting work, ensure that the auto darkening filter return to weld / cutting mode.



fig. 4

#### • VARIABLE SHADE CONTROL

Touch the "SHADE" on display screen to set shade number (see fig. 5a-A), touch "SHADE" once more to switch between Shade 5-9 and Shade 9-13, touch "▲" and "▼" to select the lens shade. Select the proper shade number for your welding / cutting process by referring to

the “Shade Guide Table” below. The shade range for each mode is as follows:

**Cutting Mode** – Shade 5 ~ 9 (see fig. 5a-B)

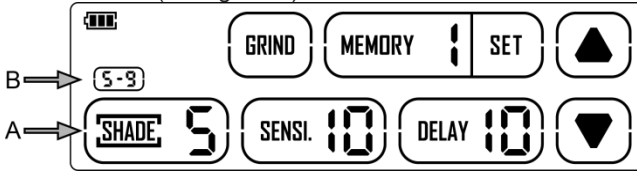


fig. 5a

**Weld Mode** – Shade 9 ~ 13 (see fig. 5b-C)

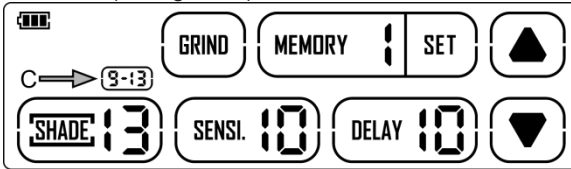


fig. 5a

**Grind Mode** - Shade 4 only (see fig. 4)

**• SENSITIVITY CONTROL**

Touch the “SENSI.” on display screen to set the sensitivity (see fig. 6-A), touch “▲” and “▼” to make the lens more or less sensitive to arc light of different welding processes. Sensitivity setting 5-10 is the normal setting for everyday use. The sensitivity ranges for each mode are as follows:

**Weld Mode(Shade 5 ~ 9) / Cutting Mode(Shade 9 ~ 13) – Sensitivity 0 ~ 10** (see fig. 6)

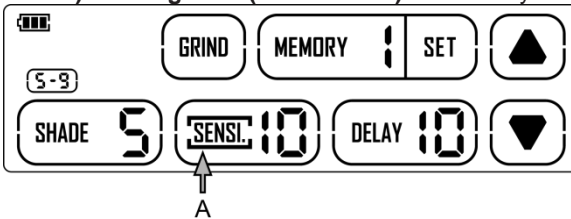


fig. 6

**Grind Mode** – No sensitivity adjustment

As a simple rule for optimum performance, it is recommended to set sensitivity to the maximum at the beginning and then gradually reduce it, until the filter reacts only to the welding arc while don't make reaction to ambient light conditions (direct sunlight, intensive artificial light, neighboring welders' arcs etc.).

**• DELAY CONTROL**

Touch the “DELAY” on display screen to set the delay time (see fig. 7-A), touch “▲” and “▼” to adjust the time for the lens to switch to the clear state after welding or cutting. The delay ranges for each mode are as follows:

**Weld Mode(Shade 5 ~ 9) / Cutting Mode(Shade 9 ~ 13) – Delay 0 ~ 10 (see fig. 7)**

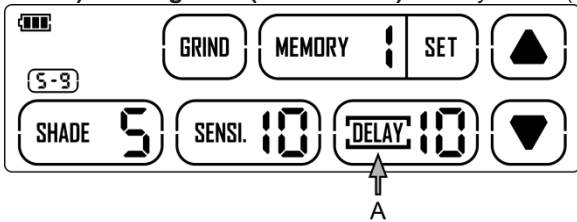


fig. 7

**Grind Mode – No delay adjustment**

The delay is particularly useful in eliminating bright after-rays present in higher amperage applications where the molten puddle remains bright momentarily after welding. Use the Lens Delay Control buttons to adjust delay from 0 to 10 (0.1 to 1.0 second). When welding stopped, the viewing window automatically changes from dark back to light but with a pre-set delay to compensate for any bright afterglow on the workpiece. The delay time /response can be set from Level 0 to level 10. It is recommended to use a shorter delay with spot welding applications and a long delay with applications using higher currents. Longer delays can also be used for lower current TIG welding, and TIG / MIG / MAG pulse.

**• MEMORY SETTING**

This auto darkening filter can save the pre-defined parameters as memory setting. Users can take the set memory out any time they need. The system can save 8 sets of parameters at most. Take Memory 1 as example, detailed step as follows:

Step 1: Touch “MEMORY” on display screen, set to “1” via touching “▲” and “▼” (see fig. 8a-A).

Step 2: Setting shade number, sensitivity and delay via “▲” and “▼”.

Step 3: After finishing all settings, touch “SET” for save (see fig. 8b-A), the “1” after “MEMORY” (see fig. 8b-B) will take a flash, which means the system has saved the parameters just set and name this set as “1”.

Step 4: MEMORY 2 to MEMORY 8 can be set the same way. Users can callout MEMORY setting via touching “MEMORY” first and then choose some certain set via “▲” and “▼”.

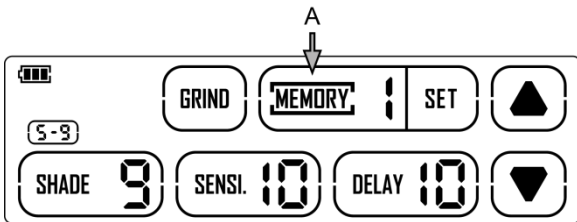


fig. 8a

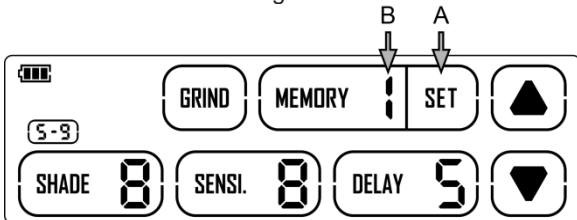


fig. 8b

### • ADJUSTING THE FIT OF THE HELMET

• The overall circumference of the headband can be made larger or smaller by rotating the knob on the back of the headband. (See adjustment “Y” in fig. 9). This can be done while wearing the helmet and allows just the right tension to be set to keep the helmet firmly on the head without it being too tight.

• If the headband is riding too high or too low on your head, adjust the strap which passes over the top of your head. To do this release the end of the band by pushing the locking pin out of the hole in the band. Slide the two portions of the band to a greater or lesser width as required and push the locking pin through the nearest hole. (See adjustment “W” in fig. 9).

• Front and back bands will automatically self-adjust according to headform, and soft pads suit forehead and back of head perfectly, which will bring more comfort (see fig. 10a). Test the fit of the headband by lifting up and closing down the helmet a few times while wearing it. If the headband moves while tilting, re-adjust it until it is stable.

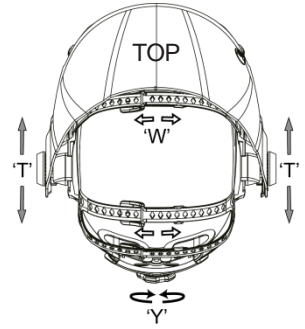


fig. 9

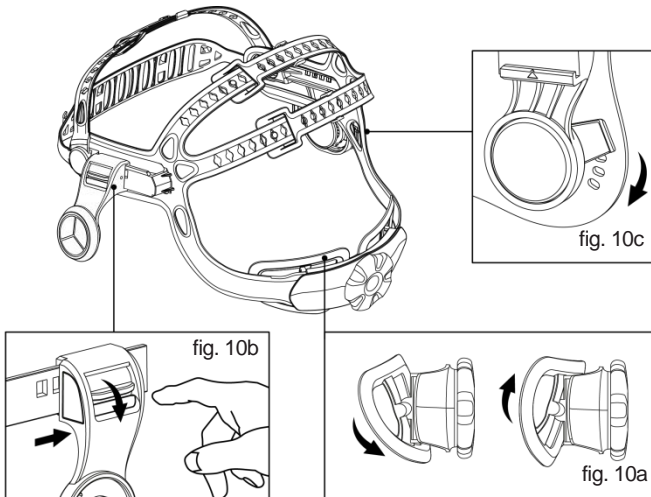
### • ADJUSTING THE DISTANCE BETWEEN THE HELMET AND THE FACE

Step 1: Press down and hold the “LOCK” latch on both sides (see fig. 10b) and it can be slide back and forth.

Step 2: Loosen the “LOCK” latch and keep it snap into slots. Please make sure the distance between the lens to both eyes are equal, to avoid uneven darkness.

### • ADJUSTING VIEW ANGLE POSITION

Tilt adjustment is located on right side of helmet. Loosen the right headgear tension knob and adjust the lever forward or back to the proper position. Re-tighten the right headgear tension knob (see fig. 10c).



## Certification and Control labels

The SENTINEL™ A50 welding filters are tested for eye protection by the following notified body: DIN CERTCO Gesellschaft für Konformitätsbewertung mbH, Alboinstr. 56, D-12103 Berlin, notified body 0196, that provides approval and continual quality system under the control of the European Commission, the German Ministry for Work and the Central Office of the Provinces.

The shell and the auto darkening filter are marked accordingly. Classification for eye and face protection is following EN379, EN175, EN166.

We are therefore allowed to use the following marks:



European Conformity mark.

This confirms that the product fulfils the requirements of the Directive 89/686/ EWG

## EN 175

Address from  
DIN CERTCO Gesellschaft für  
Konformitätsbewertung mbH  
Alboinstr. 56 ,  
D-12103 Berlin

## ADF Marking Explanation:

4/5-9/9-13 TM 1/1/1/2/379

4 - Light state scale number  
5-9 - Lightest dark state scale number  
9-13 - Darkest state scale number  
TM - Manufacture's identification  
1 - Optical class  
1 - Diffusion of light class  
1 - Variation in luminous transmittance class  
2 - Angle dependence of luminous transmittance class  
379 - Number of the standard

## MAINTENANCE

### • REPLACING THE FRONT COVER LENS

Replace the front cover lens if it is damaged. Press the semicircle button on external grind control side (see fig. 11a), remove the front cover lens carefully. When replace new front cover lens, make sure to assemble from the side without Grind Button first (see fig. 11b), and then snap the lens into the button side.

### • REPLACING THE INSIDE COVER LENS

Replace the inside cover lens if it is damaged. Place your fingernail in recess below cartridge view window and flex lens upwards until it releases from edges of cartridge view window.

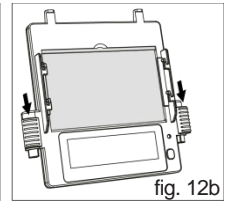
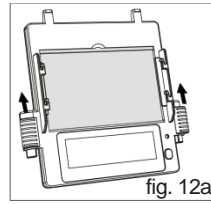
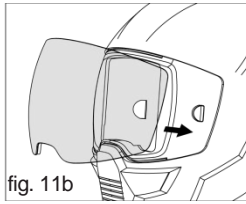
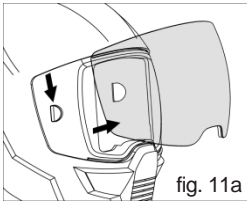
### • REPLACING THE AUTO DARKENING FILTER

Push upwards the latches on both side of ADF, then the ADF can be removed from the shell (see fig. 12a). When assembling new ADF, put the ADF into shell, push down the latches for lock. (see fig. 12b).

### • CLEANING

Clean helmet by wiping with a soft cloth. Clean cartridge surfaces regularly. Do not use strong cleaning solutions. Clean sensors and solar cells with methylated spirit and a clean cloth and wipe dry with a lint-free cloth.





## TECHNICAL SPECIFICATION

Optical Class:	1 / 1 / 1 / 2
Viewing Area:	100 x 60 mm (3.94" x 2.36")
Arc Sensor:	4
Light State:	DIN 4
Grind State:	DIN 4
Cutting Mode:	Shade No. from 5 to 9
Welding Mode:	Shade No. from 9 to 13
Shade Control:	Internal, Variable Shade, Digital Touch Control
Power On/Off:	Automatic On / Off
Sensitivity Control:	Low — High, Digital Touch Control
UV/IR Protection:	Up to Shade DIN13 at all times
Power Supply:	Solar cell. Battery replaceable 2 x CR2450 lithium battery
Switching Time:	1/25,000 s. from Light to Dark
Oxyfuel Gas Welding	Yes
Oxygen Cutting	Yes
Grinding:	Yes
Delay (Dark to Light):	0.1 ~ 1.0 s Digital Touch Control
Low Amperage TIG Rated:	≥ 2 amps (DC); ≥ 2 amps (AC)
Operating Temp.:	-5 °C ~ +55 °C (23 °F ~ 131 °F)
Storing Temp.:	-20 °C ~ +70 °C (-4 °F ~ 158 °F)
Helmet Material:	High Impact Resistance Nylon
Application Range:	Stick Welding (SMAW); TIG DC&AC; TIG Pulse DC; TIG Pulse AC; MIG/MAG/CO2; MIG/MAG Pulse; Plasma Arc Cutting (PAC); Plasma Arc Welding (PAW); Air Carbon Arc Cutting (CAC-A); Oxyfuel Gas Welding (OFW); Oxygen Cutting (OC); Grinding
Approved:	DINplus, CE, EN175, EN 379, EN166, ANSI Z87.1, CSA Z94.3, AS/NZS 1338.1

## SHADE GUIDE TABLE

### GUIDE FOR SHADE NUMBERS

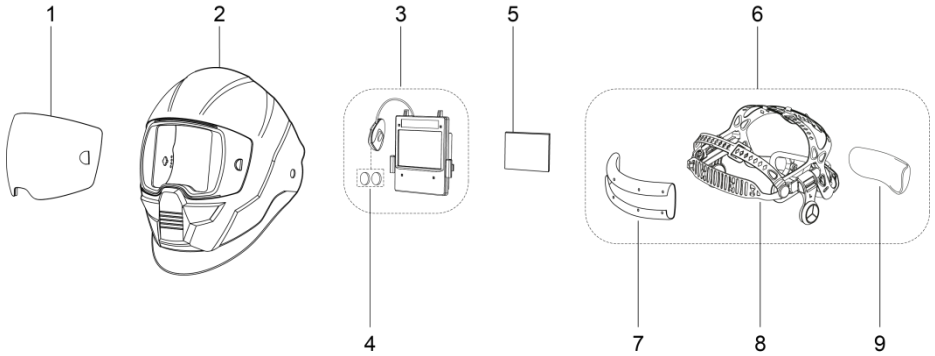
OPERATION	ELECTRODE SIZE 1/32 in. (mm)	ARC CURRENT(A)	MINIMUM PROTECTIVE SHADE	SUGGESTED <sup>(1)</sup> SHADE NO. (COMFORT)
<b>Shielded metal arc welding</b>	Less than 3 (2.5)	Less than 60	7	—
	3-5 (2.5-4)	60-160	8	10
	5-8 (4-6.4)	160-250	10	12
	More than 8 (6.4)	250-550	11	14
<b>Gas metal arc welding and flux cored arc welding</b>		Less than 60	7	—
		60-160	10	11
		160-250	10	12
<b>Gas tungsten arc welding</b>		250-500	10	14
		Less than 50	8	10
		50-150	8	12
<b>Air carbon Arc cutting</b>	(Light)	Less than	10	12
	(Heavy)	500	11	14
<b>Plasma arc welding</b>		Less than 20	6	6 to 8
		20-100	8	10
		100-400	10	12
		400-800	11	14
<b>Plasma arc cutting</b>	(Light) <sup>(2)</sup>	Less than	8	8
	(Medium)(2)	300	9	12
	(Heavy)(2)	300-400	10	14
<b>Torch brazing</b>		—	—	3 to 4
<b>Torch soldering</b>		—	—	2
<b>Carbon arc welding</b>		—	—	14
<b>PLATE THICKNESS</b>				
	in.	mm		
<b>Gas welding</b> Light Medium Heavy	Under 1/8	Under 3.2		4 or 5
	1/8 to 1/2	3.2 to 12.7		5 or 6
	Over 1/2	Over 12.7		6 or 8
<b>Oxygen cutting</b> Light Medium Heavy	Under 1	Under 25		3 or 4
	1 to 6	25 to 150		4 or 5
	Over 6	Over 150		5 or 6

(1) As a rule of thumb, start with a shade that is too dark, then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line the visible light of the (spectrum) operation

(2) These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

Data from ANSI Z49.1-2005

## PARTS LIST & ASSEMBLY



### Part List

ITEM	DESCRIPTION	PART NO.
1	Front Cover Lens Clear	0700 000 802
1	Front Cover Lens Amber	0700 000 803
2	Sentinel Helmet Shell	0700 000 804
3	Auto-Darkening Filter (Including 2 x CR2450 lithium	0700 000 806
4	2 x CR2450 lithium battery	0700 000 807
5	Inside Cover Lens (100 x 64mm)	0700 000 808
6	Headgear Assembly (Including Sweat Bands)	0700 000 809
7	Front Sweat Band	0700 000 810
8	Headgear	0700 000 811
9	Rear Sweat Band	0700 000 812



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