



CORNWELL[®]
QUALITY TOOLS

MMW60VGJF



Auto Darkening
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 a light state to a dark state when an 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 remove the battery, when not using it for a long time.

**WARNING**

- This Auto-Darkening welding helmet is not suitable for laser welding and oxyacetylene welding / cutting processes..
- 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.
- Don't make any modifications to either the filter or helmet, unless specified in this manual. Don't use replacement parts any 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.
- Don't immerse the filter in water.
- Don't use any solvents on the filter screen or helmet components.
- Use only at temperatures: -10 °C ~ +55 °C (14 °F ~ 131 °F)
- Storing temperature: -20 °C ~ +70 °C (-4 °F ~ 158 °F). The helmet should be stored in dry cool and dark area and remove the battery, when not using it for a long time.
- Protect filter from contacting with liquid and dirt.
- Clean the filter surface regularly; don't 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.
- Do not use this product without the correct protective clear lenses installed properly on both sides of the Auto-Darkening Filter cartridge.
- The materials which may come into contact with the wearers skin, can cause allergic reactions in some circumstances.

**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

Headband has been set unevenly and there is an uneven distance from the eyes to the filter lens (Reset the headband 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 referring to the "POWER" on page 2.

• Slow response

Operating temperature is too low (Do not use at temperatures below -10 °C or 14 °F).

• Poor vision

- ① Front / inside cover lens and / or the filter is soiled (Change lens).
- ② There is insufficient ambient light.
- ③ Shade number is incorrectly set (Reset the shade number).

• Welding helmet slips

Headband is not properly adjusted (Readjust the headband).



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.

• POWER

This ADF cartridge is powered by solar cell and 2 AAA alkaline batteries. Open the battery cover, replace the battery when Low battery light turn red. Please connect the battery positive and cathode electrode correctly according to the battery marking inside the battery holder (see fig. 1).

• TEST

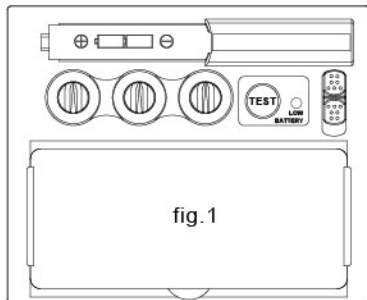
Press and hold "TEST" to preview shade selection before welding (See fig.1). When released then viewing window will automatically return to the light state (Shade 3). Press "TEST", if viewing window does not turn to dark state, replace batteries and try again.)

• BATTERY INSTALLATION

Install batteries into helmet property, according to positive and negative terminal marking on battery jar. (See fig.1)

• SELECTING DELAY TIME

When welding ceases, 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 to "S" (short: 0.1 sec.) or "L" (long: 1.0 sec.). As you



require using the infinitely dial knob on the back of the shade cartridge (See fig.2a). 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.

• SENSITIVITY

The sensitivity can be set to “ H ” (high) or “ L ” (low) by using the infinitely dial knob on the back of the shade cartridge. The “4-5 level” setting is the normal setting for everyday use. The maximum sensitivity level is appropriate for low welding current work, TIG, or special applications. Where the operation of the helmet is disturbed by excess ambient light, or another welding machine close by, use the “low” setting (See fig.2b). 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 light flash and without annoying spurious triggering due to ambient light conditions (direct sun, intensive artificial light, neighbouring welder's arcs, etc.).

• SELECTING SHADE LEVEL

Select the shade level you require according to the welding process you will use by referring to the “Shade Guide Table” below for settings. Turn the shade control knob on the lens of the helmet to the shade number required.

• SELECTING THE OPERATING MODE

Use the switch button on the back of shade cartridge to select the mode appropriate for the work activity.

Weld mode - Used for most welding applications. In this mode the shade function is turned on when it optically senses a welding arc. Select shade level, delay time and sensitivity as required (see fig.3).

Grind Mode - Used for metal grinding applications. In this mode, the shade function is turned off. The shade is fixed shade 3 that allowing a clear view to grind a weld with the helmet providing face protection (see fig.3).

• 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.4). 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.4).

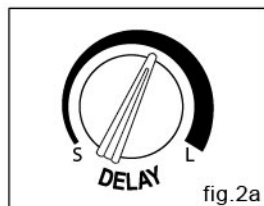


fig.2a

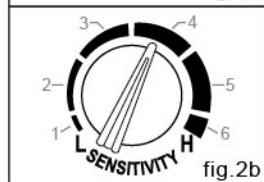


fig.2b

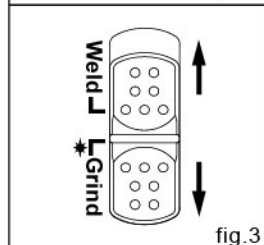


fig.3

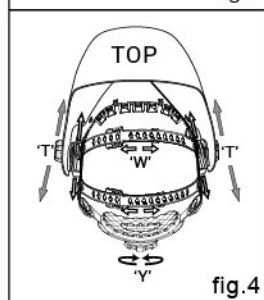


fig.4

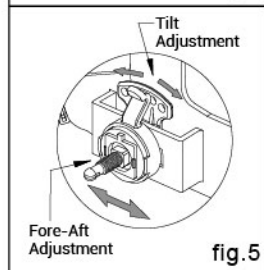


fig.5

- 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.

• ADJUSTING THE DISTANCE BETWEEN THE HELMET AND THE FACE

Step 1: Undo the block nut (See "T" in fig.4) to adjust the distance between the helmet and your face in the down position.

Step 2: Re-tighten the block nut when adjustment is complete.

• ADJUSTING VIEW ANGLE POSITION

TILT: Tilt adjustment is located on right side of helmet. Loosen the right headgear tension knob and push the top end of the adjustment lever outward until the lever's Stop Tab clears the notches. Then rotate the lever forward or back to the desired tilt position. The Stop will automatically engage again when released locking the helmet into position (See fig.5).

- You are now ready to use the helmet. The shading may be adjusted during use by re-setting the potentiometer control.

SHADE GUIDE TABLE

(NO.1)

Welding Process	ARC CURRENT (Amperes)													
	0.5	2.5	10	20	40	80	125	175	225	275	350	450		
	1	5	15	30	60	100	150	200	250	300	400	500		
SMAW					9	10		11		12		13		14
MIG(heavy)							10	11		12		13		14
MIG(light)							10	11		12		13		14
TIG,GTAW			9	10		11		12		13		14		
MAG/CO2						10	11	12		13		14		15
SAW								10	11	12	13	14	15	
PAC							11		12		13			
PAW			8	9	10	11	12		13		14		15	

NOTE:

SMAW – Shielded Metal Arc Welding

MIG (Heavy) – MIG on Heavy Metals

PAW – Plasma Arc Welding

SAW – Shielded Semi-Automatic Arc Welding

TIG, GTAW – Gas Tungsten Arc Welding

MIG (Light) – MIG on Light Alloys

PAC – Plasma Arc Cutting

MAG/CO2 - Metal Active Gas

MAINTENANCE

• REPLACING FRONT CLEAR COVER LENS

Replace the front cover lens if it is damaged. Remove ADF holder assembly per fig.6. Remove front cover lens from helmet assembly. Carefully remove gasket from cover lens. Install new cover lens into gasket and assemble to helmet shell. Make sure to assemble cover lens and gasket into helmet shell the same way as it was removed.

• REPLACING INSIDE CLEAR LENS

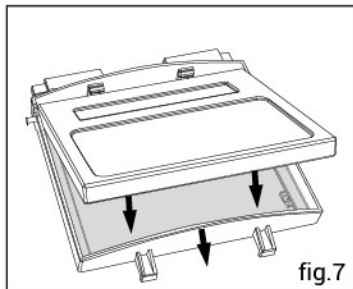
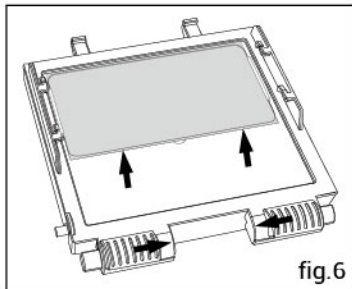
Replace the inside clear lens if it is damaged. Place your fingernail in recess below cartridge view window and flex lens upwards until it releases from edges of cartridge view window.

• REPLACING THE AUTO DARKENING FILTER

Remove ADF holder assembly from helmet (See fig.7). Flex top end of the ADF holder to remove the auto darkening filter. Install new ADF into holder (See fig.7). Make sure that the ADF is installed in holder correctly as shown. Install ADF holder assembly into helmet shell.

• CLEANING

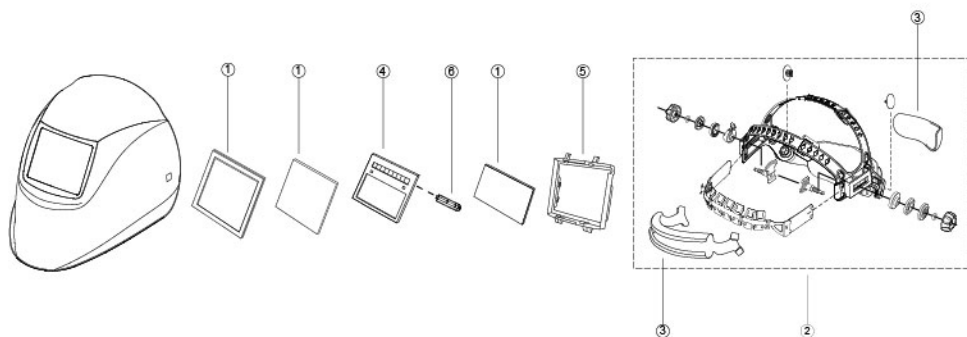
Clean helmet by wiping with a soft cloth. Clean cartridge surfaces regularly. Do not use strong cleaning solutions. Clean sensors and solar cells with methylated spirit and a clean cloth and wipe dry with a lint-free cloth.



TECHNICAL SPECIFICATIONS

Optical Class	1 / 1 / 1 / 2
Viewing Area:	98 x 44 mm (3.86" x 1.73")
Cartridge Size:	110 x 90 x 9 mm (4.33" x 3.54" x 0.35")
Arc Sensor:	2
Light State:	DIN 3
Dark State:	Variable Shade 9 ~ 13
Shade Control:	Internal, Variable Shade
Power On/Off:	Automatic On / Off
Sensitivity Control:	Low — High, by infinitely dial knob
UV/IR Protection:	Up to Shade DIN16 at all times
Power Supply:	Solar cell. Battery replaceable, 2 x AAA Alkaline battery
Switching Time:	1/25,000 s. from Light to Dark
Delay (Dark to Light):	0.1~1.0 s by infinitely dial knob
Low Amperage TIG Rated:	≥ 5 amps (DC); ≥ 5 amps (AC)
Grinding:	Yes
Battery Capacity Test:	Yes
Operating Temp.:	-10 °C ~ +55 °C (14 °F ~ 131 °F)
Storing Temp.:	-20 °C ~ +70 °C (- 4 °F ~ 158 °F)
Helmet Material:	High Impact Resistance Nylon
Total Weight:	445 g
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); Grinding
Approved:	ANSI Z87.1, CSA Z94.3

PARTS LIST & ASSEMBLY



Reference Number	Description	Part No.
1	Cover Lens Kit (4 outer/2 inner)+Gasket	MMWLK60
2	Headgear	MMWHG16
3	Sweatband Bundle	MMWSB16
4	Replacement Lens	MMWRL60
5	Lens Retaining Frame	MMWLH60
6	Batteries (2pcs)	AAA Batteries



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