

The logo for Michigan Welding Co. features the word "MICHIGAN" in a large, bold, black, sans-serif font. Below it, the words "WELDING CO." are written in a smaller, bold, black, sans-serif font, centered within a black rectangular box that has a slight 3D effect with a shadow on the right side.

AUTO DARKENING WELDING HELMET

MICADH850 (..140106)



**TO PREVENT SERIOUS INJURY, READ
AND UNDERSTAND ALL WARNINGS
AND INSTRUCTIONS BEFORE USE**

OPERATING INSTRUCTIONS



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SPECIFICATIONS

Model	MICADH850
Viewing Area(mm)	100 x 53mm
Cartridge Size (mm)	110 x 90 x 10mm
Light state	DIN 4
Dark state	DIN 5-8/9-13
Switch time	1/30,000 seconds
Dark to Light	Variable MIN to MAX 0.1-1.0sec
Shade Control	External
Sensitivity Control	Variable LOW to HIGH
Power on/off	Grind Mode turns the ADF off Automatic shut off after 10 mins idle
Power supply	Solar cell and replaceable battery 1x CR2032
UV/IR Protection	DIN 16
Arc Sensor	4
Suitable for TIG	≥ 5amp
Grinding Function	Yes (external control)
Optical Class	1/1/1/2
Operating Temp.	-5°C to 55°C
Storing Temp.	-20°C to 70°C
Weight (g)	500g
Box Sizes (mm)	240 X 230 X330
Welding Processes	MMA, MIG, MAG/CO2, TIG and Plasma Welding. Arc Gouging & Plasma cutting.
Helmet	AS/NZS 1337.1
Lens	AS/NZS 1338.1
BOX CONTENTS	
Description	Quantity
Welding Helmet	1
Front Cover Lens	1
Rear Cover Lens	1
Operating Manual	1

READ BEFORE USING

Protect yourself and others from injury - read, follow, and save these important safety precautions and operating instructions.

SYMBOL USAGE



DANGER

Indicates a hazardous situation which, if not avoided will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.



This group of symbols means Warning! Watch out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid hazards.

NOTICE: Indicates statements not related to personal injury.

ARC WELDING HAZARDS



Only Qualified Persons Should Install, Operate, Maintain & Repair this Unit.



ARC RAYS CAN BURN EYES & SKIN.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching. Refer to Lens Shade Selection table on page 8.
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare, and sparks; warn others not to watch the arc.
- Wear body protection made from durable, flame resistant material (leather, heavy cotton wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuff-less trousers, high shoes, and a cap.
- Before welding, adjust the auto-darkening lens sensitivity setting to meet the application.
- Stop welding immediately if the auto-darkening lens does not darken when the arc is struck. See the Owner's Manual for more information.



WELDING HELMETS DO NOT PROVIDE UNLIMITED EYE, EAR & FACE PROTECTION. Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Use impact resistant safety spectacles or goggles and ear protection at all times when using this welding helmet.

- Do not use this helmet while working with or around explosives or corrosive liquids.
- Do not weld in the overhead position while using this helmet.
- Inspect the ADF frequently. Immediately replace any scratched, cracked, or pitted cover lenses or ADF's.



NOISE CAN DAMAGE HEARING.

Noise from some processes or equipment can damage hearing.

Wear approved ear protection if noise level is high.



READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes



FUMES & GASES CAN BE HAZARDOUS.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



WARNING

THIS PRODUCT CONTAINS A BUTTON BATTERY

If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.

Keep batteries out of reach of children.

If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.



INTRODUCTION

Auto-Darkening Welding Helmets are designed to protect the eyes and face from arc flash, sparks, spatter and harmful radiation such as ultra violet, infrared and a percentage of visible light under normal welding conditions. The auto-darkening filters (ADF) automatically changes from light to dark while the welding arc occurs and returns to the light state when the welding arc ceases. During welding, sparks or slag often come into contact with the filter, to protect the filter, an additional hardened, clear plastic external lens cover is provided. The external cover lens should always be kept in place and replaced before damage impairs vision while welding.

Welders should protect their eyes as much as possible by using the correct shade number for the work being performed.

Filters that are too light may result in temporary or even permanent eye damage. In addition, filters that are too dark, i.e. with dinse shade numbers that are too high for the task being done, will lead to poor visibility affecting the quality of the weld and can lead to injury to the user or others in the area.

The Australian standard for occupational eye protection, AS/NZS 1336, includes the recommended practices required and should be followed closely.



USER RESPONSIBILITY

This product will perform as described in this instruction manual if installed, operated, maintained and repaired in accordance with the details provided. This equipment must be checked periodically. Defective equipment should not be used. Parts that are in any way broken or faulty must be replaced with genuine replacement parts and installed by an appropriately qualified person. You must not tamper or alter any parts of this product. The user is responsible for any malfunction which results from improper use or modification, insufficient maintenance, damage or repair attempted by anyone other than an appropriately qualified person. For assistance with any issues with maintenance or repair contact the place of purchase.



WARNING

Prior to welding check the operation of the filter lens, if the lens does not darken DO NOT COMMENCE WELDING. If during welding the filter does not darken IMMEDIATELY STOP WELDING.



WARNING

For machine disc cutting, scaling, grinding and machining of metals and the like, additional eye shields or face shields with appropriate impact rating should be used. Refer to AS/NZS 1336 for full details of the appropriate protection for industrial applications.



WARNING

This manual highlights the appropriate warnings and instructions for the helmet to protect your eyes, face and head while welding only. For all other risks to the operator associated with the use of other welding equipment in conjunction with the helmet the user must source, read and understand all operational and safety information for said welding equipment. No attempt is made in this manual to discuss how to weld safely as an end to end process.

RECOMMENDED PROTECTIVE FILTERS FOR ELECTRIC WELDING



WARNING The indicated filter lens shade numbers are minimums. If any discomfort is felt, a higher shade number should be selected.

It is important to ensure that the correct shade level is selected prior to the commencement of welding. The table below can be used as a guide to select the filter lens shade level for differing applications.

Description of process	Approximate range if welding current	Minimum shade number of filter(s)
	A	DIN
Air-arc gouging	≤ 400	12
Flux-cored arc welding (FCAW) - with or without shielding gas	≤ 300	11
	300 to 400	12
	400 to 500	13
	>500	14
Gas metal arc welding (GMAW) (MIG) - aluminium and stainless steel - other than aluminium and stainless steel	≤ 250	12
	250 to 350	13
	≤ 150	10
	150 to 250	11
	250 to 300	12
	300 to 400	13
	400	14
Gas tungsten arc welding (GTAW) (TIG)	≤ 100	10
	100 to 200	11
	200 to 250	12
	250 to 350	13
	>350	14
Manual metal arc welding-covered electrodes (MMAW)	≤ 100	8
	100 to 200	10
	200 to 300	11
	300 to 400	12
	>400	13



Description of process	Approximate range if welding current	Minimum shade number of filter(s)
Plasma-arc cutting	50 to 100	10
	100 to 400	12
	400 to 800	14
Plasma-arc spraying	–	15
Plasma-arc welding	≤ 20	8
	20 to 100	10
	100 to 400	12
	400 to 800	14
Resistance welding	–	Safety spectacles or eye shield
Submerged-arc welding Electroslag welding	–	2 (5)*
* A shade 5 filter is recommended for watching molten pool in electroslag welding		
NOTE: Definitions of the above processes are given in AS 2812		



WARNING

Prior to welding check operation of the filter lens, if the lens does not darken DO NOT COMMENCE WELDING. If during welding the filter does not darken IMMEDIATELY STOP WELDING.



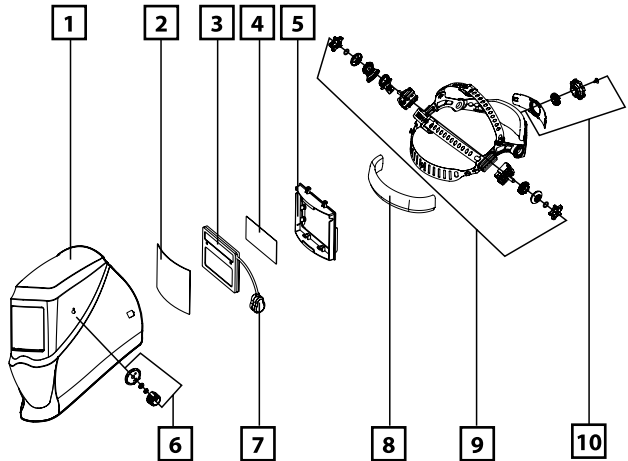
WARNING

For machine disc cutting, scaling, grinding and machining of metals and the like, additional eye shields or face shields with appropriate impact rating should be used. Refer to AS/NZS 1336 for full details of the appropriate protection for industrial applications.

COMPONENTS

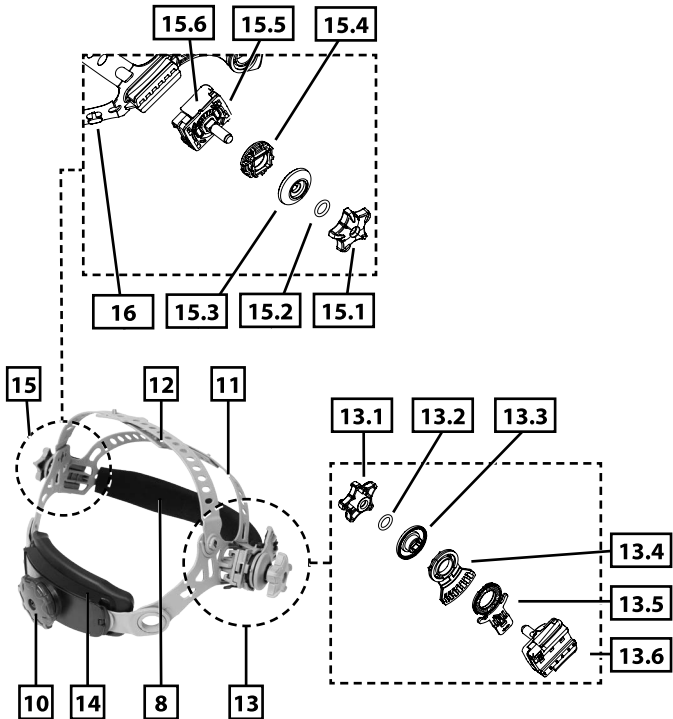
HELMET

- 1. Helmet Shell
- 2. External lens cover
- 3. Automatic Darkening Filter (ADF)
- 4. Internal lens cover
- 5. ADF Bracket
- 6. External Shade Dial assembly
- 7. ADF Shade control
- 8. Sweatband
- 9. Headgear Assembly
- 10. Headgear adjustment knob assembly



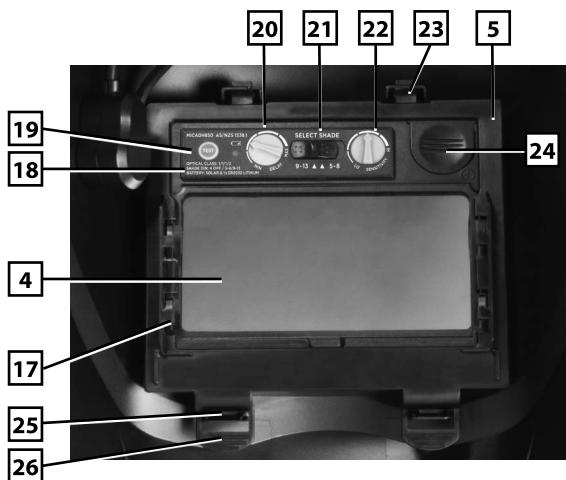
HEADGEAR

- 11. Top strap front
- 12. Top strap crown
- 13. Right Bracket Assembly
 - 13.1. Tension knob
 - 13.2. O-ring
 - 13.3. Outer cap
 - 13.4. Inner cap
 - 13.5. Angle lever
 - 13.6. Depth slider
- 14. Cushion
- 15. Left Bracket assembly
 - 15.1. Tension knob
 - 15.2. O-ring
 - 15.3. Outer cap
 - 15.4. Inner cap
 - 15.5. Depth Slider
 - 15.6. Depth Slider Lock
- 16. Sweatband notch



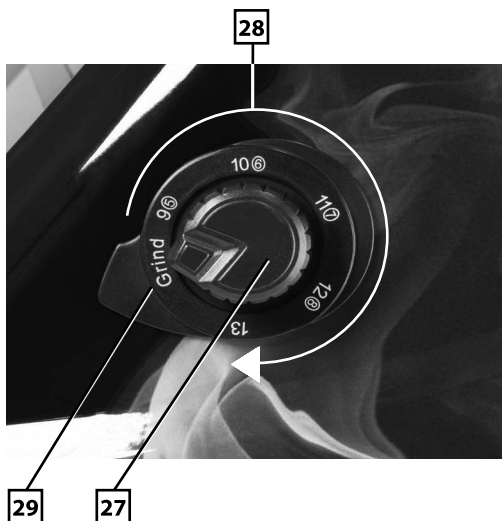
INTERNAL

- 17. Magnification lens holder
- 18. ADF specifications
- 19. Test button
- 20. Delay
- 21. Shade group selection
- 22. Sensitivity
- 23. Bracket hinge
- 24. Battery
- 25. Bracket lock x2
- 26. Bracket clip x2



EXTERNAL ADJUSTMENT DIAL

- 27. Dial
- 28. Shade/DINS value
- 29. Grind Mode/ADF Off



BEFORE USE

UNPACKING

1. Take all contents out of the box.
2. Check the helmet is in good condition and all components listed are included. If there is any damage or missing items, return it to the place of purchase
3. Dispose of the packaging in a responsible manner.

PROTECTIVE FILM

1. Open the ADF bracket and remove the external lens cover.
2. Remove the protective film and replace the external lens cover.
3. Remove the protective film from the internal lens cover.

SETUP

FILTER LENS COVERS

The lens covers comes pre-assembled on purchase but will need to be replaced on a regular basis.

Replacing the External Lens Cover

1. To remove the external lens cover. First, push down at the bottom of the ADF bracket to loosen the bracket lock
2. While pushing down, slide the lock off and repeat for both sides, now both bracket clips can be opened.
3. Using the finger hole underneath lift up the ADF bracket and remove the external lens cover.
4. Remove the protective film on the replacement lens cover
5. Place the replacement lens cover into the helmet and close the ADF Bracket.
6. Click the clips back into place.

Replacing the Internal Lens Cover

1. To remove the internal lens cover. Use the finger hole on the back of the ADF to remove internal lens cover.
2. Remove the protective film on the replacement lens cover
3. Place the replacement lens cover into the ADF and ensure all corners are held in place.

MAGNIFICATION LENS INSTALLATION

The magnification lens is sold separately. It is used to enlarge the view of the workpiece without having to position the face close to the workpiece.

1. To install, place the mag lens onto the ADF bracket
2. Slide into the mag lens bracket, check it is not loose.
3. To remove, slide out of the mag lens bracket.



SWEATBAND

The sweatband comes pre-assembled on purchase but **will** need to be replaced on a regular basis.

Replacing the Sweatband

1. To replace the sweatband. First, turn the headgear so the sweatband is exposed.
2. Locate the sweatband notches and lift the fabric so the sweatband comes out of the notches.
3. Repeat for each layer and remove the old sweatband.
4. Take the replacement sweatband and place the sponge side onto the headgear. Put the notches through the matching holes on the sweatband.
5. Fold the sweatband over the headgear and place the notches through the remaining holes on the sweatband.

HEADGEAR ASSEMBLY

The headgear comes pre-assembled on purchase. Most parts of the headgear are loose, ensure the disassembly is done over a table to catch the loose parts if they fall off suddenly. The left and right side brackets have different components, see page 10 for the assembly.

Removing the Headgear

1. To remove the headgear, on one side of the helmet, unscrew the tension knob.
Note: The holding screw and o-ring **will** come loose.
2. Take the holding screw out so the remaining parts come loose, and the headgear detaches.
3. Repeat for the other side. Put **all** the parts in a safe place separating left and right-side groups.

Replacing the Headgear

It is best to start assembling the right-side bracket before the left-side bracket, see page 10 for the assembly.

1. Put the headgear into the helmet and ensure the headgear is forward by facing the sweatband into the helmet.
2. On the right side, slide the depth adjuster onto the headgear if it has become detached.
3. Take the angle lever and place it onto the depth adjuster so the zig-zag patterns face each other and hold in place.
4. Place the inner cap onto the angle lever and align the angle pins at the middle setting.
5. Clip the other side of the inner cap onto the helmet shell and click into place. The depth slider thread **will** now stick out of the helmet shell.
6. Put the outer cap then o-ring onto the helmet shell and secure using the tensioner knob.
7. On the left side, slide the depth adjuster onto the headgear if it has become detached.
8. Place the inner cap onto the depth adjuster so the zig-zag patterns face each other and hold in place.
9. Clip the other side of the inner cap onto the helmet shell and click into place.
10. Put the outer cap then o-ring onto the helmet shell and secure using the tensioner knob.



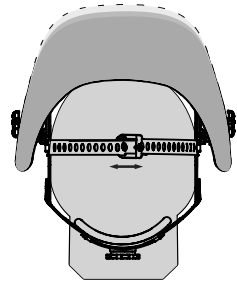
FITTING THE HEADGEAR

The helmet headgear should be adjusted to ensure the user is protected while being comfortable during welding. By taking the time to fit the headgear ensures the lens sits at the correct distance from the face and the headgear does not squeeze to tight.

HEADGEAR DEPTH

The headgear should sit securely and comfortably above your brow. A common mistake is to tighten the brim tight to keep the helmet in place, this will make the helmet uncomfortable to wear. To stop the helmet slipping, keep it in place by changing the depth of the headgear using the top strap.

1. Unclip the two top straps so they slide loosely.
2. With the helmet down, place the headgear onto your head and place the brim of the headgear onto the middle of your forehead.
3. Turn the dial so it fits firmly but not tight.
4. Push the crown top strap down until it touches the top of your head, hold it in place.
5. While holding it in place, take the helmet off and re-clip the top strap.
6. Repeat steps 4 and 5 with the front top strap.



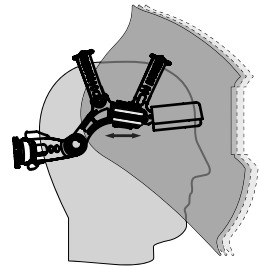
Headgear depth

HELMET DISTANCE

The helmet should be at a suitable distance from the face and should be adjusted if the user wears glasses or if the helmet is coming into contact with the body. On the MICADH850, there are 5 depths to choose from.

To adjust the helmet distance, see the following steps:

1. On one side, locate the depth slider and the depth slider locks.
2. Using your thumb and forefinger, pinch the depth slider locks together to release the slider.
3. Position the depth slider into option 1-5 and release the depth slider lock
4. Repeat for the other side.



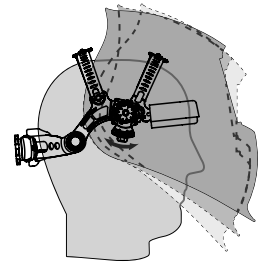
Headgear distance

HELMET ANGLE

The angle needs to be changed if the bottom edge of the helmet comes into contact with the chest when lowered or the helmet is too close/too far from the chin and mouth. On the MICADH850, there are 7 angles to choose from.

To adjust the helmet distance, see the following steps:

1. Put the helmet in the down position.
2. Pull the angle lever off the angle pin.
3. Choose the angle needed and replace the angle lever onto the angle pin.



Headgear Angle

HELMET CONTROLS

SENSITIVITY

The Sensitivity Switch is used to make the filter Lens more responsive to different light levels. In the MICADH850 the sensitivity selection is from LOW to HIGH though selecting Medium is suitable to most indoor and outdoor welding operations.

The sensitivity needs to increase when welding in low current or low light conditions. When welding in extremely bright lighting conditions, it may be safer and necessary to reduce the surrounding light levels.

Higher Sensitivity if:	Min sensitivity if:
Welding area lighting is similar to the brightness of the welding arc E.G. Welding with low current or in low light conditions, especially low-current argon arc welding	- High current welding - Welding in brightly lit environment or the surrounding where light is interfered. <i>Note: Mid Range is suitable for most applications</i>

DELAY

The Delay is used to hold the dark time of the Filter Lens after welding is completed. In the MICADH850 the delay selection is between MIN (0.1s) to MAX (1.0s). The delay is used to protect against the bright rays emitted by the weld pool once welding is finished. The weld pool is brighter in higher amperage welding because the material will be hotter than in low amperage welding.

Longer Delay if:	Less Delay if:
Weld pool is very bright or slow cooling	Weld pool is fast cooling

WELD

The welding shade numbers are used to turn the filter lens dark to protect the user from arc flash, the higher the shade number the darker the filter. Use the Shade group selector (inside the helmet) to isolate the shade group, DIN 5-8 or DIN 9-13, then select a shade suitable for the type and amperage of the weld, see the table on page 8 for reference. The shade can be changed during use by turning the external dial but be careful not to select grind/off mode and not to go a lower shade number than recommended.

GRIND

The grind position turns the auto-darkening filter off and keeps it in the light state (shade DIN 4). Shade 4 is ideal for protection against bright angle grinding sparks.

Note: additional eye and face protection is recommended when angle grinding

OPERATION

Always ensure the lens covers and arc sensors are clean and not covered by dust. Dirty or scratched lens covers will hinder the arc sensors and may stop the ADF darkening.



Before welding, make sure that the filter is transparent enough to see the work piece clearly.

Adjust the sensitivity and delay and the shade number to suit the application of our work and test the helmet before use. See the table on page 6 for information to assist the correct selection

1. Setup the headgear to fit comfortably.
2. Before welding always adjust the settings to suit the welding operation and environment lighting conditions then test the helmet.
3. Place on your head with the helmet down and begin to weld.

Note: After some use the external lens cover may get dirty, ensure to wipe down the lens cover regularly so the arc sensors are not blocked.

MAINTENANCE

LENS COVERS

The external and internal lens covers should be changed regularly.

To clean, use a damp cloth to wipe down the surface.

Note: Avoid blowing the dust to prevent ingesting any potentially harmful material.

If the lens cover shows signs of wear replace the lens covers.

Replacement lens cover kits are available from the place of purchase (SKU ..141465)

SWEATBAND

The Sweatbands will become dirty over time and should be changed regularly to keep the helmet comfortable.

If the sweatband shows signs of wear, replace the sweatband.

Replacement sweatbands are available from the place of purchase (SKU ..107471)

HELMET CLEANING

To clean the helmet shell, use a damp cloth to wipe down the surface.

Note: Avoid blowing the dust to prevent ingesting any potentially harmful material.

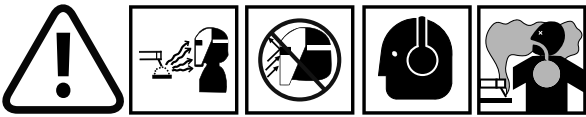
STORAGE

The storage temperature of the helmet is -20°C to 70°C, if the helmet is stored in temperatures exceeding this range will cause damage and may stop the ADF from operating.

If storing for a long period of time it is recommended the clean first then store in a cool area.



TROUBLESHOOTING



Trouble	Remedy
ADF not on – ADF will not darken momentarily when exposed to welding arc.	Make sure the lens is in Weld mode by placing the dial on a shade number. When in Weld mode the lens will darken for welding applications. Do not weld in Grind mode; the lens will not darken. Check batteries and verify they are in good condition and installed properly. Also, check battery surfaces and contacts and clean if necessary. Check battery for proper contact and gently adjust contact points if necessary. This is particularly important if the helmet has been dropped. If the helmet has been dropped, perform the ADF test to check its function. If the ADF function no longer works, the ADF will need replacing.
ADF not switching – ADF stays light and will not darken when welding or cutting.	Stop welding immediately. Make sure the lens is in Weld mode by placing the dial on a shade number. When in Weld mode the lens will darken for welding applications. Do not weld in Grind mode; the lens will not darken. Clean lens covers and sensors of any obstructions. Make sure the sensors are facing the arc; angles of 45° or more may not allow the arc light to reach the sensors.
ADF not switching –ADF stays dark after the weld arc is extinguished, or the ADF stays dark when no arc is present.	Fine-tune the sensitivity setting by making small adjustments to the control by turning it toward the “MIN” setting. In extreme light conditions, it may be necessary to reduce the surrounding light levels.

Trouble	Remedy
Sections of the ADF are not going dark, distinct lines separate the light and dark areas.	Stop welding immediately. The ADF may be cracked which can be caused by the impact of dropping the helmet. Weld spatter on the ADF may also cause cracking. (The lens may need to be replaced; most cracked lenses are not covered by warranty). Contact the place of purchase for a replacement ADF.
Switching or Flickering – The ADF darkens then lightens while the welding arc is present.	Review the sensitivity setting recommendations and increase the sensitivity if possible. Be sure the arc sensors are not being blocked from direct access to the arc light. Check the lens cover for dirt and spatter that may be blocking the arc sensors. Increasing Lens Delay 0.1–0.3 second may also reduce switching.
Inconsistent or lighter ADF shading in the dark-state, noticeable on the outside edges and corners.	Referred to as an angle of view effect, auto-darkening lenses have an optimum viewing angle. The optimum viewing angle is perpendicular or 90 degrees to the surface of the ADF. When that angle of view varies in the dark-state, welders may notice slightly lighter areas at the outside edges and the corners of the lens. This is normal and does not represent any health or safety hazard. This effect may also be more noticeable in applications where magnifying lenses are used.

If any of the remedies do not solve the issue, contact the place of purchase.



WARRANTY INFORMATION

This warranty is provided by Total Tools (Importing) Pty Ltd of 20 Thackray Road, Port Melbourne VIC 3207. Phone: 03 9261 1900 (we, us, our).

Express Warranty

Subject to the exclusions set out below, we warrant that this product will be free from defects in materials or workmanship for 12 months from the date of purchase.

The benefits conferred by this warranty are in addition to all rights and remedies which you may be entitled to under the Australian Consumer Law, and any other statutory rights you may have under other applicable laws. This warranty does not exclude, restrict or modify any such rights or remedies.

Warranty exclusions

This express warranty does not apply where a defect or other issue with the product is caused by normal wear and tear, misuse or abuse of the product.

Consumer guarantees

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage.

You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Warranty claims

To make a claim under this warranty, you must bring the product along with the proof of purchase and any other documentary evidence which you think is relevant to the Total Tools' place of purchase where the claim will be handled on our behalf. Any cost incurred by you in bringing the product to the place of purchase will be borne by you.

To make a claim under this warranty, the product and proof of purchase must be returned to the Total Tools place of purchase during the warranty period specified above.

If your warranty claim is accepted, we (or the Total Tools store that handles the claim on our behalf) will, at our discretion, repair or replace the product, or refund money to you and take back the product.

