AER LASER SAFE V2

User manual Instructions for use and maintenance

Index

1. AUTO-DARKENING LASER WELDING HELMET USER MANUAL

2. GENERAL INFORMATION

2.1 INTRODUCTION

This user manual provides important information for the correct and safe operation of Aerservice Equipments' auto-darkening Laser Welding helmet. The instructions contained in this manual help to avoid dangers, to reduce repair costs and unit downtime and to increase the reliability and lifetime of the unit.

The user manual shall always be at hand; all information and warnings contained therein shall be read, observed and followed by all people who work by the unit and are involved in tasks, such as:

- transport and assembly;
- normal use of the unit during work;
- maintenance (replacement of filters, troubleshooting);
- disposal of the unit and its components.

2.2 INFORMATION ON COPYRIGHT AND RELATED RIGHTS

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3. SAFETY

3.1 GENERAL INFORMATION

AER LASER SAFE V2 is suitable for laser welding/cutting.

• Workplace-specific hazards may require higher levels of protection, additional PPE, or modified procedures. A comprehensive hazard and risk assessment must be conducted and documented before starting any work.

• We recommend a use for a period of 5 years. The duration of use depends on various factors such as use, cleaning storage and maintenance. Frequently inspections and replacement if it is damaged are recommended.

• This protector is appropriate for the headform 1-M.

• AER LASER SAFE V2 laser protective devices are labeled with the wavelength range and relevant protection level. These specifications are based on a maximum exposure time of 5 seconds as required by the European standard EN 207:2017.

• Always consult your laser safety officer to ensure the appropriate eye protection for the specific laser source in use.

3.2 SAFETY WARNINGS FOR THE OPERATOR

• Always read and follow the User Instructions provided with each individual component of any welding helmet assembly. User Instructions include important warnings and use limitations. Failure to follow all User Instructions may result in injury or death.

• Test your color perception, especially your ability to recognize signal lights, when wearing the AER LASER SAFE V2 helmet or any additional laser protective eyewear. Ensure signal lights critical to safety are either clearly visible or monitored by others or alternative methods.

• Carefully inspect the complete AER LASER SAFE V2 before each use. Cracked, pitted, scratched, or discolored filter glass or protection plates can reduce vision and severely impair protection. Replace any damaged components immediately.

• Remove any protective film from the helmet before use.

• Ensure that laser work with the AER LASER SAFE V2 helmet is conducted only in enclosed, laser-protected environments, with no unprotected personnel present. Always adhere to relevant laser safety regulations and guidelines.

• Users should be trained in both laser welding and safety and must follow all instructions and safety warnings, safety labels on the product, and all applicable safety standards, laws and regulations. Any unapproved modification of the product can result in a permanent impairment of sight or other serious personal injury.

• Invisible reflected and scattered Class 4 laser beams can cause permanent eye damage and vision loss. Exposure to UV light, heat, and sparks generated during welding may pose a

serious risk to eye health.

• Protection is only effective for angles of incidence up to 30°.

• Continued use of an auto-darkening filter that fails to switch to the dark state may result in permanent eye injury and vision loss. If the problem cannot be identified and corrected, do not use the auto-darkening filter.

• Only operate the auto-darkening filter at temperatures between -10°C and 55°C . If used outside of this range, the filter may not perform as designed and may result in permanent eye injury and vision loss.

• The protection marked in accordance with this standard is only provided when all lens and retention components are installed according to the list or other manufacturer’s instructions.

• Eye and face protectors that have been subject to an impact shall not be used and shall be discarded and replaced.

• The auto-darkening filter 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.

• This product is designed to protect against accidental, momentary exposure to scattered or diffused laser light, which can be caused by reflective surfaces, improperly aligned optical components or the eye protection device itself. It is not suitable for protection against direct, continuous or repeated exposure to the laser beam.

• Always ensure the wavelengths and protection levels specifications on the eye match the laser source in use.

• If the luminous transmittance is below 20%, increase workplace illumination to ensure visibility.

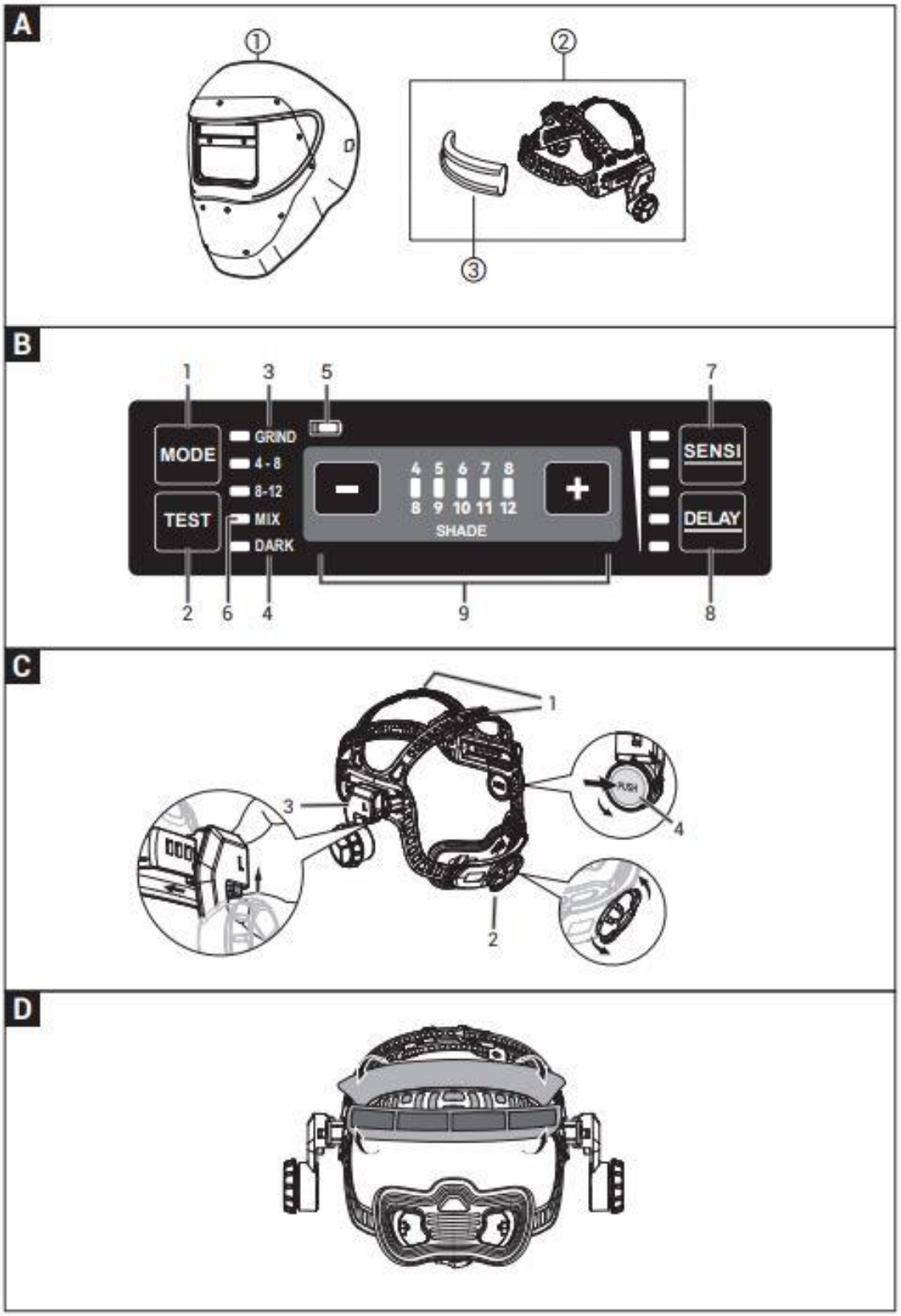
• Never look directly into a laser beam, even with proper eye protection.

• Immediately replace the eye protection device if it shows any signs of damage from laser exposure.

• 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.

• The product is in conformity with Directive 2001/95/EC, Regulation (EU) 2016/425 necessary as brought into UK law and amended, Annex II.

4. DESCRIPTION



4.1 PRODUCT OVERVIEW

ITEM	ITEM No.	DESCRIPTION	QTY
1	WM0100LWV2PRO	AER LASER SAFE V2	1
2	RWM0100PROA09	Headgear (Including sweatband)	1
3	RWM0100PROA10	Sweatband	1

4.2 INTENDED USE

The AER LASER SAFE V2 Laser welding helmet is specifically designed for laser welding/cutting application to protect users. The variable shade laser lens provides full protection against direct laser exposure, as well as reflection, scattering, diffraction, and divergence from the laser beam. Meanwhile, it offers protection against UV/IR/ blue light.

2 sensors on the front of the auto-darkening filters react independently at the moment the laser flash is struck and cause the filter to darken. The auto-darkening filter switches back to the light state after the welding arc has stopped. Protection from ultra-violet radiation (UV) and infrared radiation (IR) is continuous, whether the auto-darkening filter is in the light or the dark state.

The product allows the welder to view their work clearly and safely during set-up, during the weld and after without interruption and without the burden or delay of manually lifting the shield or filter.

5. INSTRUCTION FOR USE

5.1 PREPARATION BEFORE USE

1. Low Battery Indicator

Replace the helmet immediately when the low battery indicator lights up (Fig.B-5).

2. Test

Press and hold "TEST" to preview shade selection before working (Fig.B-2). When released then viewing window will automatically return to the light state (Shade 2.0).

⚠ If the auto-darkening filter does not function as described above, do not use and immediately contact your supervisor.
⚠ The auto-darkening filter may not turn dark if the sensors are blocked or the laser arc is totally shielded. Flashing light sources (e.g. safety strobe lights) can trigger the auto-darkening filter making it flash when no welding is occurring. This interference can occur from long distances and/or from reflected light. Welding areas must be shielded from such interference.
⚠ The auto-darkening filter will automatically turn off after a period of inactivity.

5.2 AUTO-DARKENING FILTER FUNCTIONING

1. Shade (Fig.B-9)
The following areas are pre-set:
- Grind mode: Darkening state 2.0 (cannot be changed)
- 4-8 mode: Darkening states 4 to 8
- 8-12 mode: Darkening states 8 to 12

2. Sensitivity (Fig.B-7)
The sensitivity of the sensor can be adjusted to accommodate a variety of laser welding methods and workplace conditions. The sensitivity time can be set to 5 positions as you require. 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 laser flash and without annoying spurious triggering due to ambient light conditions(direct sun, intensive artificial light, neighbouring welder's arcs etc.).

3. Delay (Fig.B-8)
When laser welding/cutting ceases, the delay function should be used to set the recovery delay time of the filter from the dark to light state according to the welding application and current. The delay time can be set to 5 positions as you require.

4. Dark (Fig.B-4)
When the auto-darkening filter is set to DARK mode, it functions solely as a dark glass and does not provide auto-darkening. The shade number in DARK mode can be selected based on your specific configuration.

5. Grind (Fig.B-3)
This setting is intended for grinding or other non-welding activities. When the auto-darkening filter is locked in the light state (shade 2.0) the LED under the symbol will flash every 3 seconds to alert the user. The auto-darkening filter must be changed to an appropriate shade before laser welding.

6. Mix Mode (Fig.B-6)
This mode is applicable for tack welding and high-power laser welding. It helps reduce eye fatigue caused by abrupt changes in shade.

The MIX mode consists of 3 periods:
1. The delay from the dark state to intermediate shade number;
2. Shade gradient phase;
3. The delay from the intermediate shade number to light state.

5.3 AUTO-DARKENING FILTER ADJUSTMENT

Selecting Shade Level
Press the MODE button to select the shade range (4-8/8-12). Use “ - ” or “ + ” to adjust the shade number

Setting Sensitivity
Press the SENSI button repeatedly until the LED shows the desired setting.

Selecting Delay Time
Press the DELAY button repeatedly until the LED shows the desired setting.

Switching Mode
Press the MODE button repeatedly until the LED shows the desired setting (GRIND/MIX/DARK).

5.4 HELMET ADJUSTMENT

1. **Adjusting the Headgear Tightness**

- To adjust the headgear's top for a proper fit, push the small button through the current slot, slide it to the desired slot, and snap the small button into place (Fig.C-1).

- Adjust the headgear by turning the adjusting wheel (Fig.C-2) to match your head circumference.

- Once you've put on the helmet, move your head to ensure it sits securely and stably.

2. **Adjusting the Distance Between the Filter and the Face**

- Press down and hold the buttons on both sides (Fig.C-3) so the headgear can be slide back and forth.

- Release the buttons to snap the pins into slots. Make sure the distance between the lens to both eyes are the same.

3. **Adjusting the Viewing Angle**

- Angle adjustment is located on the right side of the helmet. Press the "PUSH" button (Fig.C-4) and swing the helmet up and down to the desired position. Release the "PUSH" button to lock the helmet in place when you finish.

6. MAINTENANCE

Changing the Sweatband

- Remove sweatband from the hook-and-loop strap (Fig.D).

- Place a new sweatband around the front headgear, then close the hook-and-loop fastener.

7. MARKINGS

MARKING

The shell and the auto darkening filter are marked accordingly. Classification for eye and face protection is following EN ISO 16321-1:2022, EN ISO 16321-2:2021 and EN 207:2017.

AER LASER SAFE V2

Number of this standard	16231
Manufacturer's identification	AERSERVICE
Filtering performance code letter	W
Light Shade	2
Dark Shade range	4-8/8-12
Angle dependence of luminous transmittance	V2

EN207 requires that filters endure a 5-second pulse for continuous wave lasers or 50 pulses/5 seconds for pulsed lasers without losing protection. Filters meeting these criteria are marked with the protection level (LB) for the relevant wavelengths.

Wavelength range for which the eye-protector gives protection	1000-1100
Test condition in accordance with Table 4	D
Scale number in accordance with Table 1	LB7
Test condition in accordance with Table 4	IR
Scale number in accordance with Table 1	LB8
Certification mark	CE

*Table 1 & Table 4 according to EN 207:2017
D: Continuous wave laser with a pulse duration under 5 s;
I: Pulsed laser with a pulse duration between 1 µs and 0.25 s;
R: Q switch pulsed laser with a pulse duration between 1 ns and 1 µs.
*Refer to BS EN 207:2017 for more detail

8. CLEANING

Cleaning

- Clean the welding helmet with mild soap and lukewarm water.
- Use mild disinfection solution to disinfect the protector. Do not use solvents.
- Clean the auto-darkening filter with a clean, lint-free tissue or cloth.
- Do not immerse auto-darkening filters in water or spray directly with liquids.

Storage

Store the welding visor fully assembled in a place that is dry and free of dirt. Protect from direct sunlight and thermal radiation.

9. SPECIFICATION

Model	**AER LASER SAFE V2**
Viewing Area	96 x 46.5 mm
Cartridge Size	110 x 90 x 9 mm
Optical Class	1 / 1 / 1 / 2
Number of Sensors	2
Power On / Off	Automatic On / Off
Dark Shades	4-8/8-12
Light State	Shade 2.0
Switching Speed	1/25,000 s. from Light to Dark
Special Modes	GRIND / MIX / DARK
Sensitivity Control	Low - High, LED and button control
Delay	0.1-1.0 s, LED and Button Control
UV / IR Protection	Up to Shade DIN16 at all times
Operating Temp.	-10°C to 55°C
Storing Temp.	-20°C to 70°C
Laser Protection	1000-1100 D LB7 + IR LB8
Approvals	CE (EN 207, EN ISO 16321)

10. TROUBLE SHOOTING

Fault	**Cause**	**Remedy**
The auto-darkening filter flickers or does not auto-darken.	Dirty arc sensors.	Clean the arc sensors.
	Arcs not bright enough to trigger auto-darkening.	Use higher power lasers.
Darkening is uneven.	The distance between eyes and auto-darkening filter is different for each eye.	Check the headgear settings.
The response time is too long.	The ambient temperature is too low.	Use only within the specified temperature range (above -10°C or 14°F).
Poor vision quality.	The wrong shade number was selected.	Select the right shade number.
	The protective film has not been removed.	Remove the protective film.
Welding helmet slips.	Incorrect headgear settings.	Adjust the headgear.

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