

# AUTO DARKENING WELDING FILTER

**SA** 35, 60B, 60Z

**XA** 47

## INTRODUCTION

The auto-darkening filter (ADF) is an electronic filter cassette that darkens from light state to a pre-selected dark shade when the welding arc is ignited. Select the appropriate shade before you start welding. This product is designed to help protect your eyes from harmful radiation including visible light, ultra-violet radiation (UV) and infra-red radiation (IR) resulting from certain welding processes. ADF offers permanent protection against UV/IR rays, heat and sparks in any state from the light to the dark.



LIC 41350

AS/NZS 1338.1

SA 35, SA 60B, SA 60Z, XA 47:  
EN 379:2003+A1:2009

Kemppi Oy  
PL 13, Kempinkatu 1  
15801 LAHTI  
FINLAND

Authorized representative (UKCA)  
Kemppi UK  
Martti Kemppi Building,  
Priory Business Park, Fraser Road,  
MK44 3WH Bedford, UK

## SAFETY

- When fitted to a suitable face shield that meets the necessary and local safety standards, this ADF is suitable for welding, grinding, cutting, spraying and arc gouging. It is not suitable for laser welding.
- This ADF is suitable only for oxygen cutting in the oxygen flow rate range 900-2000 l/h. In the cutting mode, shade 5 is used. In the cutting mode the filter does not change from light to dark, but remains constantly dark.
- The ADF does not protect against explosive devices or corrosive liquids.
- Always use the protective lens on the ADF. Replace the protective lens when it becomes dirty/discolored/worn/cracked/scratched/pitted.
- Avoid heavy knocks on the ADF as it may break.
- If the ADF does not darken when the arc ignites, stop welding immediately. Inspect the ADF, check the batteries and change if necessary. If this does not help, contact a Kemppi representative or your supervisor.
- The ADF is not water-proof or water resistant. Do not immerse it in water. Protect the filter from contact with liquids and dirt.
- The recommended operating temperature range is -5°C...+55°C (23°F...131°F). Do not use the ADF beyond this temperature range.
- Never place the ADF on a hot surface.
- Never open or tamper with the ADF.
- Do not make any modifications to the ADF, unless specified in this manual.
- Do not use other replacement parts than those specified in this manual. Unauthorized modifications and replacement

parts void the warranty and may expose the wearer to unnecessary risk of personal injury.

- Clean the surface regularly. Do not use strong cleaning solutions or solvents. Always keep the sensors and solar cells clean. See Maintenance.
- Materials which may come into contact with the wearer's skin can cause allergic reactions.
- Failure to follow these safety instructions and/or failure to follow the operating instructions may cause voiding of the warranty and cause a risk of personal injury.

## TROUBLESHOOTING

Problem	Probable cause and recommended actions
The ADF does not darken or flickers.	<ul style="list-style-type: none"><li>• Front cover lens is soiled or damaged. Change the cover lens.</li><li>• Sensors are soiled. Clean the sensors' surface.</li></ul>
Slow response	<ul style="list-style-type: none"><li>• Operating temperature is too low. Do not use at temperatures below -5°C (23°F).</li><li>• Add sensitivity.</li></ul>
Poor vision	<ul style="list-style-type: none"><li>• Protective lens and/or the ADF is soiled. Change the lens.</li><li>• There is insufficient ambient light.</li></ul>

## TECHNICAL DATA

Model	SA 35	SA 60B	SA 60Z	XA 47
CE/UKCA classification	1/1/1/2	1/1/1/1	1/1/1/1	1/1/1/2
True color	No	Yes	Yes	Yes
Viewing area	96x35mm	100x60mm	110x60	97x47mm
Cassette size	110x61mm	110x90mm	120x90	110x90mm
Arc sensor	2	3	3	2
Shade range	9-13	9-13, Cutting 5	8-12, Cutting 5	9-13, 14-15, Cutting 5
Light state	DIN 4	DIN 4	DIN 2.5	DIN 4
Power ON/OFF	Fully automatic	Fully automatic	Fully automatic	Fully automatic
Shade control	Internal	Internal	Internal	Internal, digital display
Switching time	0.1ms	0.1ms	0.1ms	0.1ms
UV/IR protection	Always	Always	Always	Always
Grinding function	No	Yes	Internal and remote	Yes
Low battery indicator	No	Yes	Yes	Yes
Low amperage TIG rated	5A	3-5A	3-5A	5A

Power supply, replaceable	Solar cell, 2xCR2032	Solar cell, 2xCR2032	Solar cell, 1xCR2450	Solar cell, 1xCR2450
Certification	CE, ANSI, CSA, UKCA	CE, AS/NZS, UKCA	CE, AS/NZS, UKCA	CE, ANSI, CSA, AS/NZS, UKCA
Compatible with	Alfa e60A	Beta e90A, e90 SFA, Delta	Zeta W200, W200x	Beta e90X, e90 XFA, Delta+
Compliance	<ul style="list-style-type: none"><li>• Regulation (EU) 2016/425</li><li>• Regulation 2016/425 on personal protective equipment as brought into UK law and amended</li></ul>			
Standards compliance	<ul style="list-style-type: none"><li>• EN 379:2009-07</li><li>• AS/NZS 1338.1:2012</li></ul>			

Type inspected by

**SA 35, SA 60B, XA 47:**

- DIN CERTCO Gesellschaft für Konformitätsbewertung mbH, Notified body No. 0196, Alboinstr. 56D-12103 Berlin
- AS/NZS; SAI Global Certification Services Pty Limited 680 George Street, Sydney NSW 2000, GPO Box 5420 Sydney NSW 2001.
- UKCA; TUV Rheinland UK Ltd., Approved body No. 2571, Friars Gate (Third Floor), 1011 Stratford Road, Shirley, Solihull, B90 4BN, UK.

**SA 60Z:**

- CE: ECS European Certification Service GmbH. Hüttfeldstraße 50, 73430 Aalen, Germany. Notified Body No. 1883.
- UKCA: CCQS UK Ltd. 25 Wilton Rd, Pimlico, London SW1V 1LW, UK.
- Approved body number 1105.

**SA 35, SA 60B, SA 60Z, XA 47:**

- AS/NZS; SAI Global Certification Services Pty Limited 680 George Street, Sydney NSW 2000, GPO Box 5420 Sydney NSW 2001.

## ADF MARKING EXPLANATIONS

Eg. CE 4/5,8/9-13 KMP 1/1/1/2/379

4	Light state scale number
5	Cut mode scale number
8/9	Lightest dark state scale number
13	Darkest state scale number
KMP	Manufactures identification
1	Optical class
1	Diffusion of light class
1	Variation in luminous transmittance class
2	Angle dependence
379	Number of the standard

## ORDERING CODES

Model	SA 35	SA 60B	SA 60Z	XA 47
ADF	SP9873061	SP9873064	SP9873076	SP9873063
Protection plate, inside, 5 pcs	SP012951	SP012425	SP023221	SP012952

## OPERATION

Shade defines how dark the ADF gets when the arc ignites. To select the optimal shade, see the Shade guide table.

Sensitivity defines how easily the ADF photo-sensors respond to arc light and trigger the darkening of the filter. Use low sensitivity for high welding currents and welding in bright lighting conditions, such as lamp light or sunlight. Use high sensitivity for low welding currents, welding in poor lighting conditions and

when using a steady arc process, such as TIG welding process. Delay defines how long the ADF stays in the dark state to protect the eyes from the afterglow, when the arc is switched off. Use MIN delay time for tack welding and production welding with short welds. Use MAX delay time for welding at high amperage, where there is a strong afterglow from the weld.

## **Before use**

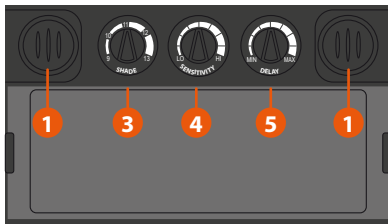
- Make sure the protective lens is clean. Remove the protective film.
- Make sure the sensors on the front of the ADF are clean.

## **SA 35, 60B and 60Z**

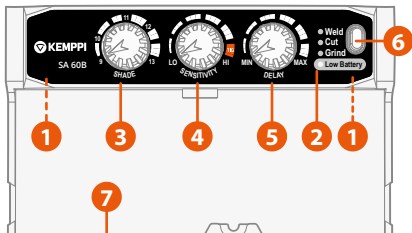
1. Battery holder (SA 35, 60B)
2. Low battery indicator.
3. Shade selection: 9–13, SA 60Z 8–12.
4. Sensitivity adjustment: Low–High. Use higher sensitivity for lower welding currents.
5. Delay adjustment (from dark to light): 0.1–0.9 s.
6. Weld, Cut or Grind selection.
7. Battery connection (SA 60Z). (The battery itself is in the helmet battery holder.)



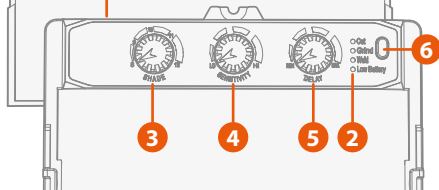
SA 35

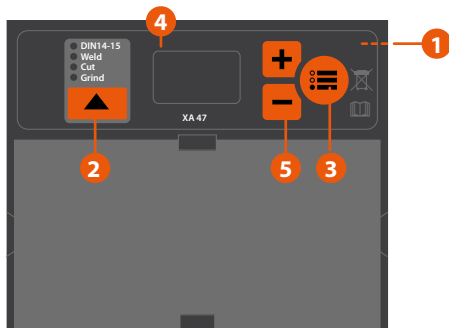


SA 60B



SA 60Z



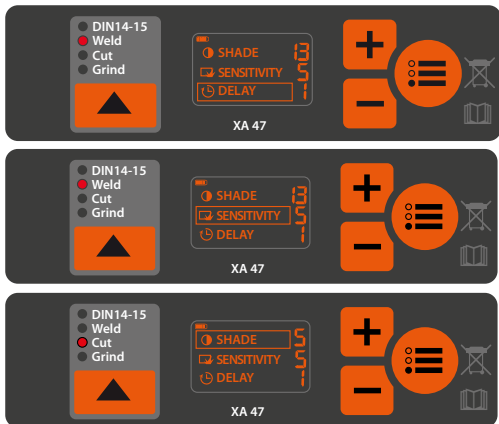


Battery holder (1 x CR2450).

1. Low battery indicator: Immediately replace the battery when the indicator and display flash.
2. Grind, Cut, Weld or DIN 14–15 selection.

**i** *When DIN14-15 mode is selected, the indicator lights in front of both WELD and DIN14-15 light up.*

3. Shade, Sensitivity or Delay selection.
4. Display
5. Adjust Shade, Sensitivity or Delay values, +/- .
  - Shade:      WELD mode: 9-13  
                  14-15 mode: 14-15
  - Sensitivity: 1-5
  - Delay:      1-5



**i** You can adjust the function values for the WELD mode and DIN14-15 mode only. For the CUT and GRIND modes, the values of sensitivity and delay remain the same as they were in WELD mode, and the shade value changes to 4 for GRIND and to 5 for CUT.

## **MAINTENANCE**

Clean the ADF regularly (for example, when you change the protective lens). You can either wipe the surface with a clean, dry piece of cloth, clean it with a piece of smooth cloth moistened with pure alcohol, or clean it with commercial disinfectant. If used properly, the ADF requires no further maintenance during its lifetime.

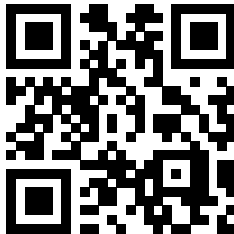
The period of use depends on various factors such as use, cleaning, storage and maintenance.

### **Storage**

Operating temperature: -5°C...+55°C (23°F...131°F). Storage temperature: -20°C...+50°C (-4°F...122°F). Store the ADF in a dry, cool and dark environment. If the ADF is not to be used for a prolonged period of time, remove the battery.

### **Disposal of the product**

Do not dispose of the product with household waste. Follow the local laws and regulations on safe and ecological disposal of electronic devices.



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Declarations of Conformity – Overensstemmelseserklæringer –  
Konformitäts-erklärungen – Declaraciones de conformidad –  
Vaatimustenmukaisuusvakuutuksia – Déclarations de conformité  
– Sigurnosne upute – Dichiarazioni di conformità – Verklaringen van  
overeenstemming – Samsvarserklæringer – Deklaracje zgodności –  
Declarações de conformidade – Instrucțiuni de siguranță – Заявления  
о соответствии – Försäkran om överensstämmelse – Güvenlik  
talimatları – 符合性声明

# SHADE GUIDE TABLE

	MMA (E-Hand)	MIG, Ss	MIG, Al	TIG	MAG, (CO <sub>2</sub> )		
15 A				9			
20 A	9			10			
30 A							
40 A	10				10		
60 A		10	10	11			
80 A							11
100 A	11	11	11	12			
125 A							
150 A							
175 A	12	12	12	13	13		
200 A							
225 A			13	14			
250 A							
275 A							
300 A	13	13	14	14	14		
350 A							
400 A			15			15	
450 A							
500 A	14	14	15		15		

	<b>Carbon arc gouging</b>	<b>Plasma cutting</b>
		11
	10	
	11	12
	12	
	13	13
	14	
	15	

## SELECTING SHADE LEVEL

Select the required shade level according to the welding process.

Refer to the "Shade guide table".

