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› [3M Speedglas Welding Helmet 9100 06-0100-20SW, with Auto Darkening Lens ADF 9100X User Manual](#)

3M 06-0100-20SW

3M Speedglas Welding Helmet 9100 06-0100-20SW with Auto Darkening Lens ADF 9100X

Model: 06-0100-20SW | Brand: 3M

1. INTRODUCTION

This manual provides essential information for the proper use, setup, operation, and maintenance of your 3M Speedglas Welding Helmet 9100 with Auto Darkening Lens ADF 9100X. This helmet is designed to provide professional-grade eye and face protection during various welding processes. Adherence to these instructions is crucial for safety and optimal performance.



Front view of the 3M Speedglas Welding Helmet 9100, showcasing its auto-darkening filter and overall design.

2. SAFETY INFORMATION

Important: This product is intended for industrial and occupational use only. It is not designed or packaged for consumer sale or use. Users must be trained professionals and comply with all applicable health and safety regulations and standards (e.g., U.S. OSHA, ANSI).

The 3M Speedglas Welding Helmet 9100 provides critical protection for the eyes and face from:

- Debris and harmful radiation, including visible light, ultra-violet radiation (UV), and infra-red radiation (IR).
- Sparks and spatter generated during welding.
- Intense light and rapid changes in brightness that can cause eye strain or injury.

Misuse of this product may result in injury, sickness, death, or property damage. For assistance with product selection and use, consult your on-site safety professional or industrial hygienist.

3. PRODUCT FEATURES

The 3M Speedglas Welding Helmet 9100 with ADF 9100X incorporates several features designed for

protection and user comfort:

- **Auto-Darkening Filter (ADF) 9100X:** Features a viewing area of 2.1 inches high x 4.2 inches wide (54 mm x 107 mm).
- **Selectable Shades:** Offers user-selectable dark shades 5, 8, 9 through 13, and a light shade of 3.
- **Fast Switching Speed:** Transitions from light to dark shade in approximately 0.1 milliseconds (1/10,000 of a second) when an arc is struck.
- **Adjustable Delay:** Automatically returns to light shade 3 with a delay of approximately 40-250 milliseconds after welding.
- **Side Windows:** Equipped with Shade 5 side filters to increase peripheral vision by over 100%.
- **Comfortable Headgear:** Features a highly adjustable, ergonomically designed head suspension system with two adjustable crown straps, padded front headband, and a swivel-mounted ratchet system.
- **Exhaust Vents:** Direct exhaled air out of the helmet to reduce heat, humidity, and fogging of the welding filter.
- **Tack Welding Comfort Mode:** An exclusive feature designed to help reduce eye strain during tack welding.

3M™ Speedglas™ 9100

Welding Helmet



Speedglas™ Auto-darkening filter 9100X

The 3M Speedglas 9100 Welding Helmet, highlighting the 9100X Auto-darkening filter.



Big and clear 9.12 sq in. protective visor and Shade 5 side windows create better viewing area and peripheral vision

The 3M Speedglas 9100 helmet, showcasing its large protective visor and Shade 5 side windows for enhanced viewing area and peripheral vision.

4. SETUP

The 3M Speedglas Welding Helmet 9100 is supplied fully assembled. Initial setup primarily involves adjusting the headgear for a comfortable and secure fit, and ensuring the auto-darkening filter (ADF) is powered.

4.1 Headgear Adjustment

The helmet features an ergonomically designed head suspension system for a customized fit:

1. **Crown Straps:** Adjust the two crown straps to achieve increased stability and even weight distribution on your head.
2. **Front Headband:** The padded front headband is designed to distribute pressure evenly. Adjust its position for comfort.
3. **Ratchet System:** Use the swivel-mounted smooth ratchet system at the back to precisely tighten the headgear for a secure fit. This can often be done while wearing gloves.
4. **Helmet Angle:** Utilize the snap adjustment to select one of nine different helmet angles to suit your preference and welding position.

5. **Pivot Positions:** Large knobs allow for simple adjustment of “prep” and “parking” pivot positions, even when wearing gloves. This controls how far the helmet lifts when in the raised position.

The headgear is designed to fit head sizes approximately 6.25 to 8 (50 to 64 cm) and avoids applying pressure to sensitive areas of the head for enhanced comfort during extended use.

4.2 Battery Installation/Check

The ADF 9100X is powered by two Cr2030 3V lithium batteries. Before initial use, or if the filter is not darkening, ensure the batteries are correctly installed and have sufficient charge. The battery life is approximately 2,500 hours. The batteries are easily accessible and replaceable.



Lightweight, compact design with self-adjusting twin pads for the forehead band

The 3M Speedglas 9100 helmet, emphasizing its lightweight, compact design and the self-adjusting twin pads for the forehead band.

5. OPERATING INSTRUCTIONS

The 3M Speedglas Welding Helmet 9100 is designed for ease of use across various welding applications.

5.1 Auto-Darkening Filter (ADF) Operation

- Power On:** The ADF is typically always on, drawing minimal power. Ensure batteries are installed.
- Light State:** In its inactive state, the filter maintains a light shade of 3, allowing clear visibility for preparation.
- Darkening:** When an arc is struck, three sensors in the lens detect the light and activate the auto-darkening filter. The filter switches from light to dark shade in approximately 0.1 milliseconds.
- Dark Shades:** Select the appropriate dark shade (5, 8, 9-13) based on your welding process and amperage. Refer to welding safety standards for recommended shade levels.
- Delay Setting:** After the weld is complete, the filter automatically returns to light shade 3 with an adjustable delay of approximately 40-250 milliseconds. This allows for immediate inspection of the weld pool.

5.2 Sensitivity Adjustment

The helmet features sensitivity adjustment to optimize performance for different welding processes:

- Adjust sensitivity for Stick (arc welding), MIG (Metal Inert Gas), and TIG (Tungsten Inert Gas) applications.
- Proper sensitivity ensures the filter darkens reliably when an arc is struck and prevents false triggering from ambient light.

5.3 Grinding and Torch Modes

The helmet includes dedicated modes for grinding and torch cutting:

- **Grinding Mode:** You can lock the filter in the light state (shade 3) for grinding operations. This prevents the filter from darkening unnecessarily.
- **Torch Mode:** Use this mode for oxy-fuel cutting or similar torch applications, which typically require a lighter shade than welding.

5.4 Tack Welding Comfort Mode

Activate the exclusive tack welding comfort mode to help reduce eye strain during repetitive tack welding tasks.

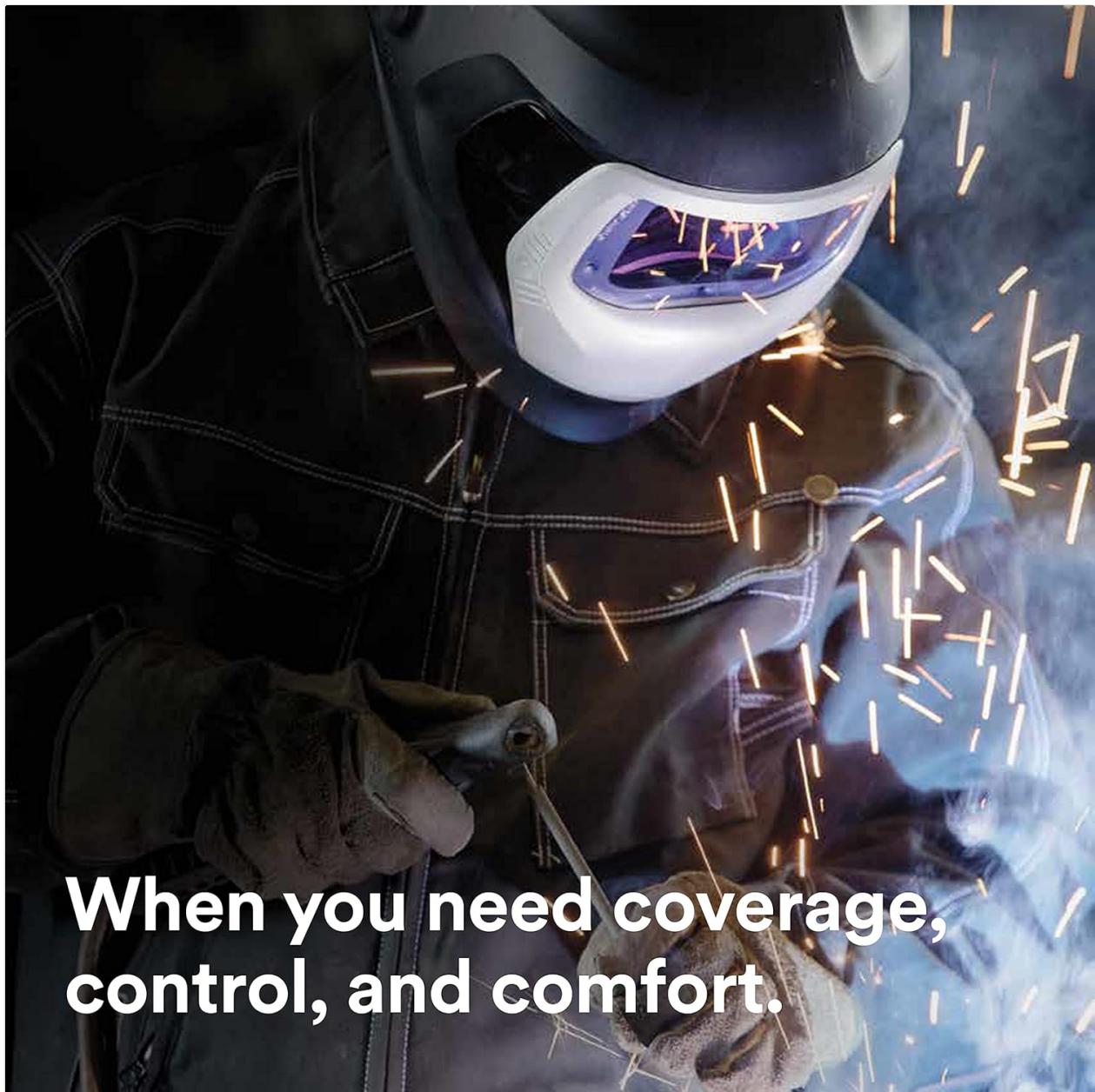
5.5 Helmet Pivot Action

The helmet's smooth up-and-down pivot action can be locked in the up position. A light pull will lower the helmet back down to the working position.



9100X ADF Filter with 2.1 x 4.2 in. viewing area and selectable Shades 5, 8-13 and Shade 3 light state

Close-up of the 9100X Auto-Darkening Filter (ADF) with its 2.1 x 4.2 inch viewing area and selectable shades (5, 8-13, and light state 3).



**When you need coverage,
control, and comfort.**

A welder utilizing the 3M Speedglas 9100 helmet, demonstrating its use in an active welding environment with sparks.

6. MAINTENANCE

Regular maintenance ensures the longevity and proper functioning of your welding helmet.

6.1 Cleaning

- **Lenses:** Clean the inner and outer protective lenses regularly with a soft, clean cloth. Avoid abrasive materials or harsh chemicals that could scratch or damage the lenses.
- **Helmet Shell:** Wipe the helmet shell with a damp cloth.
- **Exhaust Vents:** Ensure the exhaust vents are clear of dust and debris to maintain proper airflow and prevent fogging.

6.2 Battery Replacement

The ADF 9100X uses two Cr2030 3V lithium batteries. Replace them when the low battery indicator appears or if the auto-darkening function becomes unreliable. The batteries are easily accessible for replacement.

6.3 Inspection

Periodically inspect the helmet for any signs of damage, such as cracks in the shell, scratches on the lenses, or wear on the headgear. Replace damaged components immediately to maintain protection levels.

7. TROUBLESHOOTING

If you encounter issues with your 3M Speedglas Welding Helmet 9100, consider the following:

- **Filter Not Darkening:**

- Check battery charge and replace if necessary.
- Ensure sensors are clean and unobstructed.
- Adjust sensitivity settings; increase sensitivity if the arc is not consistently detected.

- **Poor Visibility/Eye Strain:**

- Verify the correct dark shade setting for your welding process and amperage.
- Ensure the protective lenses are clean and free from scratches. Replace if damaged.
- Adjust sensitivity and delay settings to match environmental conditions and welding technique.

- **Helmet Discomfort:**

- Re-adjust headgear straps, ratchet, and pivot positions for a better fit.
- Ensure the padded headband is correctly positioned.

If problems persist, consult the detailed user guide or contact 3M customer support.

8. SPECIFICATIONS

Feature	Specification
Model Number	06-0100-20SW
Viewing Area (ADF 9100X)	2.1 in x 4.2 in (54 mm x 107 mm)
Light State Shade	3
Dark State Shades	5, 8, 9-13 (user selectable)
Switching Time (Light to Dark)	0.1 ms (1/10,000 s) at 73°F (23°C)
Delay Time (Dark to Light)	Approx. 40-250 ms (adjustable)
Side Windows Shade	5
Battery Type	2 x Cr2030 3V Lithium
Approximate Battery Life	2,500 hours
Product Dimensions	11.4 x 11.1 x 10.5 inches
Product Weight	1.37 Pounds
Manufacturer	3M

9. WARRANTY AND SUPPORT

Specific warranty information for the 3M Speedglas Welding Helmet 9100 is not provided in this document. For warranty details, technical support, or service inquiries, please contact 3M customer service directly or visit the official 3M website.

10. ADDITIONAL RESOURCES

For a comprehensive guide and further details, please refer to the official User Guide PDF:

[Download 3M Speedglas Welding Helmet 9100 User Guide \(PDF\)](#)

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