



Speedglas™ Welding Filters 9002V and 9002X



Data Sheet

Description:

The 3M™ Speedglas™ Auto-Darkening Welding Filters 9002V and 9002X are designed to fit into all Speedglas 9000 welding shields including the ones for respiratory systems. The Speedglas welding filters 9002V and 9002X have five selectable shades and four selectable detector sensitivity levels.

- Easy to operate and maintain.
- Five user selectable dark shades 9, 10, 11, 12 and 13.
- Four user selectable levels of sensitivity ensure reliable arc detection.
- Excellent visibility in light state, shade 3, for easy welding preparation and after-treatment.

Applications:

The Speedglas welding filters 9002V and 9002X are designed for most welding applications. Specifically for MMA, MIG/MAG and TIG welding.

Approvals:

The Speedglas welding filters 9002V and 9002X are approved together with Speedglas 9000 welding shields as an Eye and Face protection system. The system meets the Basic Safety Requirements under Article 11A of European Directive 89/686/EEC, **PPE Directive**, and requirements in the European standards (mentioned below) and are thus CE marked.

Standards:

Product:	Standards:	Classifications:
Speedglas welding filter 9002V	EN 379	1/1/1/2
Speedglas welding filter 9002X	EN 379	1/1/2/2
Speedglas outer protection plates		
standard	EN 166	1BT
scratch resistans	EN 166	1BT
high temperature	EN 166	1BT
Speedglas inner protection plate	EN 166	1
Speedglas welding shields 9000		
without SideWindows	EN 175	BT
with SideWindows	EN 175	FT

Optical class

EN 166

1	Optical class
EN 379	
1/2/2/3	Pos 1 Optical class
1/2/2/3	Pos 2 Diffusion of light class
1/2/2/3	Pos 3 Variation of luminous transmittance class
1/2/2/3	Pos 4 Angel dependence of luminous transmittance class (option)

Mechanical Strength

EN 166, EN 175

No symbol	Minimum robustness
F	Low energy impact (45 m/s)
B	Medium energy impact (120 m/s)
T	Tested at extremes of temperature (-5°C and +55°C)

The product was examined at the design stage by: DIN Certco Gesellschaft für Konformitätsbewertung mbH, eye protection and personal protection equipment, Gartenstrasse 133, DE-73430 Aalen, GERMANY. (Notified Body number 0196)

The Speedglas automatic welding filters 9002V and 9002X are in conformity with the provisions of Council Directive 89/336/EEC, **EMC Directive**, and requirements in the European Standards (mentioned below).

The product was examined at the design stage by an accredited laboratory.

Materials

Protection plates: Polycarbonate

Plastics: Polyamide, Polycarbonate

Optical Part: LC-Elements, Glass, Polarizers

Electronics: Printed circuit board assy

Batteries: Lithium 3V Type CR2032

Spare parts and accessories:

Speedglas 9000 outer protection plates:

Standard	426000 (10 pcs 420150)
Scratch resistant	427000 (10 pcs 420100)
High temp	427070 (10 pcs 420170)

Speedglas 9000 inner protection plate:

42 x 91 mm	428000 (5 pcs 420200)
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Auto-Darkening Welding Filters

EN 379:2003 Personal eye-protection – Automatic welding filters.

Protection Plate. Clear Safety Lenses

EN 166:2001 Personal eye-protection – Specifications.

Welding Shields

EN 175:1997 Personal eye-protection – Equipment for eye and face protection during welding and allied process.

Additional standards:

Auto-Darkening Welding Filters

EN 169:2002 Personal eye-protection – Filters for welding and related techniques – Transmittance requirements and recommended use

EN 61000-6-3:2001 Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments

EN 61000-6-2:2001 Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for Industrial environments

53 x 103 mm 428010 (5 pcs 420210)

Batteries:

3V Lithium type CR2032 422000 (2 pcs)

Use Limitations:

Speedglas welding filters 9002V and 9002X are not suitable for laser welding or laser cutting. Speedglas welding shields 9000 are excellent for all positions except heavy duty overhead cutting/welding operation due to the risk of molten metal.

Technical specifications:

Weight:	160 g (welding filter 9002V only) 190 g (welding filter 9002X only) 475 g (9002V incl. welding shield) 505 g (9002X incl. welding shield)
Viewing area:	9002V 42 x 93 mm 9002X 55 x 107 mm
UV/IR protection:	According to shade number 13 (permanent)
Switching time light-dark:	0,1 ms (+23°C)
Opening time dark-light:	60 to 500 ms
Light state:	Shade number 3
Dark state:	Shade number 9, 10, 11, 12 and 13
Fail/Safe (Off) state:	Shade number 5-6
Battery type:	2 x CR2032 (Lithium 3 Volt)
Solar cell:	Yes (9002X only)
Battery life time:	1500 hours (9002V) 3000 (9002X)
Range of temperature	
Use:	-5°C to +55°C
Storage:	-30°C to +70 °C

User instructions:

On/Off

To activate the welding filter, press the **ON** button. After each short press of the **ON** button, the current settings (shade, sensitivity and delay) are displayed by flashing LED's. The welding filter switches off automatically about 60 minutes after welding has been completed. The welding filter can also be switched off manually by pressing the **ON** button and holding it down for a few seconds.

Selection of Shade Number

Five different Shade Number settings are available in the dark state, 9, 10, 11, 12 and 13. In order to see which Shade Number the welding filter is currently set to, momentarily press the **Shade** button. To select another Shade Number, press the **Shade** button again while the LED is flashing, and then keep pressing the button until the LED shows the correct Shade Number.

Setting of detector Sensitivity

Setting the performance of the photo detector system (which responds to the light from the welding arc) is made with the **Sensitivity** button. In order to see which position the welding filter is currently set to, momentarily press the **Sensitivity** button. To select another setting, press the **Sensitivity** button again while the LED is flashing, and continue to press until the LED shows the desired setting.

- Position 1** Least sensitive setting. Used if there is disturbing light from other welders in the vicinity.
- Position 2** Normal position. Used for most types of welding indoors and outdoors.
- Position 3** Position for welding with low current or where the welding arc becomes stable. (eg. TIG welding at low amps)
- Position 4** Extreme photo detector sensitivity. Suitable for very low current welding or pipe welding where part of the arc is obscured from view.

In order to find a suitable sensitivity setting for the detector, start with the normal setting (position 2), that functions in the majority of situations. If the filter does not darken during welding as desired, raise the sensitivity to Position 3 or 4 until a definite shift to dark position takes place. Should a too high sensitivity be selected, it is possible that the filter remains in the dark position after welding is complete due to surrounding light. Should this arise, make an adjustment to a less sensitive setting where the welding filter both darkens or lightens as desired. If the welding filter functions well in Position 2, but darkens due to another welding process being in progress in the vicinity, select Position 1.

Setting of the Delay to the light state

The **Delay** setting controls how fast the filter returns to the light state after welding has finished. In order to see which position it is currently set to, momentarily press the **Delay** button. To select another setting, press the **Delay** button again while the LED is flashing, and continue to press until the LED increments to the desired setting.

Position - This position causes the filter to return to the light state very rapidly and is used for example in spot or tack welding where the welder needs to have a clear view quickly after finishing the weld.

Position I Normal position.

Position + This position extends the delay time almost doubling it over the normal setting and is for use in situations where the weld pool is extremely bright after finishing the weld.

Opening times (ms)

Shade no	Short (-)	Normal (I)	Long (+)
Shade 9:	60	100	150
Shade 10:	60	150	200
Shade 11:	100	200	300
Shade 12:	100	250	400
Shade 13:	100	300	500

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