



Eye & Face Protection

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How ADF's work



Before:

With the shield in the safe down position, the welder has a clear view through the welding filter. Both hands are free and the electrode can be precisely positioned.



During:

Within 0,1 milliseconds of the arc strike, the filter has switched to the dark state.



After:

The filter automatically returns to the clear state after welding is complete, allowing for immediate and safe inspection of the weld pool, as well as preparation for the next weld.

Eye protection that increases your performance

The key to remember with Speedglas Auto Darkening Welding Filters (or ADFs) is consistency. They enable constant, comfortable vision to welders. They provide constant protection from ultraviolet and infrared (UV/IR) radiation. And they consistently auto-switch from clear to dark, and back again, in just the way the welder wants.

Awkward made easier

Speedglas welding filters also eliminate the neck-strain of “shield flipping” while greatly increasing the accuracy of electrode placement. This, in turn, reduces the need for grinding and rework. In addition, welders can get into tight, cramped spaces with their eye and face protection already in place. Their constant, clear view makes even extremely awkward welds a lot easier.

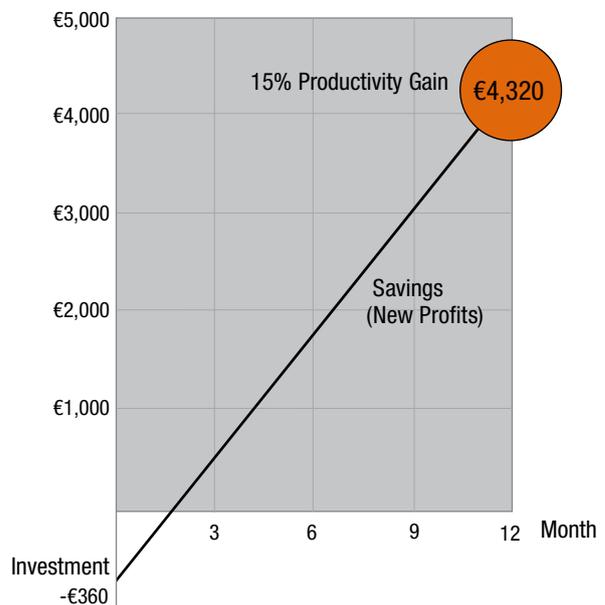
How fast does a Speedglas welding shield pay for itself?

If profitability is defined in terms of protection, one day is enough. But while “protection” sometimes can be difficult to measure, efficiency and weld quality are much easier to gauge. Studies show that welders can increase efficiency substantially when using Speedglas ADFs. Not only can welders work faster when they can always see, but they move more efficiently, placing electrodes more precisely. Most “bad weld starts” can be eliminated. Fewer bad welds mean less grinding and higher overall quality levels.

For example:

Productivity gains are, of course, dependent on the application. A welder doing lots of tack welds will have much greater productivity gains than a welder doing long seam welds. With that said, this example uses a conservative 15% gain in productivity.

If a welder is paid €18 per hour, the welding shield will pay for itself in two months. In one year, the productivity gain will be €4.320 in savings (also known as new profits).



A quick guide to our Auto-Darkening Welding Filters

Speedglas auto-darkening welding filter was one of the first of its type on the market, bringing a new standard to eye protection and comfort for welders. Today there is a great family of Speedglas welding shields, each model with its specific series of welding filters.

Before you select a model, ask yourself:

- How will I use my ADF?
- Do I occasionally change welding process/shade no?
- This is a long-term investment: A variable welding filter offers more flexible features for new working conditions.



Filter Guide

There are a few parameters that affects the performance of an auto-darkening welding filter like type of welding machine, working environments etc. The table below is a general guide

to all our various models due to detector function based solely on welding applications. For more detailed information, please see the following pages.

	Speedglas 9100XX	Speedglas 9100X	Speedglas 9100V	Speedglas SL	Speedglas 9002X	Speedglas 9002V	Speedglas 9002D	Speedglas 100V	Speedglas 100S
Dark state	Shade 5, 8, 9-13 (variable)	Shade 5, 8, 9-13 (variable)	Shade 5, 8, 9-13 (variable)	Shade 8-12 (variable)	Shade 9-13 (variable)	Shade 9-13 (variable)	Shade 9/11 (dual)	Shade 8-12 (variable)	Shade 10 or 11 (single)
MMAW (Electrode)	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized
MIG/MAG	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized
TIG (>20A)	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Suitable	Suitable	Not Recommended
TIG (1A-20A)	Optimized	Optimized	Optimized	Suitable	Suitable	Suitable	Not Recommended	Not Recommended	Not Recommended
Plasma (welding and cutting)	Optimized	Optimized	Optimized	Suitable	Suitable	Suitable	Not Recommended	Not Recommended	Not Recommended
Risk for hidden arc	Optimized	Optimized	Optimized	Suitable	Suitable	Suitable	Not Recommended	Not Recommended	Not Recommended
Tack welding	Optimized	Optimized	Optimized	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Grinding	Optimized	Optimized	Optimized	Not Recommended	Suitable	Suitable	Suitable	Suitable	Suitable

Please note: Regarding Speedglas welding shields and visors for grinding applications, please read recommendations on page 31. Recommendations of shade numbers according to EN 379:2003, see table on page 28.

3M™ Speedglas™ 9100 Welding Shield - a new era of welding comfort

The comfort of the new Speedglas 9100 shield is the result of extensive research and development processes. We've totally changed the interface between the welder's head and the shield's suspension system, eliminating pressure points, optimizing its center of gravity, and adding multiple adjustment options. We also made the shield deeper and wider, providing greater coverage of ears, neck and sides of the head.

Designed for ultimate protection

The Speedglas 9100 shield and auto-darkening filters are based on our more than 25 years of expertise in developing and producing extraordinarily reliable and durable equipment for highly-discriminating professional welders.

We have improved our patented "breathability" design to more efficiently direct exhaled air out of the shield with reduced fogging of the welding filter as an effect. It can also reduce the build-up of heat, moisture, carbon dioxide (CO₂) and stale air within the shield.



Better optics, bigger views

The new auto-darkening filter models are differentiated by size: the viewing area of the extra large Speedglas 9100XX filter is 73x107 mm, making it 30% larger than any other Speedglas filter!

By selecting just the right setting for each task, the welder reduces eye strain and improves the quality of every weld. There are seven dark shade settings to choose from: shade 5 for gas welding/cutting and shade 8 for micro-plasma and low amp TIG welding as well as variable dark shades of 9 to 13. If needed you now also have the option to lock in your shade, including the light state (shade 3) for grinding. A patented comfort mode for tack welding helps to reduce eye fatigue resulting from the eye constantly adjusting to differing light levels.

The shield option with SideWindows increases your vision even further, enabling you to be more aware of peripheral hazards. All of these options are about user comfort, personal preference, and optimum performance for each specific application.

- 30% larger than any other Speedglas welding filter (9100XX filter)!
- Seven variable dark shades (5, 8, 9 -13), including shades for gas welding, micro-plasma, and low-amp TIG.
- Adjustable sensitivity of arc detection.
- Patented tack welding comfort mode.
- Exclusive, patented shade 5 SideWindows option.





A head suspension that shapes to your head

Less pressure, more comfort

Less pressure on your head means improved comfort that lasts all day long. And the more comfortable you are in your protective gear, the more you want to keep it in position, providing you more continuous eye and face protection from workplace hazards.

Working with Western and Chinese medical experts, we mapped out the vulnerable areas of the head and avoided them with our new head suspension design. Then, we created a design that better cradles the head. As a result, you do not need to tighten the headband as much as you do on conventional headbands to firmly hold the shield on your head.

Reducing the possibility of neck strain

We reduced the static and dynamic loads on the neck by lowering the pivot point to just above your ears, the shield stays as close as possible to the top of your head when in the up position.

Technical Data - Ordering information	Speedglas 9100V Welding Filter	Speedglas 9100X Welding Filter	Speedglas 9100XX Welding Filter
Approvals Eye protection Face protection	Conforms to EN 379 EN 175	Conforms to EN 379 EN 175	Conforms to EN 379 EN 175
Classification	1 / 1 / 1 / 2	1 / 1 / 1 / 2	1 / 1 / 1 / 2
Switching time, light-dark	0,1 ms (+23°C)	0,1 ms (+23°C)	0,1 ms (+23°C)
Delay (Switching time dark-light)	User-adjustable 40 – 1300 ms	User-adjustable 40 – 1300 ms	User-adjustable 40 – 1300 ms
UV / IR protection	Shade 13 (permanent)	Shade 13 (permanent)	Shade 13 (permanent)
Viewing area	45 x 93 mm	54 x 107 mm	73 x 107 mm
Light state	Shade 3	Shade 3	Shade 3
Dark state	Shade 5, 8, 9 – 13 (variable)	Shade 5, 8, 9 – 13 (variable)	Shade 5, 8, 9 – 13 (variable)
Fail / Safe state	Shade 5	Shade 5	Shade 5
Solar cell	Yes	Yes	No
Battery type	Lithium 3 Volt	Lithium 3 Volt	Lithium 3 Volt
Battery lifetime	2 800 hours	2 500 hours	2 000 hours
Ordering information Speedglas 9100 welding shield (incl welding filter)	Part no. 50 11 05 (without SideWindows) 50 18 05 (with SideWindows)	Part no. 50 11 15 (without SideWindows) 50 18 15 (with SideWindows)	Part no. 50 11 25 (without SideWindows) 50 18 25 (with SideWindows)

For auto-darkening welding filters there are four parts of the classification: optical class/diffusion of light/transmittance and as option angle dependences.
Note: Regarding Speedglas welding shields and visors for grinding applications, please read recommendations on page 31.

3M™ Speedglas™ SL Welding Shield

At 360 Grams,
our Super Lightweight champ...

The Speedglas SL welding shield is made from a strong lightweight material with excellent protection. Unlike other materials that can absorb moisture and become heavy, the Speedglas SL shield is non-absorbent, so it retains its performance in high humidity.

The headband design uses a pattern of holes for breathability and better conformity to the welder's head. It also accommodates smaller head sizes; its full range is from 50 cm to 64 cm.



reddot design award
winner 2007



Lighter, but with all the performance

Using new liquid crystal designs and manufacturing techniques, we are able to make the Speedglas SL auto-darkening welding filter much lighter than our other models, but with the same outstanding optical quality and switching performance.

- For most arc welding processes – such as MMA, MIG/MAG, TIG and plasma welding.
- Variable (8-12) dark shade.
- Four sensitivity settings.
- Auto ON and OFF.

Technical Data - Ordering information	Speedglas SL Welding Filter
Approvals Eye protection Face protection	Conforms to EN 379 EN175
Classification	1 / 1 / 1 / 2
Switching time, light-dark	0,1 ms (+23°C)
Switching time, dark-light	User-adjustable 60 – 250 ms
UV / IR protection	Shade 12 (permanent)
Viewing area	42 x 93 mm
Light state	Shade 3
Dark state	Shade 8 – 12 (variable)
Weight (incl welding filter)	360 g
Battery type	Lithium 3 Volt
Solar cell	No
Battery life time	1 500 hours
Ordering information Speedglas SL shield incl. welding filter	Part no. 70 11 20

For auto-darkening welding filters there are four parts of the classification: optical class/diffusion of light/transmittance and as option angle dependences.

Note: Regarding Speedglas welding shields and visors for grinding applications, please read recommendations on page 31.





3M™ Speedglas™ 100 Welding Shield

High-end features, low-end price

The easy-to-use Speedglas 100 is the ideal “first” auto-darkening shield for hobby welders, farmers, DIY types, and maintenance or construction workers who weld infrequently but can benefit from the ability to always clearly see with their welding protection in place. Apart from the black/silver shield there are a number of graphic shields available - all with a specific identity.

Single or Variable Shade Filter

The Speedglas 100S-10 and 100S-11 filters have single dark shades of 10 and 11, respectively, and a light shade of 3. The Speedglas 100V filter has five user-selectable dark shades, from shade 8 to shade 12, and a light shade of 3.

- For most arc welding processes – such as MMA, MIG/MAG and many TIG applications.
- Single (10 or 11) shade or variable dark shade (8-12).
- Three sensitivity settings (100V).



Technical Data - Ordering information	Speedglas 100S-10 Welding Filter	Speedglas 100S-11 Welding Filter	Speedglas 100V Welding Filter
Approvals Eye protection Face protection	Conforms to EN 379 EN 175	Conforms to EN 379 EN 175	Conforms to EN 379 EN 175
Classification	1 / 2 / 2 / 3	1 / 2 / 2 / 3	1 / 2 / 2 / 3
Switching time, light-dark	0,1 ms (+23°C)	0,1 ms (+23°C)	0,1 ms (+23°C)
Delay (Switching time dark-light)	150 ms	200 ms	100 - 250 ms
UV / IR protection	Shade 12 (permanent)	Shade 12 (permanent)	Shade 12 (permanent)
Viewing area	44 x 93 mm	44 x 93 mm	44 x 93 mm
Light state	Shade 3	Shade 3	Shade 3
Dark state	Shade 10 (single)	Shade 11 (single)	Shade 8-12 (variable)
Battery lifetime	1 500 hours	1 500 hours	1 500 hours
Battery type	Lithium 3 Volt	Lithium 3 Volt	Lithium 3 Volt
Ordering information Speedglas 100 (black) shield incl. welding filter	Part no. 75 11 10	Part no. 75 11 11	Part no. 75 11 20

For auto-darkening welding filters there are four parts of the classification: optical class/diffusion of light/transmittance and as option angle dependences.
Note: Regarding Speedglas welding shields and visors for grinding applications, please read recommendations on page 31.

3M™ Speedglas™ 9000 ProTop Welding Shield

A combination of safety helmet, welding shield, and auto-darkening filter, especially designed for welders working in areas with overhead hazards, such as cranes, protruding beams and moving machinery. The key to the Speedglas ProTop system is the exclusive pivot mechanism that connects the welding shield to the safety helmet. Traditional welding safety helmets create a heavy forward center-of gravity when the shield is raised; as a result, the user feels off-balance, and the leveraged weight puts additional strain on neck muscles.

- Available with Speedglas 9002 Series welding filters, variable shade 9-13 or dual shade 9/11.
- Speedglas SideWindows option.
- Patented exhaust vents.



3M™ Speedglas™ 9000 FlexView Welding Shield



The Speedglas FlexView welding shield has a big, 120 x 90 mm clear visor that is ideal for precision weld preparation under low light conditions. The users simply lift up the spring-mounted welding filter assembly when welding is finished. The spring holds the auto-darkening filter securely on top of the shield, giving the welder a big, clear view behind the FlexView visor.

- Available with Speedglas 9002 Series welding filters, variable shade 9-13 or dual shade 9/11.
- Speedglas SideWindows option.
- Patented exhaust vents.

3M™ Speedglas™ 9000 Welding Shield



The Speedglas 9000 shield is available as a complete system with Speedglas 9002D welding filter. Previous variable shade models (9002V/9002X) are now replaced by the Speedglas 9100 series welding shield and filters.

- Available as complete shield with Speedglas 9002D welding filter, shade 9/11 (dual). The 9002V and 9002X filters can still be ordered as spares.
- Speedglas SideWindows option.
- Patented exhaust vents.

Technical Data - Ordering information	Speedglas 9002X Welding Filter	Speedglas 9002V Welding Filter	Speedglas 9002D Welding Filter
Approvals Eye protection Face protection	Conforms to EN 379 EN 175	Conforms to EN 379 EN175	Conforms to EN 379 EN 175
Classification	1 / 1 / 2	1 / 1 / 1	1 / 2 / 2
Switching time, light-dark	0,1 ms (+23°C)	0,1 ms (+23°C)	0,4 ms (+23°C)
Switching time dark-light	User-adjustable 60 – 500 ms	User-adjustable 60 – 500 ms	User-adjustable 100 – 200 ms
UV / IR protection	Shade 13 (permanent)	Shade 13 (permanent)	Shade 13 (permanent)
Viewing area	55 x 107 mm	42 x 93 mm	42 x 93 mm
Light state	Shade 3	Shade 3	Shade 3
Dark state	Shade 9 – 13 (variable)	Shade 9 – 13 (variable)	Shade 9/11 (dual)
Fail / Safe state	Shade 5 – 6	Shade 5 – 6	Shade 5 – 6
Solar cell	Yes	No	No
Battery life time	3 000 hours	1 500 hours	1 500 hours
Battery type	Lithium 3 Volt	Lithium 3 Volt	Lithium 3 Volt
Ordering information Speedglas 9000 shield, incl welding filter	Replaced by Speedglas 9100 shield	Replaced by Speedglas 9100 shield	Part no. 40 11 40 (without SideWindows) 40 18 40 (with SideWindows)
Ordering information Speedglas 9000 FlexView shield, incl welding filter	Part no. 44 18 80 (with SideWindows)	Part no. 44 18 70 (with SideWindows)	Part no. 40 00 40 (welding filter) 44 18 00 (welding shield)
Ordering information Speedglas 9000 ProTop shield, incl welding filter	Part no. 48 38 80 (with SideWindows)	Part no. 48 38 70 (with SideWindows)	Part no. 40 00 40 (welding filter) 48 38 00 (welding shield)

For auto-darkening welding filters there are four parts of the classification: optical class/diffusion of light/transmittance and as option angle dependences.

Note: Regarding Speedglas welding shields and visors for grinding applications, please read recommendations on page 31.

Care and maintenance of welding shields and filters

Every day welding sparks, heat, fumes and normal wear-and-tear grind away at your protection equipment. Therefore, we designed all Speedglas products with ease of maintenance in mind. All replacement parts can be installed by hand, without tools. For maximum safety and comfort, make it a regular habit to check and change the following items at intervals recommended below.



Component	Typically replaced	Notes
Outer protection plate	Once a week	Replace anytime the plates becomes deeply pitted, scratched or too dirty to clean with soft cloth or lens paper.
Inner protection plate	Once a month	Regularly clean with a soft cloth and replace if any pits or scratches occur.
FlexView protective plate	Every two weeks	Replace more often if visibility is reduced.
Sweatband	Once a month	Replace more often if sweatband becomes unhygienic.

Important information

Note that higher-than-normal levels of pollutants, heat, and sparks will require more frequent replacement of components. Above information assumes minimum 4 hours usage per day. Ordering information for each series of welding shield can be found in section parts list.