



**TBi Industries**

## TBi ArcVisorPlus

Automatischer Schweißer-Schutzhelm  
*Autodarkening Welding Helmet*



Betriebsanleitung /  
*Operating Instructions*

[www.tbi-industries.com](http://www.tbi-industries.com)

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### Safety instructions

<b>Note</b>		Carefully read the operating instructions for the TBi ArcVisor <sup>Plus</sup> before using the product for the first time. Please keep this manual for future reference.
<b>Danger!</b>		Grave injuries (e.g. to the eyes) may result from ignoring the following safety instructions and warnings. This operating manual must be read thoroughly before using the product and given instructions must be followed at all times.
<b>Read bevor use!</b>		<ol style="list-style-type: none"> <li>1. The accident prevention regulations as well as in-house and national safety-related provisions must be strictly observed.</li> <li>2. The Auto-darkening welding helmet TBi ArcVisor<sup>Plus</sup> may only be used according to its intended use.</li> <li>3. When beginning work, the correct settings and function of the helmet must be tested by igniting an arc for a short time. If necessary, readjust the settings. If there are any doubts if the helmet is working properly, stop using it and contact your dealer.</li> <li>4. The auto-darkening welding helmet must not be used when the filter and sensors are exposed to strong direct sunlight. The reliable detection of the welding arc cannot be guaranteed in this situation.</li> <li>5. This helmet is not suitable for use with Laser or oxyfuel welding, Laser-cutting or for over-head welding.</li> <li>6. The TBi ArcVisor<sup>Plus</sup> helmet does not protect against explosions or corrosive agents.</li> <li>7. The helmet does not protect against strong impact of objects.</li> <li>8. When using the welding helmet while grinding, the auto-darkening function of the helmet must be switched off by setting the slide switch to position "Grind". This will make sure that the work area is always visible. Warning! The helmet does offer little protection against penetration of high velocity particles or hot sparks.</li> </ol>

## Safety instructions

9. The helmet must not be used in temperatures below -5 °C (23 °F) or above 55 °C (131 °F).
10. Check all parts for wear and tear before every use of the helmet. Replace all wear parts on a regular basis. Immediately replace the protective shields if they are scratched, broken or pitted. Before each use of the helmet, press the "Test" button and check the correct functioning of the autodarkening filter.
11. Make sure that the front of the filter (solar cells, opto-electronic sensors) and the protective shields are clean and are not covered by other parts. Otherwise, the filter may not work properly. Protect the filter from liquids and dirt.
12. Do not use any other replacement parts except those listed in the spare parts list of this manual. Do not modify the helmet in any way. Unauthorized modifications or the use of not specified replacement parts will void the CE declaration of conformity. Unsuitable replacement parts may lead to grave injuries of the user (e.g. of the eyes).

## Warranty

Before delivery, our products are carefully checked. We guarantee, that each product is free from defects of material and workmanship at the time of delivery and is functioning according to its intended use for one year after purchase. Consumables are exempt from this warranty.

The warranty does not cover any damages or functional defects resulting from

- overloading, abusing or diverting from intended use of the product, collisions or accidents
- non compliance with instructions stated in this operation manual
- improper installation or assembly
- insufficient maintenance
- modifying the product from its original state
- chemical influences
- normal wear and tear

TBi Industries assumes no liability other than for replacement or repair of faulty parts. If warranty is claimed, the product must be sent to our facilities in Fernwald for checking and repairing. Please contact our sales team first.

The statutory limited warranty is not affected by these provisions.

## Product features

The auto-darkening welding helmet TBi ArcVisor<sup>Plus</sup> has been developed to protect the face and eyes of the welder from spatter and radiation under normal working conditions. The headband is equipped with multiple adjustment possibilities for best adaptation to every welder, an important prerequisite for ergonomic work.

The electronic filter detects automatically the start of welding and will darken the filter within a very short time to the chosen dark shade. In stand-by state, the filter is switched off and in its bright state, so that the welder can see his work. It is possible to deactivate the auto-darkening function and to use the helmet for easy grinding work.

The dark shade can be infinitely adjusted from DIN 9 to DIN 13 by turning the adjustment knob outside the helmet. This allows for optimum adaptation to the work.

Additionally, the sensitivity of the arc sensors and the delay for return to the bright state (after welding) can be adjusted. When welding with high amperage, a longer delay is easier on the eyes, as the weld will glow for a short while.

The filter of the welding helmet TBi ArcVisor<sup>Plus</sup> is equipped with a high-quality UV filter which is always active. This strong UV protection will significantly add to the protection and well-being of the welder.

The helmet is powered by solar cells and two lithium batteries. The batteries can be exchanged, their life time is between 5 to 7 years with typical use.

The electronics will switch off automatically when the helmet is not in use.

## Technical Data

Permitted welding processes	MIG/MAG (GMAW), TIG and Plasma welding, Plasma cutting
Filter dimensions	128 x 102.5 mm
Dimensions of viewing area	98 x 55 mm (3.86 x 2.17 inch)
Bright shade	DIN 4
Dark shade	DIN 9 – 13, infinitely adjustable
UV/IR-protection	always active, DIN 16
Filter quality classification	1/1/1/1
Technical specifications	according to EN379, EN175 and ANSI / ISEA Z87.1
Response time (bright to dark)	1 / 20'000 s (typical)

**Technical Data**

Opening delay (dark to bright)	0.3 – 0.9 sec. (adjustable short "S" / medium "M" / long "L")
Sensor sensitivity	infinitely adjustable
Operation mode switch	auto-darkening function can be deactivated for grinding
Power supply	Solar cells and two lithium batteries, CR2450
Operating temperature	-5 °C to +55 °C (23 °F to 131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to 158 °F)
Weight	470 g

Helmet and filter are marked with the CE-sign and are in compliance with European norms EN379, EN175 and ANSI / ISEA Z87.1-2010.

**Preparing the helmet**

**Headband adjustment**

Adjust the headband so that a comfortable position of the helmet is achieved:

**Hight:**

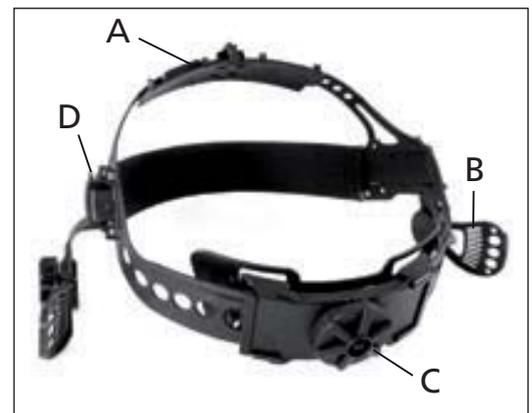
The helmet should be positioned low on the head. If necessary adjust the length of the upper strap (A).

**Distance from the eyes:**

The filter should be close to the eyes. The headband can be fixed in 3 positions (D). Make sure to set the same position on both sides.

**Head circumference:**

The headband must sit tight, but comfortable. Turn the knob (C) to adjust. In the lowered position, the filter should be parallel to the face. If necessary, the fixtures (B) on both sides can be adjusted in different positions. Use the same setting on both sides.



**Setting the operating mode**

On the outside of the helmet, there is a sliding switch for the operating mode (E). If the switch is set to the position "Grind", the helmet can be used for easy grinding.

The safety instructions at the beginning of this manual must be observed. For welding, the sliding switch must be set to the position "Weld", otherwise the filter will not darken.

## Preparing the helmet

### Danger!



When welding without sufficient eye protection, grave injuries to the eyes of the welder may occur. Make sure that the mode switch is set to position "Weld" before starting to weld.

### Dark shade setting

The dark shade can be infinitely adjusted between DIN 9 and DIN 13 by turning the adjustment knob (H). This allows for perfect adaptation to different welding tasks. Please refer to the following table for recommended settings.

Welding prozess	Welding current [A]													
	0.5	2.5	10	20	40	80	125	175	225	275	350	450	500	
Stick Electrode					9	10	11	12	13	14				
MIG (Steel)							10	11	12	13	14			
MIG (Aluminium)							10	11	12	13	14	15		
TIG			9	10	11	12	13	14						
MAG					10	11	12	13	14	15				
Cored wire							10	11	12	13	14	15		
Plasma cutting							11	12	13					
Plasma welding			8	9	10	11	12	13	14	15				

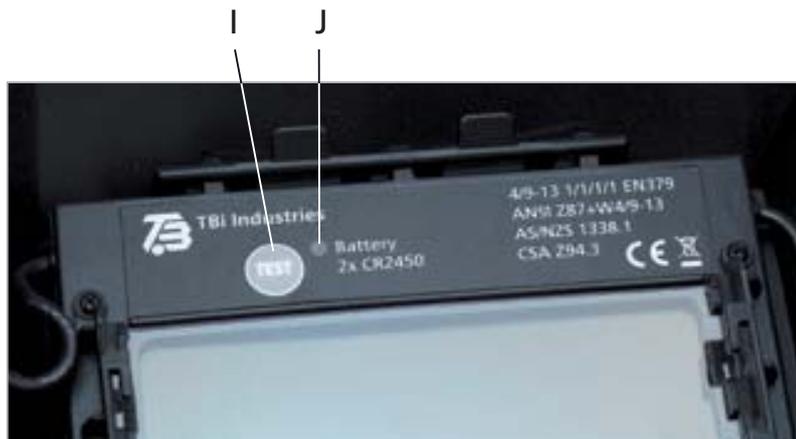


### Sensitivity setting

The sensitivity of the optical sensors that detect the welding arc can be infinitely adjusted with the knob (G) „Sensitivity“. The sensitivity should be adjusted corresponding to the amount of surrounding light and the welding parameters. Correct adjustment is crucial for the reliable detection of the arc. If the filter does not darken during welding, increase the sensitivity. If it darkens without a reason, decrease sensitivity.

Low setting "Lo": The sensors are not very responsive to light. This setting is suitable for very bright and pulsating arcs (MIG/MAG welding) or intense glowing of the weld or very little ambient light during welding.

<b>Preparing the helmet</b>	
<b>Sensitivity setting</b>	<p>High setting "Hi": The sensors are very responsive to light. This setting is suitable for a constant arc (TIG welding) or when welding with a lot of ambient light.</p> <p>To provide maximum protection, the sensitivity setting must always be as high as possible!</p>
<b>Setting of the opening delay</b>	<p>Use the sliding switch (F) „Delay “ on the side of the helmet to adjust the opening delay (time after the end of welding to switch from dark to bright shade). The delay time can be set in three steps from approx. 0.3 sec. to 0.9 sec.</p> <p>Setting Short „S“: Corresponds to an opening delay of approx. 0.3 sec. to 0.5 sec. This setting is useful for tack welding and short welds and generally when working with lower amperages.</p> <p>Setting Long „L“: Corresponds to an opening delay of approx. 0.6 sec. to 0.9 sec. Choose this setting for high amperage welding to allow the work to cool down before the filter opens.</p> <p>The setting Medium „M“ corresponds to approx. 0.4 sec. to 0.6 sec. and is in between the other two settings.</p>
<b>Testing the auto-darkening filter</b>	<p>By pressing the button (I) „TEST“ on the inner side of the filter, the correct darkening and the state of the batteries can be checked.</p> <p>As long as the button is pressed, the filter must be dark and the red LED (J) „Battery“ must be on. If the filter does not darken, or if the red LED is not lit, the helmet must not be used. Please see the section „Troubleshooting“ for possible actions to solve this problem.</p>



## Preparing the helmet

### Replacing the auto-darkening filter

Open the latches (K) above and below the filter and remove the filter from the helmet. Pull off both knobs (G,H) from the helmet and unscrew the locking nuts below, then remove the shade-box (N) and the sensitivity-box (P) on the inside of the helmet. Install the new filter by performing the reverse steps.



### Replacing the Lithium batteries

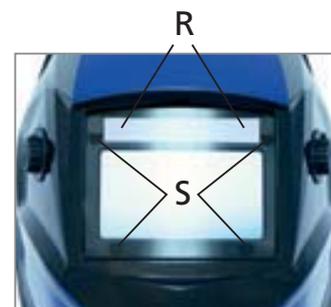
Unlock the battery compartment by simultaneously pressing on both sides, pull out the compartment downwards. Replace the batteries by the same type, make sure to insert them with the correct polarity as indicated by the symbol „+“ on the compartment. Reinstall the battery compartment in the helmet and lock by firmly pressing it in place. Always replace both batteries!



<b>Use</b>	
<p><b>Danger!</b></p> 	<p>Welding without sufficient eye protection may lead to grave injuries to the eyes.</p> <p>If the filter does not darken immediately when igniting an arc, stop welding immediately. If you are not able to solve the problem with the troubleshooting guide at the end of this manual, contact your dealer or TBi Industries.</p> <p>The helmet must not be used when strong sunlight falls onto the front of the filter. In this situation, the correct detection of the arc cannot be guaranteed.</p>
<p><b>Inspection of the helmet</b></p>	<p>Prior to starting with welding, the welder must check the following items:</p> <ul style="list-style-type: none"> <li>- Will the filter darken correctly? (Press button „Test“, see section “Preparing the helmet”)</li> <li>- Are the four sensors at the front of the filter clean?</li> <li>- Are the protective shields (before and behind the filter) clean and without damage?</li> <li>- Is the filter firmly attached to the helmet?</li> <li>- Is the helmet in perfect working order?</li> <li>- Are there any cracks or openings in the helmet where light shines through?</li> <li>- Is the helmet set up properly for the planned welding task and is the slide switch in the position “Weld”?</li> </ul> <p>If any damages are found, they must be expertly repaired before beginning work. If there are any doubts if the helmet will function properly, do not use it any more. Contact your specialist dealer for support.</p>
<p><b>Use</b></p>	<p>Before beginning work, test correct settings and function of the helmet by igniting an arc for a short time only. If necessary, readjust settings. In between welding, the helmet can be easily raised. After lowering it again, it is ready for welding.</p>
<p><b>Storage after use</b></p>	<p>After use, please set the sensitivity to “Lo” and store the helmet with the filter facing downwards, to avoid unnecessary activation of the filter. The electronics will switch itself off to save energy.</p>
<b>Maintenance and Care</b>	
	<ul style="list-style-type: none"> <li>- Prior to every use of the helmet, check all parts for wear or damage. Replace all consumable parts on a regular basis. Damaged parts must be replaced before the next use of the helmet.</li> </ul>

## Maintenance and Care

- Regularly clean your helmet, the protective shields and the front of the filter, including solar cells and optical sensors, using a soft towel lightly wetted with warm water and mild soap. Keep the solar cells (R) and sensors (S) clean at all times and do not cover them with any object. The welding arc must be detected by the optical sensors in order for the helmet to function.
- Never submerge the helmet or filter in water or other liquids. Do not use cleaning agents that contain abrasive particles, solvents or oil.
- Protect the autodarkening filter against liquids and dirt
- Immediately replace the protective shields when scratches, cracks or other damages are visible.
- Immediately replace the filter when it is damaged or does not function properly.
- Do not try to open the filter, there are no servicable parts in side.



## Trouble shooting guide

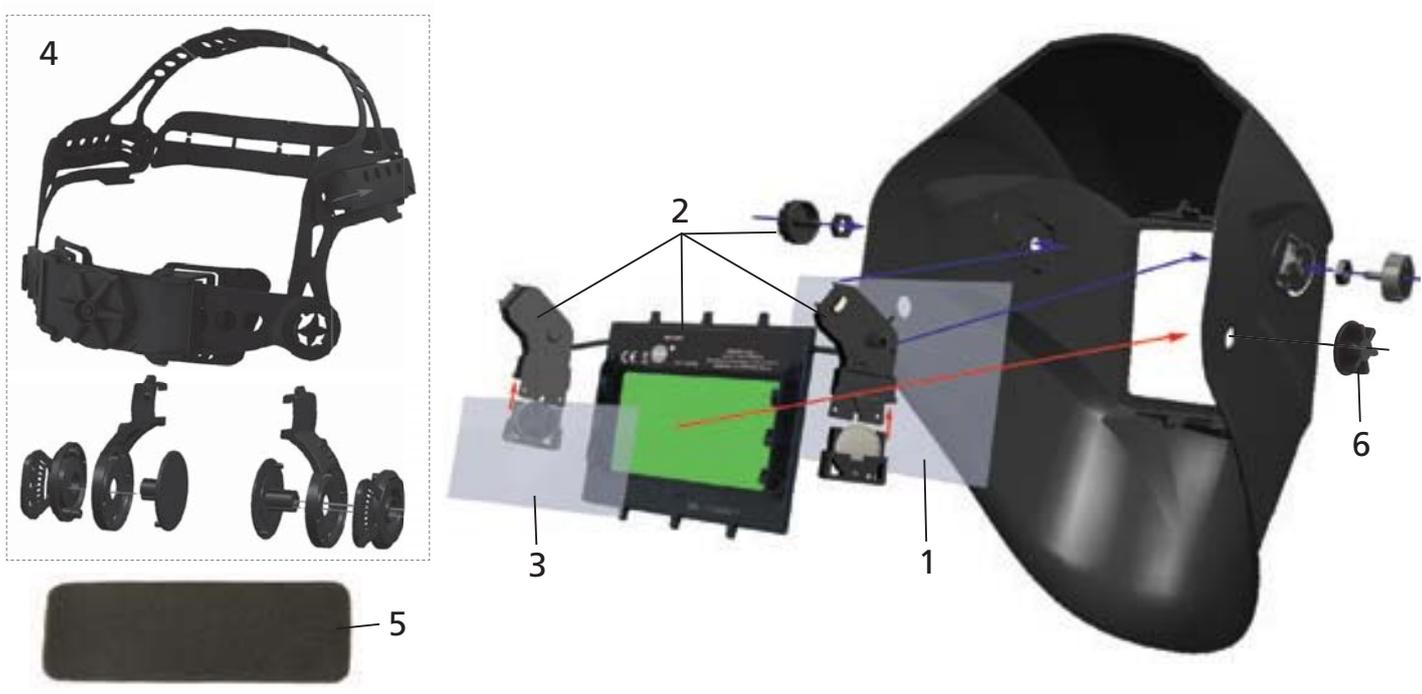
Fault	Possible cause	Solution
Uneven darkening	Headband / distance to eyes has not been set to the same distance on left and right side	Choose the same setting on both sides
The filter does not change to dark state or flickers	Mode switch is in position „Grind “	Switch to position „Weld“
	Protective shield or sensors are dirty or covered	Clean, if needed replace protectiv shield
	Welding current is too low	Increase „Sensitivity“ by turning the knob into direction „Hi“ Bring the switch „Delay“ into position „L“
	Batteries drained	Press button „TEST“ on the filter, if the red LED does not light up, proceed as detailed below.
	Filter defective	Press button „TEST“ on the filter, the filter must darken. If the filter does not darken, it is defective and further use is not permitted. Risk of severe eye injury!
Unknown fault	Filter is defective and further use is not permitted. Risk of severe eye injury!	

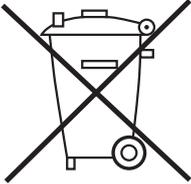
## Trouble shooting guide

Fault	Possible cause	Solution
Filter reacts slowly	The helmet is used at low temperatures	The helmet must not be used below -5 °C (23 °F)
Low visibility through the filter	Protective shields or the filter window are dirty or scratches	Clean, replace if necessary
	Too high dark shade selected	Select a dark shade corresponding to the application
	Not enough ambient light	Improve illumination of the work area
When pressing the button „Test“ the red LED does not light up	Batteries are drained	Install new batteries
	Wrong polarity of the installed batteries	Check and install correctly
	Battery compartment not installed or not locked	Install and lock battery compartment
	No batteries installed	Install new batteries

## Replacement parts

Parts	Pos.	Description	Part no.
	1	Outside protective shield	714P002073
	2	Autodarkening filter, DIN 9 -13	714P102092
	3	Inside protective shield	714P002074
	4	Head gear for helmet (without cushion)	714P002075
	5	cushion	714P002077
	6	Mounting set for head gear outside	714P002076
	-	Autodarkening welding helmet, TBi ArcVisor <sup>Plus</sup>	714P101024



<b>Disposal</b>	
<p><b>European regulations</b></p> 	<p>The device contains installed buffer batteries of the type lithium button cells. These batteries can be removed or exchanged by the end user.</p> <p>In accordance with European regulations, the device is marked with the following symbol, prohibiting disposal with normal household waste.</p>
<p><b>Regulations in other countries</b></p>	<p>For proper disposal of the device, please hand it over to a suitable recycling company. Please respect the applicable laws and regulations in your country concerning the disposal of electronic waste and batteries.</p>

**CE-Konformitätserklärung**  
*CE-Declaration of Conformity*

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Wir / We,  
TBI Industries GmbH, Ruhberg 14, 35463 Fernwald-Steinbach,  
erklären in alleiniger Verantwortung, dass die Produkte /  
*declare in our sole responsibility, that the products*

Automatischer Schweißerschutzhelm TBI ArcVisor Plus /

*Automatic welding helmet TBI ArcVisor Plus*

Artikel-Nr. / Part-No: 714P101024 / 714P101023

Filterkassette / Filter TBI ArcVisor Plus, 714P102092

Konform sind mit den Richtlinien / *conform to the directives*

**89/686/EWG Richtlinie persönliche Schutzausrüstung /**

***Personal protective equipment Directive***

**2011/65/EU RoHS-Richtlinie / *RoHS Directive***

Angewendet wurden die Normen / *The following standards have been applied:*

**EN 379:2003 + A1: 2009, EN 175:1997**

Die Erfüllung der Normen wurde von einem externen Prüfinstitut bestätigt. / *The conformity with the mentioned standards has been confirmed by an external testing institution.*

Fernwald, 7.10.2015



Oliver Binzel  
Geschäftsführer