

USER'S MANUAL



Professional Auto-Darkening WELDING HELMET



**For Generation 2
Model Nos.
4-1050, 4-1070,
4-1071, 4-1072,
4-1073, 4-1074**

Warning: Read and understand all instructions before using! Severe personal injury could occur if the user fails to follow the aforementioned warnings, and /or fails to follow the operating instructions.

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Auto-Darkening Welding Helmet

WARNING

Read and Understand All Instructions Before Using!

This Auto-Darkening Welding Helmet is designed to protect the eyes and face from sparks, spatter, and harmful radiation under normal welding conditions. Auto-darkening filter automatically changes from a light state to a dark state when an arc is struck, and returns to the light state when welding stops.

The auto-darkening welding helmet comes ready for use. The only thing you need to do before welding is to adjust the position of the headband and select the correct shade number for your application.

BEFORE WELDING

1. Check the front cover lens to make sure it is clean, and that no dirt is covering the four sensors on the front of filter cartridge. Also, check the front/inside cover lens and the front lens retaining frame to make sure that they are secure.
2. Inspect all operating parts before use for signs of wear or damage. Any scratched, cracked, or pitted parts should be replaced before using again to avoid severe personal injury.
3. Check for light tightness before each use.
4. Select the shade number required by turning the shade knob (see the Shade Guide Table No. 1). Finally, be sure that the shade number is the correct setting for your application.
5. Adjust headband so the helmet is seated as low as possible on your head and close to your face. Adjust helmet's angle when in the lowered position by turning the adjustable limitation washer.

DARK SHADE NUMBER SELECTION

The shade number can be set manually between 9(8)-13 (12). Check the Shade Guide Table to determine the proper shade number for your application. Select a shade number by turning the shade knob until the arrow points to the required setting (see the Shade Guide Table No. 1).

SHADE GUIDE TABLE (No. 1)

Welding Process	Arc Current (Amperes)														
	0.5	2.5	10	20	40	80	125	175	225	275	350	450			
	1	5	15	30	60	100	150	200	250	300	400	500			
SMAW					9	10		11		12		13		14	
MIG (heavy)							10	11		12		13		14	
MIG (light)							10	11		12		13		14	15
TIG, GTAW				9	10		11		12		13			14	
MAG/CO₂							10	11		12		13		14	15
SAW									10	11	12	13	14	15	
PAC										11		12		13	
PAW				8	9	10	11	12		13			14		15

NOTE: *SMAW-Shielded Metal Arc Welding.

*MIG (heavy)-MIG on heavy metals.

*MIG (light)-MIG on light alloys.

*TIG, GTAW-Gas Tungsten Arc Welding.

*SAW Shielded Semi-Automatic Arc Welding.

*PAC-Plasma Arc Cutting.

*PAW-Plasma Arc Welding.

WARNING: This Auto-Darkening Welding Helmet is not suitable for LASER WELDING or OXYACETYLENE WELDING.

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TECHNICAL SPECIFICATIONS

Viewing Area:	3.86" x 1.69" (98 x 43mm) Model No. 4-1050
	3.86" x 2.17" (98 x 43mm) Model Nos. 4-1070, 1071, 1072, 1073
Size of Cartridge:	4.33" x 3.54" x 0.35" (110 x 90 x 9mm)
UV/IR Protection:	Up to shade DIN16 at all times
Light State:	Shade DIN4
Variable Shade:	From DIN9 to DIN13, four infrared detectors (sensors)
Power Supply:	Solar cells and lithium battery
Power On/Off:	Fully automatic
Sensitivity:	Can be continually adjusted from outside helmet
Function:	"WELDING"/"GRINDING" can be selective
Reaction Time:	0.00005 sec (1/20,000s)
Delay Time:	Long-Middle-Short (outside control-it can vary at 0.3s ~ 0.9s)
Operating Temperature:	23 °F to 131 °F (-5 °C to +55 °C)
Storing Temperature:	-4 °F ~ 158 °F (-20 °C ~ +70 °C)
Helmet Material:	High-impact resistant Polyamide (Nylon) DIN EN 175 B CE
Total Weight:435g or 470g



4. Variable Shade Control | Delay time Sensitivity Control | Grinding Control

1) Welding/Grinding Handle: when grinding, the helmet shell cannot bear the welding spatter which is more than 43grams and exceeding 120m/sec. The helmet meets standard DIN EN 175:1997 (B impact Level). For other body parts helmet cannot protect, please wear other safety products for protection.

2)Sensitivity Knob: Before welding, please adjust the sensitivity to high position, if encountering the interference of Lighting lamp(the filter is darkening while not welding),please adjust the sensitivity towards low position slightly until the filter returns to light state (please don't make the helmet towards to light lamp source during this process, should towards to welding work piece). During welding, the sensitivity knob should be adjusted as high as possible, or it will affect the darkening speed of filter.

Attention: Operator must stop using the helmet immediately and contact with the dealer in time if the filter cannot be darkening or the darkening speed is slow or the filter is flash.

3) Shade Knob-before welding, please adjust the Shade Knob to proper shade no. based on welding process and welding amperage. to make primary welding for test (Seeing the Shade Guide Table No. 1). If the shade of filter is too darkening or too light, please adjust the Shade Knob slightly to correct position till the eyes can see the welding spot which is not glaring and can see

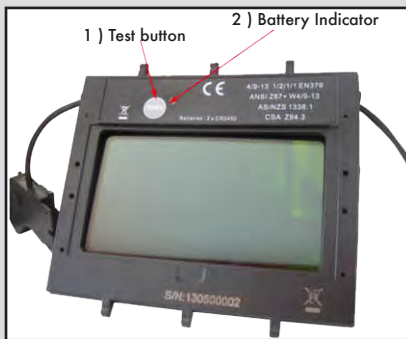
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welding molten pool. Please kindly note that it will damage the eyes if using welding helmet under incorrect shade no.(too darkening or too light) for a long time.

Attention: If the filter cannot be darkening or the darkening shade is not enough or the darkening speed is slow or the filter is flash, for such abnormal work, please find the reason immediately. If operator cannot solve the problem, please must stop using the helmet immediately and contact with the dealer in time.

4) Delay time Handle –There are three position (Long, Middle, Short), it can adjust the switching time of filter from dark state to light state, avoid the da-mage to eyes from the residual arc of welding molten pool due to too fast switching time to light state when welding is end (Break arc). The delay time is 0.3s-0.5s (at short position); 0.4s-0.6s (at middle position); 0.6s-0.9s (at long position). The switching time may vary due to different welding types and different sensitivity setting even delay time handle is at the same position. If the filter is flash under low current welding, please adjust the delay time handle to long position, this can help to solve this problem.



5. Test

1) Test button –It can test if the lithium battery is with power and if the filter is under normal work. If the battery indicator is lightening (red) and the filter can be darkening when pressing down test button, it means the filter is under normal work.

If the battery indicator is lightening but the filter is not darkening, it means there is some problem with the filter; please don't use this filter anymore.

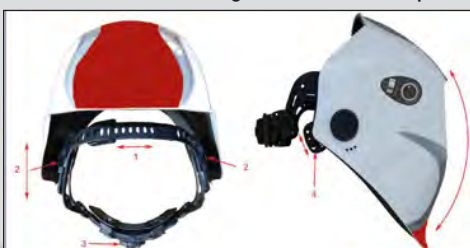


6. Magnifying lens:

The filter can be assembled with magnifying lens conveniently, please purchase magnifying lens if need it.

7. ADJUSTING HEADGEAR

1) Top head band To move the Head Band in the direction of arrow(as picture) to adjust the depth of headband. According to user's headshape adjust to a suitable position.



2) Distance of Harness from filter lens To adjust the distance from the welder's eyes to filter lens (left-right Symmetrical adjustment).

3) Back of headband to adjust the size of headband (loose or tighten).

7. ADJUSTING HEADGEAR (Continued)

4) Incline angle adjustment to adjust the incline angle of helmet relative to the welder's face, and adjust the height of welder's eyes relative to filter lens.

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• This model is designed & equipped with a special turnover (up & down) headband mechanism. When welder turns over the helmet to welder's head top, the headband mechanism makes helmet's gravity center to be more lower, and be coincided with the center of welder's head. The design of welding helmet greatly lowers the fatigue of welder's head (& neck) and make welder feel more comfortable than before while working.

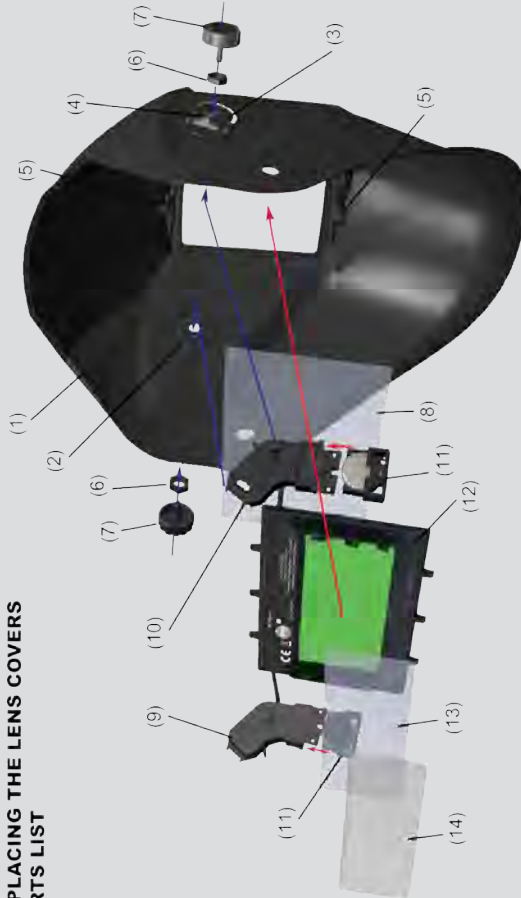


• Headband has been set unevenly and there is an uneven distance from the eyes to the filter's lens (Reset headband to reduce the difference to filter).

- LENS AND HELMET MAINTENANCE**
- Replace the front cover lens if it is damaged (cracked, scratched, soiled or pitted).
 - Replace the inside cover lens if it is damaged (cracked, scratched, soiled or pitted).
 - Clean the filter's lens with a clean, lint-free tissue or cotton cloth.
 - Do not immerse the lens in water or any other liquid. Never use abrasives, solvents or oil-based cleaners.
 - Never try to open the filter.

Model #	Item Description	Fits Model #
4-1191	Front Cover Lens	4-1050; 4-1070 to 4-1074 Gen. 2
4-1181	Inner Cover Lens	4-1050 Gen. 2
4-1186	Inner Cover Lens	4-1070 to 4-1074 Gen. 2
4-1169	1.50 diop. Magnifier Lens	4-1050; 4-1070 to 4-1074 Gen. 2
4-1170	1.50 diop. Magnifier Lens	4-1050; 4-1070 to 4-1074 Gen. 2

8. REPLACING THE LENS COVERS & PARTS LIST

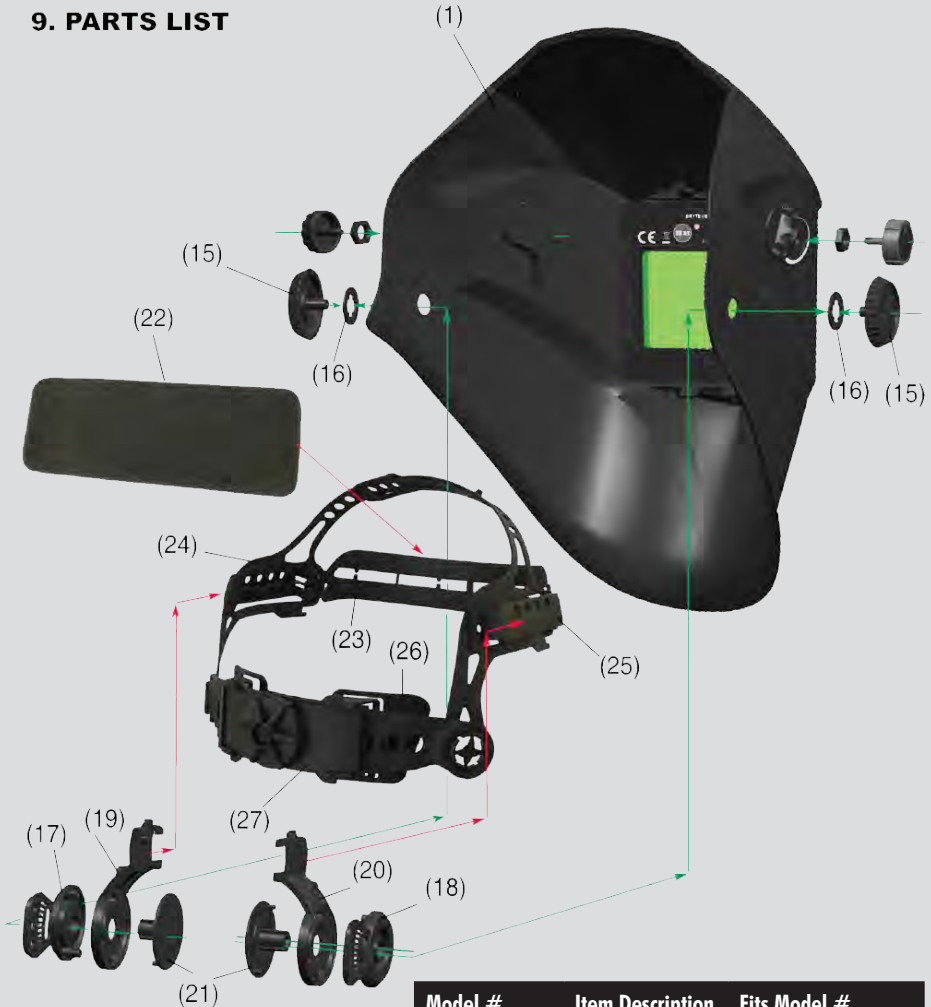


- (1) Shell (welding mask) (2) Shade scale plate (3) Sensitivity scale plate (4) Welding/grinding Handle (5) Filter setting frame (6) 2x shade nut (7) Shade knob/sensitivity knob (8) Front cover lens (9) Shade-box (10) Sensitivity-box (11) Lithium battery house (12) Auto darkening filter cartridge (13) Inside cover lens (14) Magnifying lens (Can select if need it or not)

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9. PARTS LIST



Model #	Item Description	Fits Model #
4-1203	Replacement Headgear	4-1050; 4-1070 to 4-1074 Gen. 2

- 1) Shell (welding mask) 15) 2x block nut 16) 2x check washer
 17) Angle adjusting shim (left) 18) Angle adjusting shim (right)
 19) Headband rack (left) 20) Headband rack (right) 21) Headband fixing screw rack
 22) Sweatband (cloth) 23) Front band
 24) Left band 25) Right band 26) back elastic pad 27) Headband and regulator assembly (release –tighten)

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DO's AND DON'Ts

- NEVER place this helmet and auto-darkening filter on a hot surface.
- NEVER open or tamper with the auto-darkening filter.
- Before operating, make sure the function-setting switch is set at the suitable location; "WELDING"/"GRINDING". The auto-darkening welding helmet will NOT PROTECT against severe impact hazards.
- This helmet will not protect against explosive devices or corrosive liquids.
- Don't make any modifications to either the filter or helmet, unless specified in this manual. Don't use replacement parts other than those specified in this manual. Unauthorized modifications and replacement parts will void the warranty and expose the operator to the risk of personal injury.
- Should this helmet not darken upon striking an arc, stop welding immediately and contact your supervisor or K-T Industries.
- Don't immerse the filter in water.
- Don't use any solvents on filter screen or helmet components.
- Use only at temperatures: 23°F ~ 131°F (-5°C ~ +55°C).
- Storing temperature: -4°F ~ 158°F (-20°C ~ +70°C).
- Protect filter from coming in contact with liquid and dirt.
- Clean filter surfaces regularly; do not use strong cleaning solutions. Always keep sensors and solar cells clean, using a clean, lint-free tissue or cloth.
- Replace cracked/scratched/pitted front cover lens regularly.
- Warning: This auto darkening welding helmet is not suitable for laser welding or oxy-aceitylene welding.

Severe personal injury could occur if the user fails to follow the aforementioned warnings, and/or fails to follow the operating instructions.

COMMON PROBLEMS AND REMEDIES

- Irregular Darkening/Dimming
 - Headband has been set unevenly and there is an uneven distance from the eyes to the filter's lens (reset headband to reduce the difference to filter).
- Auto-Darkening Filter Does Not Darken or Flickers
 - Front cover lens is soiled or damaged (change lens cover).
 - Sensors are soiled (clean the sensor's surface).
 - Welding current is too low (turns the switch to the "Long" position).
- Slow Response
 - Operating temperature is too low (do not use at temperatures below 23°F (-5°C)).
- Poor Vision
 - Front/inside cover lens and/or filter lens are soiled (change lens).
 - There is insufficient ambient light.
 - Shade number is incorrectly set (reset the shade number).
- Welding Helmet Slips
 - Headband is not adjusted properly (readjust headband).

WARNING:

Operator must stop using the auto-darkening welding helmet immediately if the above-mentioned problems cannot be corrected.

CONTACT K-T INDUSTRIES.

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PRODUCT FEATURES

- This product is in full conformity with related DIN EN 379, DIN EN 175 safety standards and ANSI/ISEA Z87.1.2010 safety standards. Filter CE class: 1/2/1/1.
- This model is designed and equipped with a special up & down headband mechanism. When welder turns the helmet over to welder's head top, the headband mechanism makes helmet's gravity center to be lower, and coincide with the center of welder's head. The design of this welding helmet greatly lowers the fatigue of the head and neck, making the welder feel more comfortable while at work.
- The moment welding begins, the filter screen automatically changes from clear to dark in only 1/20,000 of a second.
- Dark to Clear Delay Adjustment: Operator can vary the time for the filter to return to clear state.
- Outside sensitivity adjustment is more convenient for the operator while at work.
- At the moment of welding stops, the filter screen automatically changes from dark to light state according to your preset delay time. (turning the time-setting switch to the "short" position - it can vary at 0.25s ~ 0.35s; turning the time-setting switch to the "middle" position - it can vary at 0.35s ~ 0.5s; turning the time-setting switch to the "long" position - it can vary at 0.5s ~ 0.8s).
- "WELDING"/"GRINDING" can be selective. Be sure that the mode switch is on WELDING position before welding.
- The helmet utilizes high performance solar cells as its power supply, and has two built-in 3V lithium batteries as power back-up. No change of battery is required. The battery life is raised to a new limit. Under normal welding conditions, users can expect battery lifetime of more than 6 years.
- Variable shade (DIN) from DIN9 (8) to DIN13 (12) is adjusted at the turn of a shade knob (shade variable).
- The product is in full conformity with related DIN, ISO, EN safety standards and ANSI Z87.1-2003 standards.
- The ultra high performance of UV/IR auto-darkening filters provide full protection for the user's eyes & face against UV/IR radiation during the entire welding process, even in the light state. The UV/IR protection level is up to Shade 16 (DIN) at all times.

Materials may come into contact with the wearers skin which may cause allergic reactions in some instances.

PRODUCT WARRANTY

The manufacturer's sole obligation under this warranty is limited to making replacement or repairs within 90 days of purchase.

This warranty does not cover product malfunctions or damages resulting from product tampering, misuse or abuse. Please follow the operating instructions carefully to maintain this warranty. Failure to do so will void the warranty. The manufacturer shall also not be held liable for any indirect or consequential damages arising out of the use of this product.

A copy of the original receipt and serial number (located on filter cartridge's surface) are required as proof of purchase. Please carefully maintain this warranty. This warranty is nontransferable and extends only to the original buyer purchasing the products directly from the manufacturer or through its authorized distributors, dealers, or agents.

K-T Industries, Inc.

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