

CHICAGO **welding**
ELECTRIC® **systems**

AUTO-DARKENING WELDING HELMET with ANSI Approved Lens

Model 46092

ASSEMBLY AND OPERATING INSTRUCTIONS



NOTE: YOUR Helmet may appear different from the Helmet pictured in this manual.

The changes are only cosmetic, the warnings, operation instructions, and maintenance procedures will remain the same.



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Visit our Web site at <http://www.harborfreight.com>

**TO PREVENT SERIOUS INJURY OR BLINDNESS,
READ AND UNDERSTAND ALL WARNINGS
AND INSTRUCTIONS BEFORE USE.**

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For technical questions and replacement parts, please call 1-800-444-3353

Revised Manual 04/05; Revised Cover 06/05

Specifications

Welding Protection Types	For All Arc Welding Processes; NOT for Laser Welding or Oxyacetylene Welding/Cutting
Shell Material	High Impact Resistant Plastic Polyamide Nylon
Shell Colors	Black
Shade Range	9 to 13; Clear State: #-3/4
Infrared Protection	780-1400 nm
Ultraviolet Protection	up to shade 14 all the time
Viewing Area	6.29 Square Inch
Lens Switching Speed	1/25,000 second
Power Source	Solar Cells (rechargeable battery included, no additional battery required)
Weight	1.05 Lbs.
Power ON / OFF	Fully Automatic
Operating Temperature	23 to 131° F
Storing Temperature	-13 to 167° F
ANSI Approved Lens	

Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.


Safety Warnings and Precautions

WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Read all instructions before using this tool!

- 1. Do not use the Welding Helmet if the lens is cracked, if the lens or sensors are dirty, or if the lens or front retaining frame is loose.**
- 2. Keep work area clean.** Cluttered areas invite injuries.
- 3. Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lit. Do not use electrically-powered tools in the presence of flammable gases or liquids.

Safety Warnings and Precautions (continued)

4. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
5. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
6. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
7. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective gear is essential to protect against welding rays, some examples are: a leather welding apron, welding sleeves, jeans without cuffs, work boots. Wear restrictive hair covering to contain long hair.
8.  **Use eye and ear protection. When welding, wear ANSI approved impact safety goggles under the Auto-Darkening Welding Helmet.** Wear an ANSI approved respirator and hearing protection when welding.
9. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
10. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
11. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not operate properly.
12. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts can render helmet ineffective, possibly causing eye damage, and will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
13. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
14. **Maintenance.** For your safety, service and maintenance should be performed regularly only by a qualified technician.

Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

WARNING: This product is used with welding or similar applications that produce chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code 25249.5 et seq.)

Welding Helmet Specific Safety Warnings and Precautions


1. **People with pacemakers should consult their physician(s) before welding.** Electromagnetic fields (such as those caused by welding) in close proximity to a heart pacemaker could cause interference to or failure of the pacemaker.
2. **This helmet provides protection for intended purposes only.**
 - The Welding Helmet is not suitable for laser welding processes.
 - The Welding Helmet will not protect against severe impact hazards, including fragmenting grinding disks; never use Welding Helmet when grinding.
 - The Welding Helmet will not protect against explosive devices or corrosive liquids.
3. **Use only at temperatures from 23 to 131° F.**
4. **Maintain the helmet and lens correctly to help ensure reliable protection.**
 - **Clean filter's surfaces regularly.** Always keep sensors and solar cells clean using a clean lint-free tissue/cloth. Don't use any solvents on filter's screen or helmet components. Protect filter from liquid and dirt contact. Don't immerse the filter in water.
 - **Should the Auto-Darkening Welding Helmet not darken upon striking an arc, stop welding *immediately* and have the helmet checked by an authorized service technician.**
 - **Regularly replace the Front Lens Cover (1) if it becomes cracked, scratched, pitted, or otherwise damaged.**
 - **Do not make any modifications to either the Auto-Darkening Filter (2) or the rest of the helmet, other than those specified in this manual.** Do not use any replacement parts other than those specified in this manual. Unauthorized modifications and replacement parts will void the warranty and expose the user to the risk of personal injury. **Never open or tamper with the Auto-Darkening Filter (2).**
5. **The Welding Helmet's Auto-Darkening Filter (2) must never be placed on hot surfaces.**

WARNING: SEVERE PERSONAL INJURY and/or BLINDNESS may occur if the user fails to follow the aforementioned warnings and/or fails to follow the operation instructions.

Warning: Read and understand all instructions before using!


Inhalation Hazard

Welding Produces TOXIC FUMES and GASSES.



Exposure to welding gasses can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding gasses or fumes are:

- Early onset of Parkinson's Disease
- Damage to the reproductive organs
- Inflammation of the small intestine or stomach
- Respiratory diseases such as emphysema, bronchitis or pneumonia
- Heart Disease
- Ulcers
- Kidney damage



Safety precautions, such as using natural or forced air ventilation and wearing an ANSI approved respirator, are **ESSENTIAL** to reduce the risk of developing the above illnesses.

Unpacking

When unpacking, check to make sure all the parts are included. Refer to the Parts List and Assembly Diagram at the end of this manual. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

The Auto-Darkening Welding Helmet is designed to protect the eyes and face from sparks, splatter, and harmful radiation under normal welding conditions. The Auto-Darkening Filter automatically changes from a clear state to a dark state when an arc is struck, and it returns to the clear state when welding stops.

The Auto-Darkening Welding Helmet comes ready for use. The only things you need to do before welding are to remove the protective film from both sides of the lens (if not already done), adjust the position of the headband, select the correct shade number for your application, and test the helmet for proper operation, as mentioned below.

BEFORE WELDING

Check the Front Cover Lens to make sure that it is clean, and that no dirt is covering the two sensors on the front of the Filter Cartridge. Also check the Front/Inside Cover Lens and the Front Lens Retaining Frame, and make sure that they are secure in place.

Inspect all operating parts before each use for signs of wear or damage. Any scratched, cracked, or pitted parts should be replaced immediately before using again to avoid severe personal injury.

Check for light tightness before each use.

Select the shade number you need for your setting at the turn of a shade knob (See Shade Guide Table on page 7). Finally, be sure that the shade number of the Welding Helmet is the correct shade number for your application. **Note:** If a selection of shades are recommended for your application, **try the darkest setting first.**

Adjust headband so that the helmet is seated on the head as low as possible and close to your face. Adjust helmet's angle when in the lowered position by turning the adjustable limitation washer.

SHADE NUMBER SELECTION

The shade number can be infinitely set manually between 9 - 13. Check with the Shade Guide Table on page 8 to determine the proper shade number for your application. To select a shade number, simply turn the shade knob until the arrow points to the desired shade number.

IMPORTANT NOTE: Test the helmet auto-darkening filter lens before welding. While wearing the helmet, briefly strike an arc, keeping your face and eyes turned slightly away, and to one side. The lens should darken evenly when not directly facing the arc. If it does not darken properly, do not use the Welding Helmet.

PRODUCT FEATURES

At the moment the welding operation is started, the filter screen automatically changes from clear to dark in only 1/25,000th of a second.

Dark to clear delay adjustment: Operator can vary the time for the filter to return to clear state.

At the moment welding is stopped, the filter screen automatically changes from dark to clear state according to your preset time. Note: If the time-setting switch is at the "FAST" position - the time can vary from 0.25 seconds to 0.35 seconds; if it is at the "SLOW" position - the time can vary from 0.6 seconds to 0.8 seconds-see **Figure 1**, below.

Figure 1
(View from
inside of
helmet.)



Dark to Clear Delay Adjustment
In FAST Position = .25-.35 Second
In SLOW Position = .60-.80 Second

This Welding Helmet utilizes high performance solar cells as power supply, and has two built-in 3V lithium batteries as power backup. No change of battery is needed. Under normal welding conditions, users can expect a battery lifetime of more than 6 years.

User-selectable (DIN) variable shades from 9 to 13 are adjusted at the turn of a shade knob (shade variable). This product is in full conformity with related DIN, ISO, EN379 safety standards and ANSI Z87.1-1989 standard.

The ultra high performance of UV and IR Auto-Darkening filters provides to the user's eyes and face full protection against UV and IR radiation during the entire welding process, even in the clear state. The UV/IR protection level is up to Shade 14 (DIN) at all times.

COMMON PROBLEMS AND REMEDIES

1. Irregular Darkening or Dimming

- a. Headband has been set unevenly on the two sides of the helmet (unequal distances from the eyes to the filter's lens).
- b. Reset headband to reduce the difference in distances to filter, if necessary.

2. Auto-Darkening Filter Does Not Darken Or Flickers

- a. Front Cover Lens is soiled or damaged (change the cover lens).
- b. Sensors are soiled (clean surface of the sensors).
- c. Welding current is too low (turn the switch to the "SLOW" position, if necessary).

3. Slow Response

- a. Operating temperature is too low (do not use at temperatures below 23° F).

4. Poor Vision

- a. Front/Inside Cover Lens and/or filter soiled (change it).
- b. Insufficient ambient light.
- c. Shade number is incorrectly set (reset shade number).

5. Welding Helmet Slips

- a. Headband is not adjusted properly (must be lowered).

WARNING: You must stop using the Auto-Darkening Welding Helmet *IMMEDIATELY* if *any* of the above mentioned problems can't be corrected.

LENS AND HELMET MAINTENANCE

Figure 2

1. **Replace the Front Lens Cover (1) if it is damaged (cracked, scratched, soiled or pitted).**
 - a. Remove the Front Lens Cover (1) by gently pulling up the central part of the Lens -**see Figure 2, right.**
 - b. Remove the protection film from both sides of the new Lens if it comes with the film on. Place the new Lens into the right position by bending it *slightly* enough to fit in between the tabs at each side of the lens and putting the lens in place - **see Figure 2.**
 - c. Check and make sure that the Lens is securely installed.
2. Clean the Filter Lens with a clean lint-free tissue or cotton cloth.
3. Don't immerse the lens in water or any other liquid. Never use abrasives, solvents or oil based cleaners.
4. Don't remove the auto-darkening filter from the Auto-Darkening Welding Helmet. Never try to open the filter.
5. Storage temperature: -13 to 167° F.



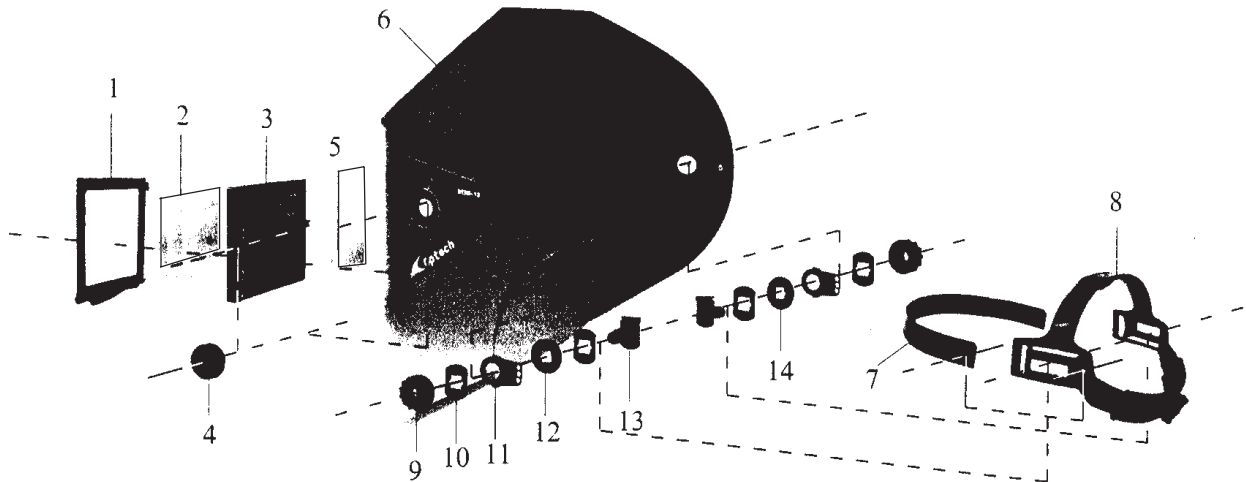
Shade Guide Chart

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	█		
TIG,GTAW	█		9	10	11	12	13		14		█			
MAG/CO ₂	█		█		█		10	11	12	13	14	█		
SAW	█		█		█		10		11	12	13	14	█	
PAC	█		█		█		11		12		13			
PAW	█		8	9	10	11	12	13		14		█		

Note: * SMAW-Shielded Metal Arc Welding.
 * MIG(heavy)-MIG on heavy metals.
 * MIG(light)-MIG on light alloys.

* TIG,GTAW-Gas Tungsten Arc Welding(GTAW)(TIG).
 * SAW-Shielded Semi-Automatic Arc Welding.
 * PAC-Plasma Arc Cutting. * PAW-Plasma Arc Welding.

Parts List and Assembly Diagram



- 1. Front Lens Retaining Frame
- 2. Front Cover Lens
- 3. Auto-Darkening Filter Cartridge
- 4. Shade Knob
- 5. Inside Cover Lens

- 6. Shell (Welding mask)
- 7. Front Headband
- 8. Adjustable Headband
- 9. 2 x Block Nut
- 10. 4 x Washer

- 11. 2 x Adjustable Limitation Washer
- 12. Left Limitation Washer
- 13. 2 x Screw
- 14. Right Limitation Washer

* Includes Slow/Fast and Sensitivity Switches

NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

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