



Series 700 Auto-Darkening Welding Helmet

Owner's Manual



48739



48740

⚠ WARNING: Read and understand all instructions, warnings, and cautions before using this product. Failure to follow the instructions, warnings, and cautions may result in serious personal injury and/or property damage.

Item # 48739 & # 48740

SAVE THESE INSTRUCTIONS

Thank you very much for choosing a Klutch product!

For future reference, please complete the owner's record below:

Serial Number/Lot Date Code: _____

Purchase Date: _____

Save the receipt, warranty, and this manual.

This product is designed for certain applications only. The distributor cannot be responsible for issues arising from modification or use of this product in an application for which it was not designed. We strongly recommend that this product not be modified and/or used for any application other than that for which it was designed.

For technical questions, please call **1-800-222-5381**.

Table of Contents

Intended Use.....	4
Technical Specifications.....	4
Important Safety Information.....	5
Safety Labels.....	7
Operating Instructions.....	8
Adjusting the Fit of the Helmet.....	8
Adjusting the Distance between the Helmet and your Face.....	8
Adjusting the View Angle.....	8
Installing the Batteries.....	9
Testing the Shade Selection.....	9
Selecting the Operating Mode.....	9
Selecting the Delay Time.....	9
Selecting the Sensitivity.....	10
Selecting the Shade Level.....	10
Maintenance.....	11
Troubleshooting.....	12
Parts Diagram.....	13
Parts List.....	13
Replacement Parts.....	14
Limited Warranty.....	15

Intended Use

The Solar-Powered Auto-Darkening Welding Helmet is ideal for most welding applications and designed to meet the most demanding requirements.

Technical Specifications

Viewing Area	3.86" x 1.73" (98 x 44mm)
Cartridge Size	4.33" x 3.54" x 0.35" (110 x 90 x 9mm)
Arc Sensor	2
Light State	DIN 3.5
Shade	DIN 9 - 13
Shade Control	External, Variable Shade
Power On/Off	Fully Automatic
Sensitivity Control	Adjustable by infinite dial knob
UV/IR Protection	Up to Shade DIN16 at all times
Power Supply	Solar cell. Battery replaceable 2 x AAA Alkaline battery.
Low Battery Warning	Red Light
Switching Time	1/25,000 s. from Light to Dark
Delay (Dark to Light)	0.1 - 1.0 s by infinitely dial knob
Low Amperage TIG Rated	≥ 5 amps DC; ≥ 5 amps AC
Grinding	Yes
Operating Temperature	14°F - 131°F (-10°C - +55°C)
Storing Temperature	- 4°F -158°F (-20°C - +70°C)
Helmet Material	High Impact Resistance Nylon
Total Weight	15.5 oz. (440g)
Application Range	Stick Welding (SMAW); TIG DC&AC; TIG Pulse DC; TIG Pulse AC; MIG/MAG/CO ₂ ; MIG/MAG Pulse; Plasma Arc Cutting (PAC); Plasma Arc Welding (PAW); Air Carbon Arc Cutting (CAC-A); Grinding
Tested	ANSI Z87.1, CSA Z94.3

Important Safety Information

WARNING:

- The warnings, cautions, and instructions in this manual cannot cover all possible conditions or situations that could occur. Exercise common sense and caution when using this tool. Always be aware of the environment and ensure that the tool is used in a safe and responsible manner.
- DO NOT allow persons to adjust or use this product until they have read this manual and have developed a thorough understanding of how the product works.
- Industrial or commercial applications must follow OSHA requirements.

WORK AREA SAFETY

- Inspect the work area before each use. Keep the work area clean, dry, free of clutter, and well lit. Cluttered, wet, or dark work areas can result in injury.
- Do not weld where there is a risk of causing a fire or an explosion; e.g., in the presence of flammable liquids, gases, or dust. Welding can create sparks, which may ignite the flammable liquids, gases, or dust.
- Keep children and bystanders away from the work area while welding.

PERSONAL SAFETY

- Stay alert, watch what you are doing, and use common sense when welding. Do not weld while you are tired or under the influence of drugs, alcohol, or medication.
- Dress properly. Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts. Wear proper welding apparel including flame resistant gloves, shirts, and caps.
- Use safety apparel and equipment. Use ANSI-approved safety goggles or safety glasses with side shields. Use a dust mask in dusty work conditions. Also use non-skid safety shoes, hardhat, gloves, dust collection systems, and hearing protection when appropriate. This applies to all persons in the work area.
- Do not overreach. Keep proper footing and balance at all times.

WARNING:

HELMET USE AND CARE

- DO NOT modify the helmet in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the helmet.
- DO NOT use the helmet if the filter does not darken immediately upon striking an arc.
- DO NOT use the helmet as a hand shield. Wear the helmet correctly.
- DO NOT open or tamper with the Auto-Darkening filter. Protect the filter from contact with liquid or dirt. Do not immerse the filter in water or any other liquid. Clean the surface of the filter regularly. Do not use solvents on the filter screen or helmet components.
- DO NOT place the helmet or filter on a hot surface
- DO NOT allow children to handle or play with the helmet. Not for use by children.
- Use only at temperatures 14°F - 131°F (-10°C - +55°C).
- Store at temperatures - 4°F -158°F (-20°C - +70°C).
- Always check of damaged or worn out parts before using the helmet. Broken parts will affect the helmet's operation. Replace or repair damaged or worn parts immediately.
- Store the helmet when it is not in use. Store it in a secure, dry, cool place out of the reach of children. Remove the batteries if it will be stored for a prolonged period. Inspect it for good working condition prior to storage and before re-use.
- This helmet is not suitable for laser welding and oxyacetylene welding/cutting processes.
- This welding helmet will not protect against severe impact hazards.
- This helmet will not protect against explosive devices or corrosive liquids.
- The front cover lens is breakable and does not provide significant protection against flying particles, splash, spray, and spatter. The helmet will only protect the eyes and face from radiation and sparks.
- Wear approved safety glasses with side shields under the helmet.
- The helmet materials which may come into contact with the wearer's skin may cause allergic reactions in some individuals.
- Use protective screens or barriers to protect others from flash and glare. Warn others not to look at the arc.

Safety Labels

WARNING

This Product uses (2) AAA batteries. To help avoid fluid leaks or explosions please adhere to the following warning:

Do not mix old and new batteries or batteries of different types: alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) • Insert batteries as indicated inside the battery compartment • Do not insert batteries backwards • Remove batteries during long periods of non-use. Always remove exhausted batteries from the product. Dispose of batteries safely. Do not dispose of this product in a fire. The batteries inside may explode or leak • Never short-circuit the battery terminals • Do not expose to excessive heat • Use only batteries of the same or equivalent type, as recommended • Do not charge non-rechargeable batteries

WARNING

1. Fully read and understand the manual before use.
2. Before welding or cutting, ensure the darkness range of this helmet is offers sufficient eye protection for your use.
3. Always wear ANSI approved safety glasses with the welding helmet when using this product. The front cover lens (front impact resistant plate) **CAN BREAK** and **DOES NOT** provide complete protection against flying particles, splash, spray and splatter.
4. Inspect lens before each use. Pitted or scratched lens plates reduce vision clarity, severely reduce impact protection and should be replaced immediately to prevent injury.
5. Not for use with Laser Welding Processes.
6. Inspect the helmet before each use. Do not use if damaged. Replace worn parts before using.
7. Not for use by children. Store helmet out of the reach of children.

DO NOT REMOVE THIS WARNING LABEL

Operating Instructions

Adjusting the Fit of the Helmet

See Figure.1. The overall circumference of the headband can be made larger or smaller by rotating the knob (Y) on the back of the headband. This can be done while wearing the helmet and allows just the right tension to be set to keep the helmet firmly on the head without it being too tight.

If the headband is riding too high or too low on your head, adjust the strap which passes over the top of your head (W). To do this, release the end of the band by pushing the locking pip out of the hole in the band. Slide the two portions of the band to a greater or lesser width as required and push the locking pip through the nearest hole.

Test the fit of the headband by lifting up and closing down the helmet a few times while wearing it. If the headband moves while tilting, re-adjust it until it is stable.

Adjusting the Distance between the Helmet and your Face

See Figure.1. Undo the block nut (T) to adjust the distance between the helmet (in the down position) and your face. Loosen the block nut on either side of the helmet and slide it nearer or further from your face (Z). It is important that your eyes are each the same distance from the lens. Otherwise the darkening effect may appear uneven. Re-tighten the block nut when adjustment is complete.

Adjusting the View Angle

See Figure.2.

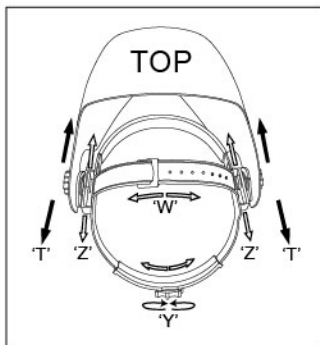


Figure.1

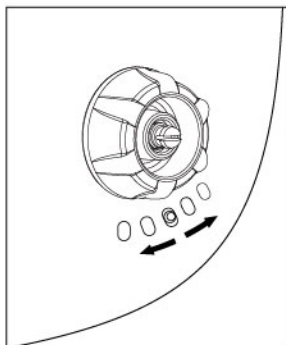


Figure.2

Installing the Batteries

See Figure.3.

This ADF cartridge is powered by a solar cell and two AAA alkaline batteries. The batteries must be replaced when the Low Battery light is lit (red). To insert batteries, open the battery cover and insert the batteries according to the battery markings inside the battery holder.

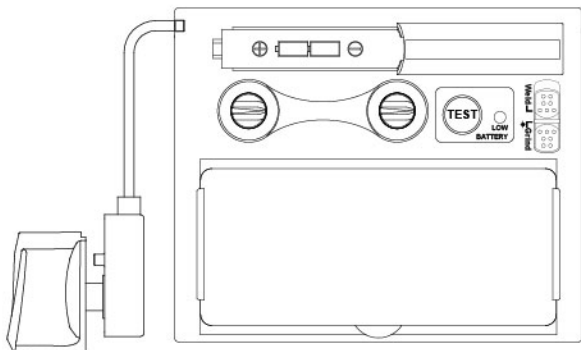


Figure.3

Testing the Shade Selection

See Figure.3. Press and hold the TEST button to preview the shade selection before welding. When the TEST button is released, the viewing window will automatically return to the light state (3.5 Shade). Press TEST again; if the viewing window does not turn to the dark state, replace the batteries and try again.

Selecting the Operating Mode

See Figure.4. Use the switch button on the back of the shade cartridge to select the mode appropriate for the work activity.

Weld mode is used for most welding applications. In Weld mode, the shade function is turned on when it optically senses a welding arc. You must select the shade level, delay time, and sensitivity when using Weld mode.

Grind mode is used for metal grinding applications. In Grind mode, the shade function is turned off. The shade is fixed shade DIN 3.5, which allows a clear view to grind a weld with the helmet providing face protection.

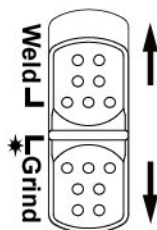


Figure.4

Selecting the Delay Time

See Figure.5. When welding ceases, the viewing window automatically changes from dark back to light but with a pre-set delay to compensate for any bright afterglow on the work piece. The delay time/response can be set to **S** (short: 0.1 sec.) or **L** (long: 1.0 sec.) using the infinite dial knob on the back of the shade cartridge. It is recommended to use a shorter delay with spot welding applications and a longer delay with applications using higher currents. Longer delays can also be used for lower current TIG welding, and TIG / MIG / MAG pulse.



Figure.5

Selecting the Sensitivity

See Figure.6. The sensitivity can be set to **H** (high) or **L** (low) by using the infinite dial knob on the back of the shade cartridge. The Mid-High setting is the normal setting for everyday use. The maximum sensitivity level is appropriate for low welding current work, TIG, or special applications. Where the operation of the helmet is disturbed by excess ambient light, or another welding machine close by, use the low setting. For optimum performance, it is recommended to set sensitivity to the maximum at the start and then gradually reduce it until the filter reacts only to the welding light flash and not to false triggering due to ambient light conditions (direct sun, intensive artificial light, neighboring welder's arcs, etc.).



Figure.6

Selecting the Shade Level

Select the shade level you require according to the welding process you will use by referring to the Shade Guide Table below for settings. Turn the shade control knob on the side of the helmet to the shade number required.

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

TIG, GTAW – Gas Tungsten Arc Welding

PAC – Plasma Arc Cutting

SAW – Shielded Semi-Automatic Arc Welding

MIG (Heavy) – MIG on Heavy Metals

PAW – Plasma Arc Welding

MAG/CO2 - Metal Active Gas

MIG (Light) – MIG on Light Alloys

Maintenance

Maintain your welding helmet by adopting a program of conscientious repair and maintenance in accordance with the following recommended procedures.

- Clean the helmet by wiping with a soft cloth. Clean cartridge surfaces regularly. Do not use strong cleaning solutions. Clean sensors and solar cells with a damp cloth with methylated spirit (denatured alcohol) and a clean, lint-free cloth and wipe dry with another clean, lint-free cloth.
- Replace the front cover lens and the inner cover lens if they are cracked, scratched, dirty, or pitted. To do so, place your finger or thumb into the recess at the bottom edge of the window and flex the window upwards until it releases from one edge. (See Figure.7.)
- Change the Shade Cartridge. See Figure.8 and Figure.9.
- Install a New Cartridge. Take the new shade cartridge and pass the cable under the wire loop before dropping the cartridge into its retaining frame inside the helmet. Press down the wire loop clip and ensure that the front edge of the loop is properly retained under the retaining lugs as shown in Figure 9. Fasten the potentiometer to the inside of the helmet with the shaft protruding through the hole. Push the shade control knob onto the shaft.

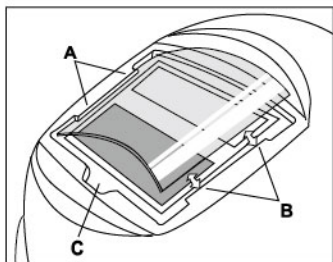


Figure.7

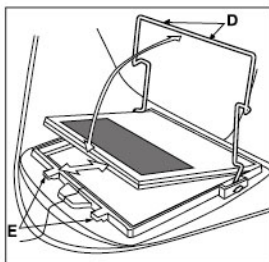


Figure.8

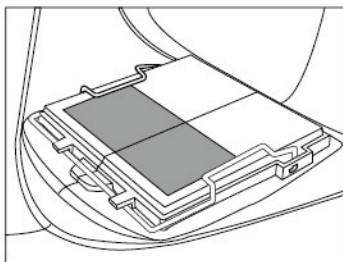
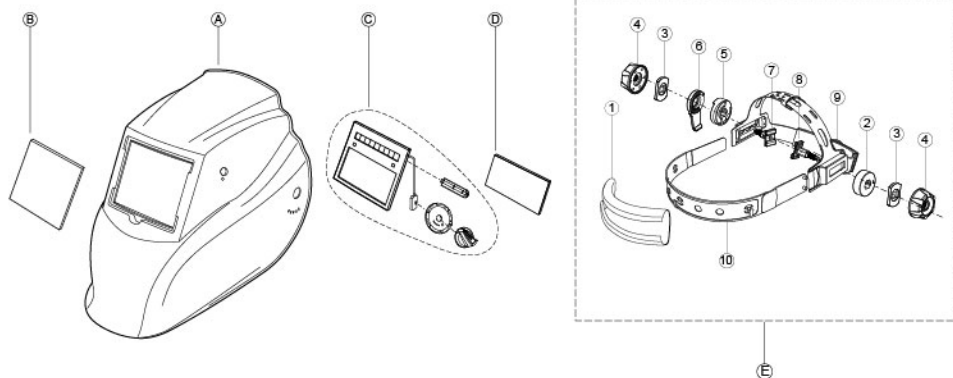


Figure.9

Troubleshooting

Problem	Solution
Helmet slips.	<ul style="list-style-type: none"> • Headband is not adjusted properly. Adjust the headband.
Irregular darkening or dimming.	<ul style="list-style-type: none"> • The distance from each eye to the filter lens is not the same. Adjust the headband so that the distance from each eye to the filter lens is the same.
Auto-darkening filter does not darken or it flickers.	<ul style="list-style-type: none"> • Front cover lens is soiled or damaged. Replace the front cover lens. • Sensors are soiled. Clean the surface of the sensors. • Welding current is too low. Increase the sensitivity level. • Check the batteries and verify that they are in good condition and installed properly. Also, check the battery surfaces and contacts and clean if necessary.
Slow response.	<ul style="list-style-type: none"> • Operating temperature is too low.
Poor vision.	<ul style="list-style-type: none"> • Front/inside cover lens and/or filter soiled. Change the front/inside cover lens and/or filter. • Insufficient ambient light. Increase the ambient light. • Shade number is incorrectly set. Reset the shade number.

Parts Diagram



Part List

ITEM	DESCRIPTION	QTY
A	Shell (Welding mask)	1
B	Front Cover Lens	1
C	Auto-Darkening Filter	1
D	Inside Cover Lens	1
E*	Headgear Assembly (Including Sweatband)	1

Part List of *E

ITEM	DESCRIPTION	QTY
1	Sweatband	1
2	Washer	1
3	Washer	2
4	Block Nut	2
5	Limitation Washer	1
6	Angle Limitation Washer	1
7	Right Boot Screw	1
8	Left Boot Screw	1
9	Adjustable Headband	1
10	Front Headgear	1

Replacement Parts

- For replacement parts and technical questions, please call Customer Service at **1-800-222-5381**.
- Not all product components are available for replacement. The illustrations provided are a convenient reference to the location and position of parts in the assembly sequence.
- When ordering parts, the following will be required: Model Number, Serial Number/Lot Date Code, and Description.
- The distributor reserves the rights to make design changes and/or improvements to product lines and manuals without notice.

Limited Warranty

Northern Tool and Equipment Company, Inc. ("We" or "Us") warrants to the original purchaser only ("You" or "Your") that the Klutch product purchased will be free from material defects in both materials and workmanship, normal wear and tear excepted, for a period of **two years** from date of purchase. The foregoing warranty is valid only if the installation and use of the product is strictly in accordance with product instructions. There are no other warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose. If the product does not comply with this limited warranty, Your sole and exclusive remedy is that We will, at our sole option and within a commercially reasonable time, either replace the product without charge to You or refund the purchase price (less shipping). This limited warranty is not transferable.

Limitations on the Warranty

This limited warranty does not cover: (a) normal wear and tear; (b) damage through abuse, neglect, misuse, or as a result of any accident or in any other manner; (c) damage from misapplication, or improper installation of product or components; (d) improper maintenance and repair; and (e) product alteration in any manner by anyone other than Us, with the sole exception of alterations made pursuant to product instructions and in a workmanlike manner.

Obligations of Purchaser

You must retain Your product purchase receipt to verify date of purchase and that You are the original purchaser. To make a warranty claim, contact Us at 1-800-222-5381, identify the product by make and model number, and follow the claim instructions that will be provided. The product and the purchase receipt must be provided to Us in order to process Your warranty claim. Any returned product that is replaced or refunded by Us becomes our property. You will be responsible for return shipping costs or costs related to Your return visit to a retail store.

Remedy Limits

Product replacement or a refund of the purchase price is Your sole remedy under this limited warranty or any other warranty related to the product. We shall not be liable for: service or labor charges or damage to Your trailer incurred in removing or replacing the product; any damages, including, without limitation, damages to tangible personal property or personal injury, related to Your improper use, installation, or maintenance of the product or components; or any indirect, incidental or consequential damages of any kind for any reason.

Assumption of Risk

You acknowledge and agree that any use of the product for any purpose other than the specified use(s) stated in the product instructions is at Your own risk.

Governing Law

This limited warranty gives You specific legal rights, and You also may have other rights which vary from state to state. Some states do not allow limitations or exclusions on implied warranties or incidental or consequential damages, so the above limitations may not apply to You. This limited warranty is governed by the laws of the State of Minnesota, without regard to rules pertaining to conflicts of law. The state courts located in Dakota County, Minnesota shall have exclusive jurisdiction for any disputes relating to this warranty.



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