



Quantum Helmet With Hard Hat Owner's Manual

• Designed to be used with Universal PAPR blower unit



Professional Quality Welding Helmet With Hard Hat

SAFETY WARNINGS - READ BEFORE USING



WARNING
Read & Understand All Instructions Before Using



Auto-Darkening welding helmets are designed to protect the eye and face from sparks, spatter and harmful radiation under normal welding conditions. Welding helmet with hard hat and PAPR blower unit forms a complete eye and face, respiratory, and head protection. MATCH series hard hat conforms EN397-2012 standard. This auto darkening filter will automatically turn on when pick it up. The filter automatically changes from a light state to a dark state when an arc is struck, and it returns to the light state when welding stops. This helmet are designed to be used together with Universal Powered air respirator unit to protect against airborne contaminants.

The Auto-Darkening welding helmet comes assembled. But before it can be used, it must be adjusted to fit the user properly. Check battery surfaces and contacts and clean it if necessary. Verify if the battery is in good condition and installed properly. Set up for delay time, sensitivity and shade number for your application. Before welding, please make sure the ADF was set to WELDING / CUTTING mode instead of GRIND mode.

The helmet should be stored in dry, cool and dark area and remove the battery, when not using it for a long time.



WARNING



- Inspect face seal for damage and replace if necessary. Make sure the air is supplied to helmet. Make sure the ears are uncovered by the face seal.
- This Auto-Darkening welding helmet is not suitable for laser welding.
- Never place this helmet and Auto-Darkening filter on a hot surface.
- Never open or tamper with the Auto-Darkening filter.
- This 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 any 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 your dealer.
- Don't immerse the filter in water.
- Don't use any solvents on the filter screen or helmet components.
- Use only at temperatures: -10°C ~ +55°C (14°F ~ 131°F).
- Storing temperature: -20°C ~ +70 °C (- 4°F ~ 158°F). The helmet should be stored in dry cool and dark area and remove the battery, when not using it for a long time.
- Protect filter from contacting with liquid and dirt.
- Clean the filter surface regularly; don't use strong cleaning solutions. Always keep the sensors and solar cells clean using a clean lint-free tissue.
- Regularly replace the cracked / scratched / pitted front cover lens.
- The materials which may come into contact with the wearer's skin, can cause allergic reactions in some circumstances.



WARNING
Severe personal injury could occur if the user fails to follow the above mentioned warnings and/or fails to follow the operating instructions.



COMMON PROBLEMS AND REMEDIES

• Irregular Darkening Dimming

Headgear has been set unevenly and there is an uneven distance from the eyes to the filter lens (Reset the headgear to reduce the difference to the filter).

• Auto-Darkening filter does not darken or flickers

- ① Front cover lens is soiled or damaged (Change the cover lens).
- ② Sensors are soiled (Clean the sensors surface).
- ③ Welding current is too low (Reset the sensitivity level to higher).
- ④ Check battery and verify they are in good condition and installed properly. Also, check battery surfaces and contacts and clean if necessary. Please refer to the "BATTERY INSTALLATION" on page 2.

• Slow response

Operating temperature is too low (Do not use at temperatures below -10°C or 14°F).

• Poor vision

- ① Front / inside cover lens and / or the filter is soiled (Change lens).
- ② There is insufficient ambient light.
- ③ Shade number is incorrectly set (Reset the shade number).
- ④ Check if removing the film on the front cover lens.

• Welding helmet slips

Headgear is not properly adjusted (Readjust the headgear).



WARNING



The user must stop using the auto-darkening welding helmet immediately if the above-mentioned problems cannot be corrected. Contact the dealer.

INSTRUCTIONS FOR USE

WARNING! Before using the helmet for welding, ensure that you have read and understood the safety instructions.

• BATTERY INSTALLATION

Slide the battery holder out of the auto darkening filter, (remove the used battery when replacing battery), put new CR2450 batteries inside the battery holder, and put the battery holder back into the auto darkening filter. Please make sure the anode and cathode of the battery are installed correctly (See fig.1).

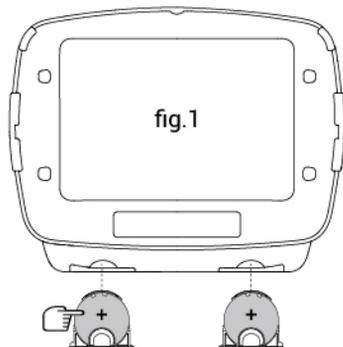
• POWER ON / OFF

This auto darkening filter will automatically turn on when pick it up.

Sensitivity level setting 0 - 9: The welding helmet will be automatically off after 5 minutes not being used.

Sensitivity level setting =10: The filter will be darkening all the time to meet some specially welding application under both WELD MODE and CUTTING MODE. With this setting, the welding helmet will NOT automatically turn off after 5 minutes of not being used.

To save power, remember to set the sensitivity value between 0 - 9 when not being used.



Be sure Positive (+) side of battery faces up.

• DIGITAL SCREEN ACTIVATION

Press any of four button to activate the digital screen (See fig.2a). After 15 seconds, digital screen will automatically turn to standby mode. Short press the button again will active the screen once more and previous settings will remain.

• MODE CONTROL

Short Press "ON / MODE" button to select the mode appropriate for the work activity (See fig.2a):

Weld Mode – used for most welding applications. Push "FUNC" button to adjust shade number, sensitivity, and delay settings properly before welding. In this mode the lens turns to dark immediately when you start welding.

Cutting Mode – used for cutting applications. Push "FUNC" button to adjust shade number, sensitivity, and delay settings properly before cutting. In this mode the lens turns to dark immediately when you start cutting.

Grind Mode – used for grinding applications. In this mode the lens shade is fixed shade No. 4. Can not adjust shade number, sensitivity, and delay settings.

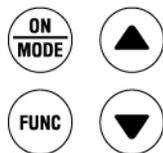


fig.2a

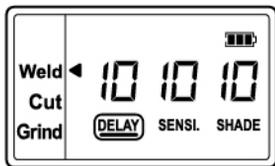


fig.2b



fig.2c

• BATTERY INDICATOR

The symbol "  " show the current state of the battery (See fig.2b). The volume of batteries has four levels symbol to appear (See fig.2c). The symbol "  " appears on the display screen before 1–2 days of battery life remains, the CR2450 lithium batteries should be replaced in time. The symbol of the Battery Indicator is not real-time, should be updated after pressing "ON / MODE" button shortly.

• VARIABLE SHADE CONTROL

After turn on the lens, short press "FUNC" button to choose "SHADE", and adjust the lens shade number. Use "▲" and "▼" buttons to select the lens shade in the dark state. The shade range for each mode are as follows:

Cutting Mode – Shade 5 ~ 8 (See fig.3a) **Weld Mode** – Shade 9 ~ 13 (See fig.3b)

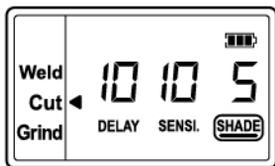


fig.3a

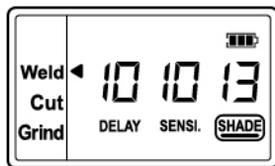


fig.3b

Grind Mode – No. 4 only (See fig.3c). Flip up the front-flip part for grinding job, the auto darkening filter also has grind mode setting.

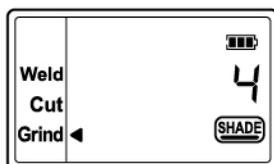


fig.3c

Select the proper shade number for your welding / cutting process, by referring to the "Shade Guide Table" on the last page.

• SENSITIVITY CONTROL

Press "FUNC" button to choose "SENSITIVITY". Use "▲" and "▼" buttons to make the lens more or less sensitive to arc light of different welding processes. Sensitivity setting 5-10 is the normal setting for everyday use. The sensitivity ranges for each mode are as follows:

Cutting Mode (Shade 5 ~ 8) / **Weld Mode** (Shade 9 ~ 13) – Sensitivity 0 ~ 10 (See fig.4a / 4b)

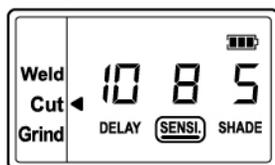


fig.4a

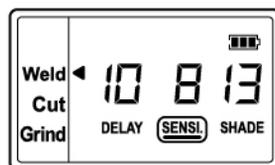


fig.4b

Grind Mode – No sensitivity adjustment

As a simple rule for optimum performance, it is recommended to set sensitivity to the maximum at the beginning and then gradually reduce it, until the filter reacts only to the welding light flash and without annoying spurious triggering due to ambient light conditions (direct sun, intensive artificial light, neighbouring welder's arcs etc.).

It may be necessary to adjust helmet sensitivity to accommodate different lighting conditions or if lens is flashing On and Off. Adjust helmet sensitivity as follows: Adjust helmet sensitivity in lighting conditions helmet will be used in.

- Press "▼" button to lower setting to 0.
- Face the helmet in the direction of use, exposing it to the surrounding light conditions.
- Press "▲" button repeatedly until the lens darkens, then press "▼" button until lens clears. Helmet is ready for use. Slight readjustment may be necessary for certain applications or if lens is flashing on and off.

• DELAY CONTROL

Press "FUNC" button to choose "DELAY", begin lens delay adjustments. Use the Lens Delay Control "▲" and "▼" buttons to adjust the time for the lens to switch to the clear state after welding or cutting.

Cutting Mode (Shade 5 ~ 8) / Weld Mode (Shade 9 ~ 13) - Delay 0 ~ 10 (See fig.5a / 5b)

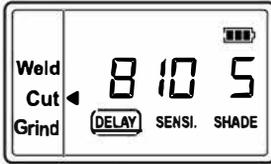


fig.5a

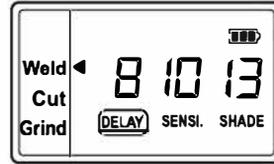


fig.5b

Grind Mode - No sensitivity adjustment

The delay is particularly useful in eliminating bright after-rays present in higher amperage applications where the molten puddle remains bright momentarily after welding. Use the Lens Delay Control buttons to adjust delay from 0 to 10 (0.1 to 1.0 second). When welding stopped, the viewing window automatically changes from dark back to light but with a pre-set delay to compensate for any bright afterglow on the workpiece. The delay time / response can be set from Level 0 to level 10. 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 low current TIG welding, and TIG / MIG / MAG pulse.

• **ADJUSTING THE FIT OF HARD HAT**

By rotating the rear knob of hard hat headgear, overall perimeter of headgear can be made larger or smaller to ensure that hard hat is comfortable and stable. (see "Y" in fig 6)

• Front and back bands will automatically self-adjust according to headform, and soft pads suit forehead and back of head perfectly, which will bring more comfort (See fig.7). 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 THE FACE**

To adjust the distance between the user's face and lens by pressing the button down on each adapter and then sliding forward or back.

• **ADJUSTING ROTATION RANGE**

Tilt adjustment is located on right side of helmet. To adjust the resting position and rotation range, loosen tension knob, rotate lever to 1 of the 3 positions and tighten tension knob. (See fig.7).

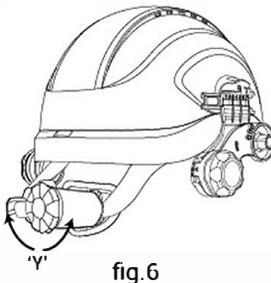


fig.6

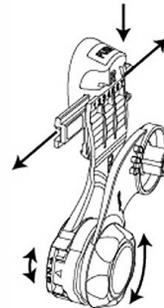


fig.7

• HARD HAT ASSEMBLY

•Match each adapter with the correct side of the helmet shell

Note:L= Left Side R=RightSide(See fig.8a).

Unscrew main connection knob of each adapter (See fig.8b).

Place each adapter into the helmet shell assembly points and screw main connection knob until secure(See fig.8c).

•In accordance with the order of 1-4 in the figure, align the face seal with the velcro inside the helmet shell and make sure the face seal is closely attached to helmet shell (See fig.9).

•Pull the elastic at face seal and put it on adapter.(See fig.10).

•Insert adapter base into hard hat slots.(See fig.11).

•Press "PUSH" button on adapter base and slide hard hat into helmet shell.(See fig.12).

•Attach the fixing band on face seal to the headgear of hard hat.(See fig.13).

•Adjust face seal to fit.(See fig.14).

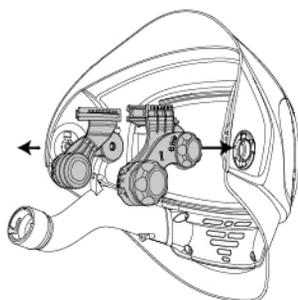


fig.8a

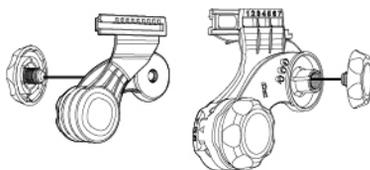


fig.8b

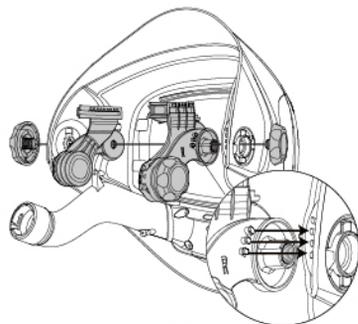


fig.8c

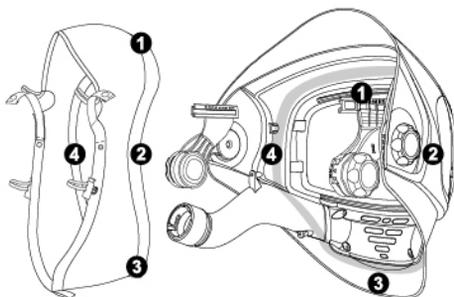


fig.9

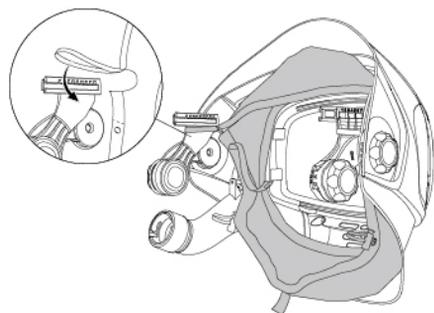


fig.10

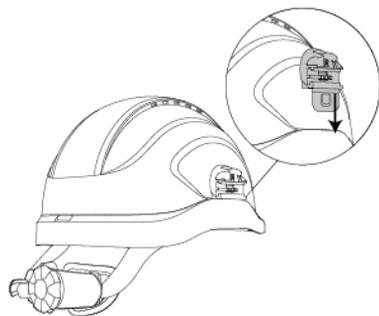


fig.11

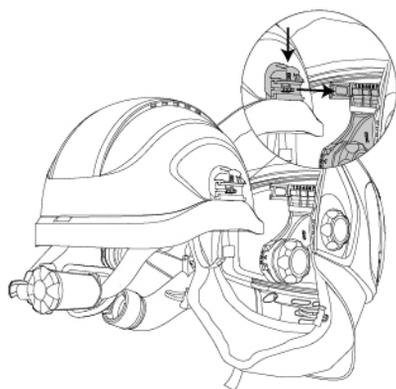


fig.12



fig.13

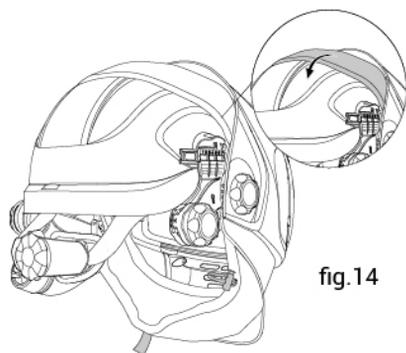
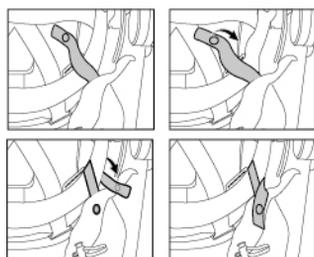


fig.14



• ASSEMBLING THE BREATHING TUBE

Insert the prong on the breathing tube into the helmet air duct, twist 1/4 to the anti-“open” direction (See fig. 15a), then clip the breathing tube into holder on the back cover of the head-gear to lock into place (See fig. 15b).

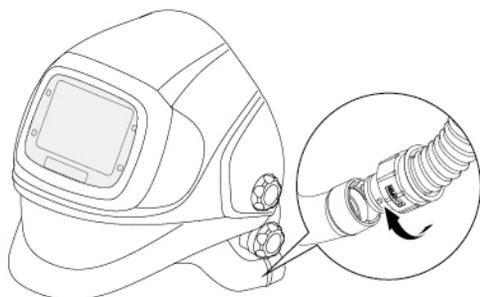


fig. 15a

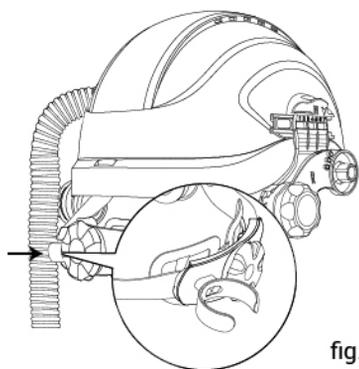


fig. 15b

MAINTENANCE

• REPLACING THE FRONT LENS HOLDER

Disassembling: Remove the front lens holder per fig. 16a / 16b.

Assembling: Fit the one side into slot, then press and lock the other side (See fig. 16c).

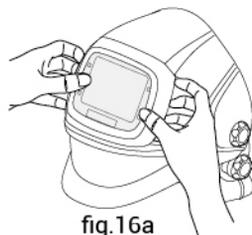


fig. 16a

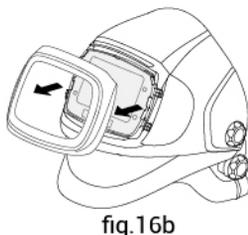


fig. 16b

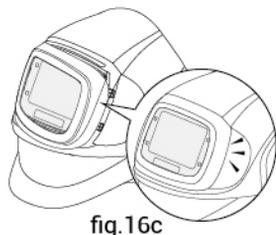


fig. 16c

• REPLACING THE AUTO DARKENING FILTER

Disassembling: Press the thumb on the bottom sides of the auto darkening filter and push it upward (See fig. 17a), remove the filter from the helmet shell (See fig. 17b).

Assembling: First insert the auto darkening filter into the slots on left and right sides. Then push the filter down till the locks click (See fig. 17c).

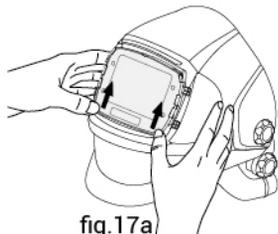


fig. 17a

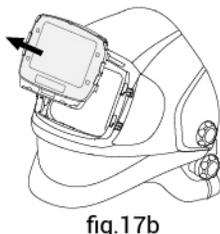


fig. 17b

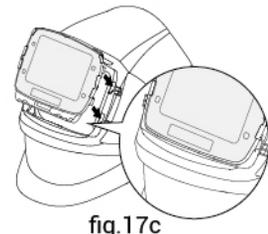


fig. 17c

- **REPLACING THE OUTSIDE COVER LENS**

Replace the outside cover lens if it is damaged.

Disassembling: Remove the front lens holder per fig.16a / 16b. Place your fingernail in recess above filter view window and flex lens upwards until it releases from edges of filter view window (See fig.18a).

Assembling: Install with one side into the slot, then insert the other side.

- **REPLACING THE INSIDE COVER LENS**

Replace the inside cover lens if it is damaged.

Disassembling: Place your fingernail in recess above filter view window and flex lens upwards until it releases from edges of filter view window (See fig.18b).

Assembling: Assemble inside cover lens the same way as it was removed.

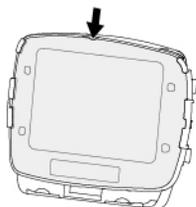


fig.18a



fig.18b

- **REPLACING THE GRIND LENS HOLDER AND GRIND LENS**

Disassembling: Remove the grind lens holder per fig.19a / 19b. Remove the grind lens per fig.19c.

Assembling: Install with one side into the slot, then insert the other side.



fig.19a



fig.19b

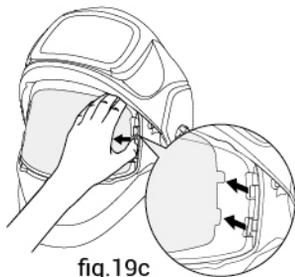


fig.19c

- **CLEANING**

Clean helmet by wiping with a soft cloth. Clean the filter surfaces regularly. Do not use strong cleaning solutions. Clean sensors and solar cells with methylated spirit and a clean cloth and wipe dry with a lint-free cloth.

TECHNICAL SPECIFICATIONS

WELDING HELMET

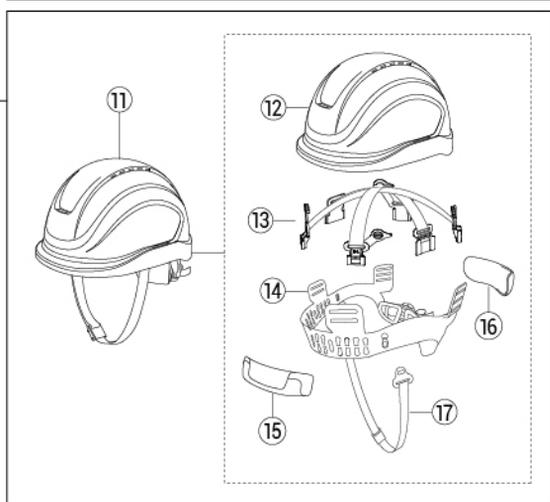
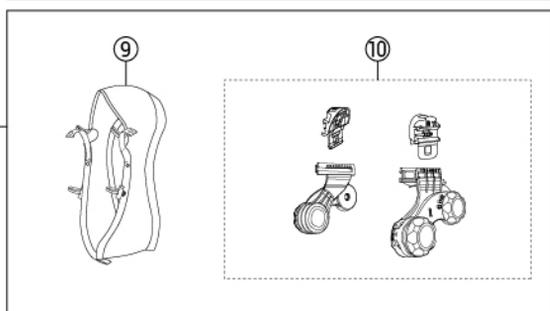
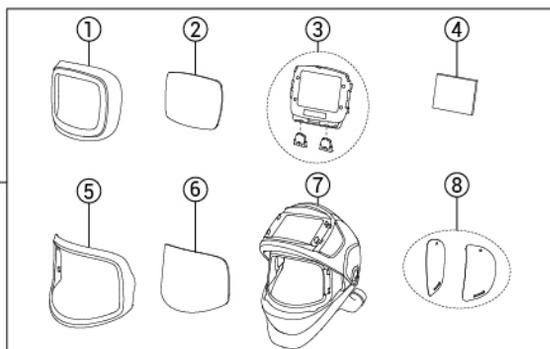
Optical Class:	1 / 1 / 1 / 1
Viewing Area:	107 x 75 mm (4.21" x 2.95")
Cartridge Size:	156 x 123 x 33 mm (6.14" x 4.84" x 1.30")
Arc Sensor:	4
Light State:	DIN 4
Grind State:	DIN 4
Cutting Shade:	Shade No. from 5 to 8
Welding Shade:	Shade No. from 9 to 13
Shade Control:	Internal, Digital Display Control
Power On / Off:	Automatic On / Off
Sensitivity Control:	Low ~ High, Digital Display Control
UV / IR Protection:	Up to Shade DIN16 at all times
Power Supply:	Solar cell. Battery replaceable, 2 x CR2450 lithium battery
Switching Time:	1/25,000 s. from Light to Dark
Grinding:	Yes
Delay (Dark to Light):	0.1 ~ 1.0 s, Digital Display Control
Low Amperage TIG Rated:	≥ 2 amps (DC); ≥ 2 amps (AC)
Operating Temp.:	-10 °C ~ +55 °C (14 °F ~ 131 °F)
Storing Temp.:	-20 °C ~ +70 °C (- 4 °F ~ 158 °F)
Helmet Material:	High Impact Resistance Nylon
Application Range:	Stick Welding (SMAW); TIG DC&AC; TIG Pulse DC; TIG Pulse AC; MIG/MAG/CO2; MIG/MAG Pulse; Plasma Arc Cutting (PAC); Plasma Arc Welding (PAW); Air Carbon Arc Cutting (CAC-A); Oxyfuel Gas Welding (OFW); Oxygen Cutting (OC); Grinding
Approved:	CE, UKCA, UKNI, ANSI Z87.1, Z94.3, AS/NZS 1338.1, EAC

HARD HAT

Weight:	387g
Hard hat size:	258 x 217 x 153mm
Head circumference scope:	51~64cm
Period of validity:	30 months
Material:	High strength ABS raw material
Testing standard	EN397-2012

PARTS LIST & ASSEMBLY

A



ITEM	PART NO.	DESCRIPTION
A-1	AC429-000-005-000	Front lens holder
A-2	EP264-000-041-000	Outside cover lens (160.36×107.3 mm)
A-3	EP265-000-005-000	Auto darkening filter
A-4	EP266-000-005-000	Inside cover lens (107×80 mm)
A-5	AC430-000-005-000	Grind lens holder
A-6	EP267-000-005-000	Grind lens (anti-fog, 223×129.8 mm)
A-7	RP233-0000-005-ONE	Helmet shell with air duct no ADF
A-8	EP269-000-005-000 00	Side lens cover
A-9	AC586-0000-037-ONE	Face seal for Hard Hat
A-10	AC585-0000-005-ONE	Hard hat adapter
A-11	HH049-0000-033-ONE	Hard hat (including Headgear) (white)
A-12	HH049-0000-033-ONE	Hard hat
A-13	AC588-0000-005-ONE	Hard hat head harness
A-14	AC589-0000-005-ONE	Hard hat headgear strap
A-15	AC587-0000-005-ONE	Hard hat front sweatband
A-16	AC433-000-005-000	Hard hat rear soft pad
A-17	AC543-0000-005-ONE	Hard hat chin strap

SHADE GUIDE TABLE

GUIDE FOR SHADE NUMBERS

OPERATION	ELECTRODE SIZE 1/32 in. (mm)	ARC CURRENT(A)	MINIMUM PROTECTIVW SHADE	SUGGRSTED ⁽¹⁾ SHADE NO. (COMFORT)
Shielded metal arc welding	Less than 3 (2.5)	Less than 60	7	—
	3-5 (2.5-4)	60-160	8	10
	5-8 (4-6.4)	160-250	10	12
	More than 8 (6.4)	250-550	11	14
Gas metal arc welding and flux cored arc welding		Less than 60	7	—
		60-160	10	11
		160-250	10	12
		250-500	10	14
Gas tungsten arc welding		Less than 50	8	10
		50-150	8	12
		150-500	10	14
Air carbon Arc cutting	(Light)	Less than 500	10	12
	(Heavy)	500-1000	11	14
Plasma arc welding		Less than 20	6	6 to 8
		20-100	8	10
		100-400	10	12
		400-800	11	14
Plasma arc cutting	(Light) ⁽²⁾	Less than 300	8	8
	(Medium) ⁽²⁾	300-400	9	12
	(Heavy) ⁽²⁾	400-800	10	14
Torch brazing		—	—	3 to 4
Torch soldering		—	—	2
Carbon arc welding		—	—	14
PLATE THICKNESS				
	in.	mm		
Gas welding	Under 1/8	Under 3.2		4 or 5
	1/8 to 1/2	3.2 to 12.7		5 or 6
	Over 1/2	Over 12.7		6 or 8
Oxygen cutting	Under 1	Under 25		3 or 4
	1 to 6	25 to 150		4 or 5
	Over 6	Over 150		5 or 6

⁽¹⁾ As a rule of thumb, start with a shade that is too dark, then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line the visible light of the (spectrum) operation.

⁽²⁾ These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

WARRANTY

Universal's only obligation shall be repair, replace or refund the purchase price of such parts or products material and fabrication defects free of charge within the warranty period. This warranty does not cover to cause by improper handling abuse or application other than recommended in the user instruction.

If you come across any problem during warranty period, contact your distributor, send the defective parts together with the completed defect problem if necessary.

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

Serial Number:

Purchase Date:



EN12941:1998 +A2:2008, Class TH3 P R SL.

DIN EN175:1997

DIN EN379:2009-07

DIN EN166:2001

(EU) 2016/425

UKCA-B-210967

Approved body No: 0194

UNIVERSAL PPE LTD

Aqua House, Buttress Way, Smethwick, West Midlands,

England, B66 3DL

info@universalppe.co.uk

www.universalppe.co.uk

Tel: +44 (0) 121 817 790