SparxLift Welding PAPR
Usage & Care

Component Diagram

Welding Helmet with Shroud
Breathing Tube with Nomex Cover
HE Filter with Spark Arrest Cover
Blower Unit with Battery and Belt

April 2014

Bullard
Installing Headgear

• Position the Band Holder on each side as shown
• Then with position the head band so that the mating pieces line up over the band holders
• Push until the band holders fully engage the head band.
Adjusting Headgear Circumference

- To adjust the fit of the headgear around the circumference of your head, simply tighten or loosen the ratchet knob.
- The knob must be pushed in before it can be rotated.
- Push in and rotate clockwise to tighten.
- Push in and rotate counter-clockwise to loosen.
Adjusting Headgear Top Fit

- To adjust the fit of the top of the headgear, move the pin to the desire location and push in to lock.
Adjusting Headgear Tilt

• Start by loosening the knobs on the side of the helmet slightly.
• Then move the angular stopper to one of the three available positions and repeat on the opposite side.
• The center position is considered neutral.
• The position closest to the front of the helmet will tilt the helmet closer to the chin.
• The position furthest from the front from helmet will tilt the helmet away from the chin.
Adjusting Liftup Knobs

- These knobs determine how easy or how difficult it is to lift the helmet when desired.
- The tension on these knobs also determines if the helmet will stay in the up position.
- Turn clockwise to tighten.
- Turn clockwise to loosen.
Adjusting the Weld Settings
Adjusting Shade Control

- The required filter dark state can be selected by using the shade control.
- The SparxLift can be adjusted between shades 9 to 13 with the embossed arrow on the dial indicating the current adjustment.
- Always use the appropriate shade for the welding operation you are undertaking.
- The higher the shade number, the darker the lens will be when the Auto Darkening Filter is activated.
- **Important:** there is always full time radiation and UV protection and that shade 4 is provided even when the ADF is not activated.
## OSHA Welding Shades

### Table 1: Filter Lenses for Protection during Shielded Metal Arc Welding

<table>
<thead>
<tr>
<th>Operation</th>
<th>Electrode Size – inch (mm)</th>
<th>Arc Current (Amperes)</th>
<th>OSHA Minimum Protective Shade Number</th>
<th>ANSI &amp; AWS Shade Number Recommendations*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shielded Metal Arc Welding (SMAW)</td>
<td>Less than 3/32 (2.4)</td>
<td>Fewer than 60</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>3/32-5/32 (2.4-4.0)</td>
<td>60-160</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>More than 5/32-1/4 (4.0-6.4)</td>
<td>More than 160-250</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>More than 1/4 (6.4)</td>
<td>More than 250-550</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>

### Table 2: Filter Lenses for Gas Welding and Oxygen Cutting Operations

<table>
<thead>
<tr>
<th>Operation</th>
<th>Plate Thickness Inches</th>
<th>Plate Thickness mm</th>
<th>OSHA Minimum Protective Shade Number</th>
<th>ANSI &amp; AWS Shade Number Recommendations*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Welding</td>
<td>Under 1/8</td>
<td>Under 3.2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1/4 to 1/2</td>
<td>3.2 to 12.7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Over 1/2</td>
<td>Over 12.7</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Oxygen Cutting</td>
<td>Under 1</td>
<td>Under 25</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1 to 6</td>
<td>25 to 150</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Over 6</td>
<td>Over 150</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation</th>
<th>Arc Current (Amperes)</th>
<th>OSHA Minimum Protective Shade Number</th>
<th>ANSI &amp; AWS Shade Number Recommendations*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW)</td>
<td>Fewer than 60</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>60-160</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>More than 160-250</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>More than 250-500</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Gas Tungsten Arc Welding (GTAW)</td>
<td>Fewer than 50</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>50-150</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>More than 150-500</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Air Carbon Arc Cutting (CAC-A) (Light)</td>
<td>Fewer than 500</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Air Carbon Arc Cutting (CAC-A) (Heavy)</td>
<td>500-1000</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Plasma Arc Welding (PAW)</td>
<td>Fewer than 20</td>
<td>6</td>
<td>6-8</td>
</tr>
<tr>
<td></td>
<td>20-100</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>More than 100-400</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>More than 400-800</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Plasma Arc Cutting (PAC) (Light)**</td>
<td>Fewer than 300</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Plasma Arc Cutting (PAC) (Medium)**</td>
<td>300-400</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Plasma Arc Cutting (PAC) (Heavy)**</td>
<td>More than 400-800</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Torch Brazing (TB)</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Torch Soldering (TS)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Carbon Arc Welding (CAW)</td>
<td></td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>
# EN Welding Shades

## Recommended shade numbers according to BS 679, DIN 4647-1 and EN169

<table>
<thead>
<tr>
<th>Welding Process</th>
<th>Current in amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Covered Electrodes</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
</tr>
<tr>
<td><strong>MIG on heavy metals</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>MIG light alloys</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>TIG on all metals and alloys</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
</tr>
<tr>
<td><strong>MAG</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>Arc-air gouging</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
</tr>
<tr>
<td><strong>Plasma jet cutting</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td><strong>Microplasma arc welding</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

According to the conditions of use, the next greater or the next smaller scale number can be used.
Adjusting Delay

- The delay refers to the length of time it takes to recover from dark to light after a weld has been completed.
- This should be set according to welding type and current.
- During periods of short, rapid welding, it may be desirable to have a slow recovery to avoid flickering and the “tired eye” effect.
Adjusting Sensitivity

• The higher the sensitivity, the less light is required to make the ADF activate.

• **Where problems are encountered** during welding at low amps (e.g. TIG) or there is a high level of ambient light please follow these steps:
  - Start with the sensitivity **LOW** (gently turn anticlockwise until the knob stops) and adjust upwards as required.
  - If this does not solve the problem, set the sensitivity control in the middle position and hold the helmet close to the target object and adjust the shade control completely clockwise.
  - If the welding filter stays in the light state, leave the control set at this point.
  - If the filter switches to the dark state, turn the shade adjustment back until the filter just switches into the light state.
• The filter should now be adjusted correctly.
Adjusting RF Sensor

- **High Setting**
  - For TIG welding of less than 10 amps
  - For shielded cables and welders.

- **Low Setting**
  - For TIG welding of more than 10 amps
  - Use when working near other welders
  - Use in areas of high RF interference to avoid false triggers
  - Use for **general welding**.

<table>
<thead>
<tr>
<th>Tig Rating</th>
<th>RF HIGH</th>
<th>&gt;1 Amp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RF LOW</td>
<td>&gt;10 Amp</td>
</tr>
</tbody>
</table>
Changing the Front Cover Lens

• To change the lens, hold the helmet in your lap with the control knobs closest to you.
• Then place your thumb at the edge of the door frame, centered just above the finger hold.
• With your index finger positioned in the finger hold, apply a very slight pressure with your thumb to release the latch mechanism and then pull upward with your index finger in a slight curling motion to open the door.
• Another option is to use a flat head screwdriver to gently pry up the latch.
Changing the Front Cover Lens – Part 2

- Open the Door
- Remove the old lens
- Remove the protective film from new lens.
- Replace and close the door.
Changing the Rear Cover Lens

- The SparxLift Helmet comes complete with a rear cover lens to protect the inside of the ADF.
- To change this lens begin by opening the door frame.
- Unplug the Rapid Connect Cable System to remove the ADF.
- Place index finger into finger hold at the top center of the viewing lens and pull to remove the cover lens.
- Remove the protective film from the new cover lens and slide underneath the four holding tabs to install.
- Re-attach the ADF using the Rapid Connect Cable System and put back into place.
- Finish by closing the door frame.
Changing the Grinding Lens

- To access the Grinding Lens, press the Autolift button at the front center of the helmet.
- This will lift the ADF up to reveal the polycarbonate grinding lens.
- Next, from the inside of the helmet, unclip the two side tabs from their latched position by pulling inward.
- Then slide the lens out through the front of the helmet.
- Remove the protective film from the new lens and slide in from the front.
- Secure with the locking tabs on each side.
Changing the Batteries

- The SparxLift Helmet comes with (2) 3V Lithium CR2032 cells as the main power source for the ADF.
- They should be replaced immediately when the battery warning light comes on and/or at least every 3 years.
- To change these batteries:
  - Open the door frame.
  - Unplug the Rapid Connect Cable System to remove the ADF.
  - Slide out the battery holders from each side of the Solar Assist cartridge
  - Discard the old batteries according to your employers disposal policies.
  - Install the new batteries into the battery holder, noting the proper polarity, and slide the holders back into the cartridge.
  - Re-attach the ADF using the Rapid Connect Cable System
  - Return ADF to original position.
  - Finish by closing the door frame
Changing the ADF – Part 1

- Open the door frame.
- Unplug the Rapid Connect Cable System to remove the ADF.
- Separate the Solar Assist Cartridge from the ADF by using the Z-slide system.
- With the battery holder side of the system facing you, simultaneously move the top cartridge to the left and the bottom cartridge to the right.
Changing the ADF – Part 2

• Install the new ADF to the Solar Assist Cartridge by lining up the tabs on the Solar Assist with the slots on the ADF.
• One aligned properly, hold the ADF stationary and slide the Solar Assist into place.
• Re-attach the ADF using the Rapid Connect Cable System and put back into place.
• Finish by closing the door frame.
Changing the Solar Assist

• To change the Solar Assist Cartridge Auto Darkening Filter, begin by opening the door frame.
• Unplug the Rapid Connect Cable System to remove the ADF.
• Separate the Solar Assist Cartridge from the ADF by using the Z-slide system.
• With the battery holder side of the system facing you, simultaneously move the top cartridge to the left and the bottom cartridge to the right.
• Install the new Solar Assist to the ADF by lining up the tabs on the Solar Assist with the slots on the ADF.
• One aligned properly, hold the ADF stationary and slide the Solar Assist into place.
• Re-attach the ADF using the Rapid Connect Cable System and put back into place.
• Finish by closing the door frame.
Installing the Shroud – Step 1

- Position the helmet so that you are looking at the ratchet adjustment knob (zoom)
- Orient the shroud so that you are looking at the breathing tube connection. (zoom)
Installing the Shroud – Step 2

- Then line up the triangular shaped indent of the shroud edge with the triangular shaped ledge inside the helmet just above the headgear knob.
- The edge of the shroud indent should press tightly against the end of the helmet ledge.

Do not leave a gap
Installing the Shroud – Step 3

- Press the loop Velcro of the shroud against the hook Velcro of the helmet, working around the helmet in a clockwise fashion until the shroud is completely installed.
- The shroud’s stiffening edges fit against the helmet shell and behind the headgear adjustment components.
- If using the SLS1 shroud the ratchet cover from the helmet should be removed since there is a ratchet cover built into the shroud.
Connecting SparxLift to EVA

- Connecting the SparxLift Helmet to the EVA blower system creates a world class welding PAPR.

- For the full library of instructional EVA videos please visit Bullard TV on YouTube or go to www.bullard.com to download.
Connecting to the EVA - Filter

- Remove the filter and record the starting date of the service period.
- Install the HEPA filter by positioning the locking tab at approximately the 11 o’clock position, lowering into the blower.
- Continue to rotate the filter clockwise until the filter locking tab is secure at the 12 o’clock position.
Connecting to the EVA - Battery

• Install the battery by inserting it into the rails in the back of the blower until the latch clicks.
• Press the fuel gauge to verify remaining charge capacity of the battery.
Connecting to the EVA - Belt

- Install the belt by first lay the blower filter side down.
- Then orient the level locks on the blower to match the openings in the belt back plate.
- Position the belt over the blower and secure by rotating the lever locks.
Connecting to the EVA – Breathing Tube

- Verify that a rubber gasket is in place in the breathing tube port of the blower unit.
- Install the breathing tube into the blower by threading until finger tight.
Installing Spark Arrest Cover

- The SparxLift system comes with a Nomex cover to protect the blower and breathing tube.
- An added feature of this cover is a Spark Arrest screen that protects the HEPA filter from sparks and weld slag.
- To install the cover, first make sure the blower, battery, belt, and breathing tube are all assembled together.
- Also make sure that the blue fiberglass disk is properly in place.
- Then, slide the cover down the breathing tube and over the battery.
- Align the inlet of the cover with the blue disk over the HEPA filter.
- Next, wrap the cover around the belt and secure with the snaps.
Testing the Air Flow

• With gasket present in the breathing airway port, attach breathing tube to blower unit.

• With a filter cartridge installed, turn blower power on. Hold free end of breathing tube upright and place the Airflow Indicator into the end without blocking the outlet holes.

• Apply a slight downward pressure on the Airflow Indicator against the breathing tube to get a reasonable seal.

• If the ball is completely above the Pass Line then the system is ready for use.
Donning with the SLS1 Shroud

- With air flowing into the SparxLift helmet from the EVA PAPR… (show system connected)
- Don the SparxLift by inserting the chin into the shroud and pull the helmet over your head.
- Adjust the ratchet as necessary for fit and comfort.
- Adjust the drawstring to be snug but not uncomfortable.
Donning with the SLS2 Shroud

• With air flowing into the SparxLift helmet from the EVA PAPR…
• Spread open the neck cuff and don the SparxLift by inserting the chin into the shroud and pull the helmet over your head.
• Adjust the ratchet as necessary for fit and comfort.
• Adjust the drawstring to be snug but not uncomfortable.
Maintaining the AutoLift
Assembling and disassembling the Auto Lift assembly on the SparxLift is a simple process but should be done according to the following instructions to ensure problem free operation of the helmet.

- Locate the spring (10-3L) in the recess on the outside of the helmet shell ensuring that the end of the spring is hooked into the hole provided and pointing upwards.
- Springs are labeled (R/L) and if reversed the Auto Lift mechanism will not work.
- Place the spring retainer (10-2L) over the spring and ensure that the tongue of the retainer is located in the slot provided on the side of the helmet shell.
- Mount the cartridge holder assembly over the spring retainer ensuring that the notches in the top of the spring retainer are nested into the matching slots on the cartridge holder assembly.
Maintaining the AutoLift – Part 2

- Insert the slotted bolt into the hole and over the end of the spring.
- While holding the slotted bolt in place with your thumb, look inside the shell and locate the black washer over the end of the bolt which should now be visible on the inside of the shell.
- Note that the black washer has internal fins that mate with the end of the slotted bolt.
- Insert the self tapping screw into the washer and screw it in. Avoid overtightening.
- Use a coin to tension the springs on each side by turning the head of the slotted bolts with a coin. Avoid over tensioning.
- Test the Auto Lift mechanism after each adjustment. Usually turning the screw a few ‘clicks’ or about 180 degrees gives perfect results.
Inspection

• Check your helmet shell and filter on a regular basis when in normal use and after extended periods of storage.
• Never use a cracked or damaged helmet as this may result in personal injury and will void your warranty.
• Please replace any worn or damaged parts as necessary.
• Genuine Bullard replacement parts are available from your authorized Bullard distributor.
Cleaning

- Never expose the filter cartridge to direct contact with water or solvents.
- After removing the welding filter from the shell the shell can be cleaned using a mild detergent and water solution.
- Sweat bands can be washed.
- A silicone based lubricant may be used on moving parts if necessary but is not normally required.
- The filter may be carefully wiped with a cloth dampened with household window cleaning solution.
- Please be careful not to scratch or otherwise damage the filter cartridge with fragments of welding spatter or other abrasive dirt.
- Refer to the relevant parts diagram for illustrations regarding assembly and disassembly.
Storage and Temperature

- Your Bullard welding helmet is strong and durable.
- It is designed to work in temperatures between -5°C and +55°C.
- Do not use your helmet in very hot conditions where temperatures exceed +65°C.
- Always store your helmet in a clean dry place out of the direct sun and protect it from exposure to moisture or extreme heat (min/max storage temperature is -20°C ~ +70°C).
- Avoid unnecessary impact or compression of your helmet and never use a helmet that is damaged.
- Your Bullard welding helmet is a quality professional tool and careful storage will extend the life of your investment.
For More Information:

Call 1-877-Bullard
or
visit www.bullard.com