

(for use with SparxLift Welding Helmets)

EVA1 - Powered Air-Purifying Respirator

US-NIOSH	Powered Air-Purifying Respirator with High Efficiency (HE) Filters - Approval No. TC-21C-0940 (PAPRFC3) TC-21C-0941 (PAPRFC3)
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Cautions and Limitations

- A. Not for use in atmospheres containing less than 19.5% oxygen.
 - B. Not for use in atmospheres immediately dangerous to life or health.
 - C. Do not exceed maximum use concentrations established by regulatory standards.
 - F. Do not use respirator if airflow is less than four cfm (115 lpm) for tight fitting face pieces or six cfm (170 lpm) for hoods and/or helmets.
 - H. Follow established cartridge and canister change schedules or observe ESLI to ensure that cartridges and canisters are replaced before breakthrough.
 - I. Contains electrical parts that may cause an ignition in flammable or explosive atmospheres.
 - J. Failure to properly use and maintain this product could result in injury or death.
 - L. Follow the manufacturer's user instructions for changing cartridges and/or filters.
 - M. All approved respirators shall be selected, fitted, used and maintained in accordance with MSHA, OSHA and other applicable regulations.
 - N. Never substitute, modify, add or omit parts. Use only exact Bullard replacement parts in the configuration as specified by the manufacturer.
 - O. Refer to User's Instructions and/or maintenance manuals for information on use and maintenance of these respirators.
 - P. NIOSH does not evaluate respirators for use as surgical masks.
- * At very high work rates, the pressure in the device may become negative at peak inhalation flow.

▲ WARNING
<ul style="list-style-type: none"> • Always use genuine SparxLift front and inside cover plates. Failure to do so may result in injury and will void the warranty. • The SparxLift is not designed for overhead welding without the use of additional protection. • Check your helmet for physical damage and test it regularly. If your helmet is damaged or is not working normally have it tested and repaired before use. • Always select the appropriate shade before use according to the type of welding and current/amperes used. When in doubt refer to your authorized safety representative.



CE EN175
EN379
ANSI Z87S

▲ WARNING
<p>Use strictly in accordance with instructions, labels and limitations pertaining to the EVA Series respirator.</p> <ol style="list-style-type: none"> 1. The EVA Series respirator does not supply oxygen. Use only in adequately ventilated areas containing at least 19.5% oxygen. 2. Do not use when concentrations of contaminants are immediately dangerous to life or health (IDLH). This term is defined in 29CFR 1910.134 (b). 3. Do not use these respirators for respiratory protection during abrasive blasting or clean up. 4. Do not use in circumstances where the airborne concentration level of contaminant exceeds maximum use concentration for this type of respirator as established by regulatory standards. 5. Leave area immediately if: <ul style="list-style-type: none"> • Breathing becomes difficult • Dizziness or other distress occurs • You taste or smell the contaminant • Unit becomes damaged • Battery alarm activates • Low Flow alarm activates 6. This apparatus must not be worn with the blower unit switched off. If the blower is switched off, a rapid build-up of carbon dioxide and depletion of oxygen may occur, which could result in death or serious injury. 7. Never alter or modify this respirator. Use only Bullard NIOSH-approved EVA Series components and replacement parts for this respirator. 8. This device is not immune to highly powered RFI/EMI emissions. Failure to follow these warnings could result in death or serious injury.

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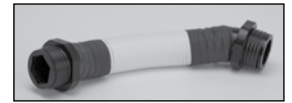
Component Diagram

Breathing Tube with Nomex Cover

HE Filter with Spark Arrest Cover

Welding Helmet with Shroud

Blower Unit with Battery and Belt



PAHBTBK

Helmet with Shroud



Breathing Tubes



PA1BT - STANDARD LENGTH



PA1BTXS - XS LENGTH



PA1BTXL - XL LENGTH

Breathing Tube Cover



NMXBTC

Blower and Battery



EVA

Cover with Spark Arrest Filter



EVADCFR1

Belts



EVABELT1



EVABELT2

EVA Series Powered Air-Purifying Respirator Blower Assembly User Manual

(for use with SparxLift Welding Helmets)

EVA Series - Principle of Operation

The EVA Series Powered Air-Purifying Respirator (PAPR) System is configured in six parts:

1. The blower and belt assembly:

EVA1	Blower Unit
EVABELT1	Comfort/Decon Belt
PA1AFI	Air Flow Indicator
2. The battery pack (Part No. EVABAT1). One fully charged pack will power the blower for approximately four to ten hours depending upon factors such as speed, cartridge selected and cartridge loading.
3. The breathing tube, which is available in 4 options:

PAHBT	Powered Air Hood Breathing Tube Assembly (standard length)
PAHBTXS	Powered Air Hood Breathing Tube Assembly (short length)
PAHBTXL	Powered Air Hood Breathing Tube Assembly (long length)
PAHBTBK	Powered Air Hood Breathing Tube Assembly for Back Pack
4. The High Efficiency Particulate Absolute (HEPA) filter.
5. SparxLift welding helmet with Shroud.
6. The Battery Charger:

EVASMC	Quick charger (single port)
EVASMC2	Analyzing charger
EVAGC	Gang charger (six port)

The blower unit draws in ambient air through the filter. The purified air is blown into the wearer's hood through the breathing tube. A flow indicator is provided to check that there is an adequate volume of air available to the wearer prior to use. The system is designed to operate at a minimum air flow of approximately seven cubic feet of air per minute (210 liters per minute) in the hood under normal use on the standard speed setting, and eight and one-half cubic feet of air per minute (241 liters per minute) in the hood under normal use on the high speed setting. A feedback loop from the Mass Flow Sensor to the impellor continually monitors and adjusts the air flow to keep it constant at the design set point.

The units are designed for use at temperatures from 23°F to 122°F (-5°C to 50°C). A high temperature alarm will sound at 50°C (122°F).

The battery pack mounts in a compartment on the back of the blower. A fully charged battery pack will power the blower for approximately four to ten hours depending upon factors such as speed selected, cartridge selected, and filter/cartridge loading.

The EVA Series Blower is equipped with two alarms: A 77db continuous alarm will sound when the air flow falls below approximately 185 lpm and a 77db intermittent chirp alarm will activate to indicate that the battery has approximately 15 minutes of remaining capacity.

Battery Pack

One fully charged battery pack will power the blower for approximately four to eight hours depending upon factors such as speed selected, cartridge selected and filter/cartridge loading.

NOTE

The battery has built-in short circuit protection. In the event of a short circuit, an internal polyfuse will trip. The fuse will reset itself within 5-10 seconds allowing the battery to resume normal operation.

To charge the battery pack, do the following:

- Press the battery release on the pack to remove the battery from the back of the blower (see Figure 1).



Figure 1

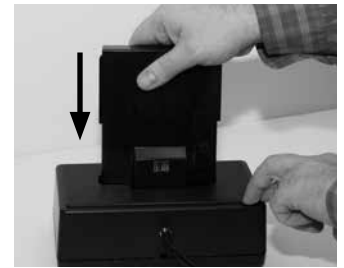


Figure 2

- Place battery upside down into the charging port of the battery charger (Figure 2).
- Connect the battery charger to a 110-volt AC electrical outlet.
- Charge the battery pack for approximately four hours.

While the battery is charging, the light on the charger will remain red. The charger light will illuminate green when charging is complete.

Table-top gang chargers EVAGC with 6 ports are also available.

Diagnostic functions are available for chargers (upon special order) including access to data such as number of cycles of operation, remaining charge capacity, etc. Details for these functions are available in the EVASMC2 charger user manual (upon special order).

WARNING

DO NOT charge batteries in hazardous areas.

Battery Storage

Storage of Li Polymer batteries is relatively easy. Unlike Nickel batteries, they lose a very small amount of power (less than 0.5% per day) and therefore can be charged and stored ready for use. If long-term storage is required, it is best to store the battery in a cool place with at least 40% charge still remaining.

NOTE

Discharging and re-charging the battery fully at least once every 3 months is suggested to ensure the longest possible life of the battery. Do not leave on the charger for more than 30 consecutive days.

To maximize battery life, these guidelines should be followed:

- Remove the battery from the blower unit when not in use.
- Charge the battery before it is completely discharged. The low battery alarm indicates that the battery needs to be charged. The battery is designed with a circuit to protect the battery. It will not allow the battery to be discharged below a safe voltage for the cells, regardless of airflow, without the alarm sounding. When the battery reaches the voltage cutoff it will automatically cease operation.
- Always charge the batteries at room temperature or cooler. At higher temperatures, the battery pack may not accept a full charge. If the battery

pack feels hot, let it cool for 30 minutes before charging.

- Do not charge battery packs in an enclosed cabinet without ventilation.

Battery Fuel Gauge:

EVA Battery Packs are equipped with an on-board fuel gauge (Figure 3) to indicate the amount of remaining capacity left in the battery pack. To check the remaining capacity, simply depress the button labeled "Push" and LEDs will illuminate indicating the level of battery capacity remaining. When fully charged all four LEDs will illuminate green, and when 25% or less charge is available a single LED will illuminate red.



Figure 3

Pre-Operational Inspection

Prior to each work shift, perform the following Pre-Operational Inspection to ensure proper operation and to ensure that the unit is completely assembled.

1. Belt Mounted Blower Unit, Part No. EVA1

- Check that the unit is clean and undamaged.
- Inspect for deterioration, physical damage and improper assembly.

2. Filter/Cartridges

- Inspect the filter/cartridge for any physical damage
- Check the label to ensure the filter/cartridge has not exceeded its "use-by" date.
- Inspect the gasket on the filter for any physical damage.

NOTE

Each filter comes with a permanent gasket.

- Ensure that the correct filter/cartridge is appropriate for the contaminant.
- Consult the NIOSH approval label and your own in-plant safety professional if you have any questions as to the suitability and efficiency of the Air-Purifying Element.
- Screw the cartridge into the port until hand-tight and the locking tab is secure (Refer to Mounting and Replacing Filters on Blower Unit on page 5).

3. Battery Pack

- Check that the battery is not damaged.
- Check the Fuel Gauge to determine sufficient charge is available.
- Place the battery pack in the battery compartment on the blower.
- The battery tab should click when completely engaged (Figure 4).

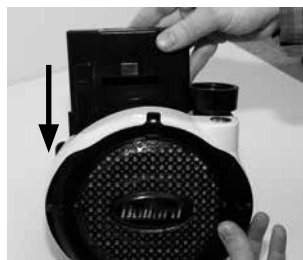


Figure 4

4. Helmet with Shroud (SLS1 or SLS2)

- Inspect both the helmet and the shroud for any physical damage
- Inspect shroud to helmet velcro attachment and ensure proper installation.
- To provide a general check of system status you may wish to set the shade control to 11 and hold the helmet towards a bright incandescent light source. Under normal circumstances the filter will change from light to dark state and back to light state again as you move the helmet away.

Mounting the Breathing Tube on the Blower

- Ensure that a rubber gasket is in place in the breathing tube coupler on the blower unit.
- Screw one end of the breathing tube into the blower unit - hand tight is sufficient (Figure 5).
- Ensure that neither the breathing tube nor the filter is blocked.
- Ensure that the ON/OFF Switch is in the OFF position.
- Switch on the blower by pressing the on/off button for 1-2 seconds confirmed by a short beep.
- If the Low Battery Alarm sounds at this time, the battery needs to be recharged. See instructions on page 2 regarding properly charging the battery.
- If the Low Flow Alarm sounds at this time, the hood, breathing tube and filter should be checked for a blockage.



Figure 5

Checking Airflow with the Airflow Indicator (PA1AFI)

With the blower switched ON and the filters/cartridges mounted, take the free end of the breathing tube in one hand, hold it upright and place the Airflow Indicator into the end of the tube (Figure 6).



Figure 6

Apply a light downward pressure to the Airflow Indicator to get a reasonable seal at the breathing tube end. Ensure that the air outlet holes in the Airflow Indicator tube are not blocked. Two hands may be used if preferred, one to hold the breathing tube and one to hold the Airflow Indicator.

The position of the ball in the Airflow Indicator should be observed. If any part of the ball is below the PASS LINE on the Airflow Indicator, check for:

- Blower malfunction.
- Clogged or damaged Air-Purifying filter elements on the HE filter. See "Mounting and Replacing Cartridges on the Blower Unit" on page 7.
- Low battery or battery malfunction.

If the ball is completely above the PASS LINE on the Airflow Indicator, then the system is ready for use.

WARNING

If the blower malfunctions during use in a hazardous area:

Remain calm and **LEAVE** the hazardous area immediately.

DO NOT use a blower that fails the flow test (air flow indicator sold separately).

Use **ONLY** Bullard filter/cartridges which comply with and have the NIOSH approval label and which are appropriate for the contaminant.

Failure to observe these warnings could result in death or serious injury.

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EVA Series PAPR Air-Purifying Elements

Principle of Operation

The following filter/cartridge protection classification applies when used with any of the hoods or loose fitting facepieces.

NIOSH Filter/Cartridges		
Protection	Filter/Cartridge	NIOSH / ANSI Color Code
High Efficiency (particulate)	PAPRFC3	Magenta

EN Filter/Cartridges		
Protection	Filter/Cartridge	Color Code
EN12941 P3	PAPRFC3	White

HE particulate filters are 99.97% effective against all particulate aerosols.

Filters are supplied in quantities of six per box.

⚠ WARNING

- Use only the filter/cartridge(s) described in the above table.
- Do not change filter/cartridges while in a hazardous atmosphere.
- Incorrect filter/cartridge selection will invalidate all performance statements and approvals for this equipment.
- Failure to follow these warnings could result in death or serious injury.
- *DO NOT fit filters directly to the hood.

Mounting and Replacing Filters on the Blower Unit

High efficiency particulate filters must be replaced when retained particles clog the filters and reduce air flow below acceptable levels, as indicated by testing with the Air Flow Indicator as described at left (Figure 7).

To Replace Filters

- Remove the air-purifying element from its packaging, and inspect for damage. If in doubt do not use.
- Check that the air-purifying element has not exceeded its "use-by" date.
- Check that the filter connecting thread and gasket are in good condition.
- Check that the air-purifying element is appropriate to the hazard. If in doubt consult your respirator program administrator or supervisor.
- Check that the threads in the blower unit port are in good condition and clear of contaminant.
- Screw the air-purifying elements into the receptacles (see Figure 8) until the cartridge is hand tight. DO NOT OVERTIGHTEN.
- Check to see that the locking tab is secure (see Figure 9).



Figure 7



Figure 8



Figure 9

Installing the Spark Arrest Cover

If using the HE filter (PN PAPRFC3) and waist belt, then use the EVADCFR1 dust cover and spark arrest cover. Or if using a back pack use the EVABPDCFR1. Another option is to use the PAPRSC2 shower/spark cap to protect the filter and the NMXBTC to protect the breathing tube.

Insert the blue mesh disc into the cover, laying the disc against the plastic perforated disc.

With the breathing tube attached to the blower but not the helmet, slide the cover down the tube.

Then wrap the ends of the cover around the blower and secure with the plastic snaps.

The Nomex fabric will protect the breathing tube and the blower while the mesh will protect the HE filter material.

Installing and Removing the Belt on the Blower Unit

To Install the Belt

- With the blower filter side down, orient the lever locks as shown in Figure 10.
- Lay belt over blower as shown in Figure 11.
- Rotate level locks until they are oriented as shown in Figure 12.

To Remove the Belt

- With the blower filter side down, orient the lever locks as shown in Figure 13.
- Remove belt from blower.



Figure 10



Figure 11



Figure 12



Figure 13



Figure 14

ⓘ NOTE

Plastic insert may be removed for cleaning as shown in Figure 13-14. See back page for more information on cleaning.

Donning the Blower and Respirator

Initial Donning

Prepare to don the blower, battery and hood in a safe, hazard-free area and do the following:

- Ensure that the filter/cartridges used are suitable for the contaminant in question and are compatible with the EVA1 Blower Unit.
- Check that the filter/cartridge is properly mounted on the blower unit.
- Place the battery in the battery compartment on the back of the blower.
- Fit the blower and belt around the user's waist and adjust the belt for a comfortable fit (suspenders are also available).
- Remove the belt and blower to install the helmet and corresponding breathing tube.

▲ WARNING

The use of any filter/cartridge not approved with the EVA1 blower unit may put the user at risk and could result in death or serious injury.

Connecting the Breathing Tube to the Helmet

With the shroud already installed into the helmet, thread the end of the breathing tube that is not already connected to the blower to the threaded port at the rear of the shroud until finger tight.

▲ WARNING

Do not put on or remove these respirators in a hazardous atmosphere except for emergency escape purposes. Failure to heed these warnings could result in death or serious injury.

Donning the Respirator Assembly

Buckle the blower with the belt onto the waist with the blower in the lower back of the wearer.

Adjust for comfort as preferred.

Turn the blower on by depressing and holding the on/off switch (Figure 15) for approximately 1 full second (indicated by a short beep).

Don the helmet with shroud.

For the SLS1 shroud:

- Insert your chin into the shroud and pull the helmet upward toward the face.
- Adjust the drawstring for a snug, but comfortable fit.

For the SLS2 shroud:

- Widen the turtleneck with your hands and insert your head, chin first, then pull onto your head.
- Adjust drawstring for snug fit.
- Adjust the ratchet assembly and harness for angle and comfort.
- Adjust the speed if desired.

▲ WARNING

Do not enter a hazardous area until you are sure that the blower and hood are fully operational and the blower is running. The user should periodically leave the hazardous area to check the airflow through the system. If the low battery or low flow alarm should sound, or if the user experiences any difficulty in breathing, or senses any taste or any odors from the hazard, the user should leave the hazardous area immediately. Failure to observe these warnings could result in death or serious injury.

Final Donning:

- Attach the other end of breathing tube to blower unit (if not already attached) by screwing adapters together.
- Remove any protective film covering the lens of the headpiece.
- Put on the belt and blower assembly and make any final adjustments to the belt as necessary, keeping the breathing tube and helmet behind the head.
- Turn the blower on by depressing and holding the on/off switch (Figure 16) for approximately 1 second indicated by a short beep.
- Buckle the belt onto the waist (blower unit should be in the lower back of the wearer).
- Don the helmet.
- Choose speed setting (see below).
- Place the helmet on the head making any final adjustments to the fit as required at this time to ensure a comfortable and stable fit.

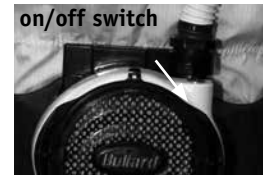


Figure 15

Final Donning



Speed Selection

The EVA1 Blower is equipped with the ability for the user to select one of two speeds for operation.

When the unit is initially turned on, the blower will operate at approximately 8.5 cfm = 240 lpm (high speed). Note: The battery life is reduced at the higher speed.

Pressing the on/off switch will change the speed to approximately 7 cfm = 198 lpm (low speed).

Pressing the on/off switch additional times will toggle the unit between the two speeds.

ⓘ NOTE

Speed change is confirmed by a short beep.

Replacing the SLS1 Shroud

- Remove the old shroud by pulling carefully along the velcro mating line.
- To install the new shroud, start at the top of the helmet and match the loop sections of Velcro on the shroud to the corresponding hook selections of Velcro on the helmet and secure with pressure.

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(for use with SparxLift Welding Helmets)

- Wrap the padded ratchet cover around the ratchet knob and secure the Velcro.
- Wrap the 5/8" Velcro strips on each side of the ratchet around the headband and secure.

Replacing the SLS2 APF Shroud

- Remove the old shroud by pulling carefully along the velcro mating line.
- To install the new shroud, start at the top of the helmet and match the loop sections of Velcro on the shroud to the corresponding hook sections of Velcro on the helmet and secure with pressure.

Low Battery Alarm and Low Flow Alarm

The EVA1 Blower unit is equipped with a Low Battery Alarm and a Low Flow Alarm.

The Low Battery Alarm will sound an intermittent 77 dba electronic beep indicating that there are approximately 15 minutes of remaining battery capacity. The delays between beeps will get shorter and shorter as time runs out.

The Low Flow Alarm will sound a continuous 77 dba electronic beep indicating that the flow to the hood has dropped below the design specification of 185 lpm = 6.5 CFM (Note: The NIOSH minimum required flow is 170 lpm = 6 CFM).

When either of these alarms sounds, the user should immediately do the following:

- Leave the hazard area
- Remove the helmet
- Disconnect the breathing tube from the hood
- Check the airflow with the airflow indicator (see page 4).
- Check the operation of the low-flow alarm by blocking the end of the breathing tube. The device will first ramp up to compensate and if correct flow cannot be achieved, the alarm will sound within 5 seconds.

Troubleshooting

The following guide will assist you in troubleshooting to locate possible issues with your respirator:

Circumstance	Possible Cause(s)	Solution
High Temperature Alarm is sounding	High Temperature $\geq 122^{\circ}\text{F}$ (50°C)	Move to a cooler location
Low Battery Alarm is sounding	Low Voltage	Charge the battery
	Blower malfunction	Return blower for analysis
Low Flow Alarm is sounding	Clogged/damaged air-purifying filter element	Replace the filter/cartridge
	Battery Low	Re-charge the battery
	Blower malfunction	Leave hazardous area immediately and check equipment. If the problem persists and no damage is found, return equipment for repair. Replace breathing tube and/or hood.
	Hood neck cuff is restricting flow	Adjust neck cuff position
Smell or taste contaminant	Equipment damaged	Leave hazardous area immediately and check equipment
	Non-particulate hazard	Select appropriate filter cartridge
	Low airflow	Leave hazardous area immediately and check equipment If the problem persists and no damage is found, return equipment for repair
Blower unit does not run full service life	Damaged Battery	Return battery for analysis
	Malfunctioning Battery Charger	Return charger for analysis
	Hood neck cuff is restricting flow	Adjust neck cuff position

If the airflow indicator indicates insufficient airflow, the battery should be fully charged (see "Battery Pack" on page 3), and/or the filter/cartridge should be replaced.

NOTE

The EVA1 blower is provided with a circuit to protect the battery. It will not allow the battery to be discharged below a safe voltage for the cells, regardless of airflow, without the Alarm sounding. When the battery reaches the voltage cutoff it will automatically cease operation. When the Low Battery Alarm sounds and the filter cartridges are not clogged, the battery should be recharged to protect the battery and thereby prolong the working life of the unit. If the ball in the Airflow Indicator is BELOW or PARTLY BELOW the PASS LINE with a fully charged battery, the filter cartridges may need to be changed.

Doffing the Respirator

Prepare to doff the blower, battery and helmet in a safe, hazard-free area and do the following (in conjunction with your employer's standard operating procedures):

- Remove the helmet.
- Turn the blower off by holding down the on/off switch for 5 seconds. This is confirmed by a long beep and a shut down of the motor.
- Remove the waist belt.
- Disconnect the helmet from the breathing tube.
- Disconnect the breathing tube from the blower.
- Clean and inspect components as necessary.
- Place battery on charger (as desired).
- Place components in storage.

WARNING

The use of any filter/cartridge not approved with the EVA1 blower unit may put the user at risk and could result in death or serious injury.



Bullard

1898 Safety Way
 Cynthiana, KY 41031-9303
 877-BULLARD (285-5273)

MODEL SPARX LIFT RESPIRATOR

Approved Only in the Following Configurations:

TC-	RESPIRATOR COMPONENTS																				CAUTIONS AND LIMITATIONS ²					
	PROTECTION ¹	HELMET ASSEMBLY	ALTERNATE SHROUD	ALTERNATE BREATHING TUBES				BLOWER UNIT ASSEMBLY	FILTER ASSEMBLY	BATTERY	BELT ASSEMBLY	ACCESSORIES														
	SLH	SLS2	SLS1	PAHBT	PAHBTXS	PAHBTXL	PAHBTBK	EVA1	PAPRFC3	EVA BAT1	EVA BELT1	EVA BKPK1	EVA BELT2	EVA SMC	EVA EXT1	PA1AFI	NMXBTC	PAPRSC2	EVA GC	PAPRUSP1	PAPRPF2	EVA DCFR1	EVA BPCFR1	EVA SMC2		
21C-0940	HE	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ABCFHIJLMNOP
21C-0941	HE	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ABCFHIJLMNOP

1. PROTECTION

HE = High Efficiency Particulate Air Filter for Powered Air Purifying Respirators

2. CAUTIONS AND LIMITATIONS

- A. Not for use in atmospheres containing less than 19.5% oxygen.
- B. Not for use in atmospheres immediately dangerous to life or health.
- C. Do not exceed maximum use concentrations established by regulatory standards.
- F. Do not use this respirator if airflow is less than four cfm (115 lpm) for tight-fitting facepieces or six cfm (170 lpm) for hoods and / or helmets.
- H. Follow established cartridge and canister change schedules or observe ESLI to ensure that cartridges and canisters are replaced before breakthrough occurs.
- I. Contains electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA / NIOSH.
- J. Failure to properly use and maintain this product could result in injury or death.
- L. Follow the manufacturer’s instructions for changing cartridges and / or filters.
- M. All approved respirators shall be selected, fitted, used and maintained in accordance with MSHA, OSHA and other applicable regulations.
- N. Never substitute, modify, add or omit parts. Use only exact replacement parts in the configuration specified by the manufacturer.
- O. Refer to User’s Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
- P. NIOSH does not evaluate respirators for use as surgical masks.

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PAPR Cleaning

⚠ WARNING

Avoid contaminant entry into the breathing tube, as this will compromise respiratory protection and could result in death or serious injury. Consult your local safety professional if you suspect that contaminant has entered the breathing tube.

When cleaning the equipment, do the following:

- Ensure water does not enter filter. Replace wet filter.
- DO NOT use gasoline, organic-based solvents, or chlorinated degreasing fluids (such as trichloroethylene), as they will cause damage.
- DO NOT immerse the equipment in water or other cleaning fluid, as this may cause contamination in the breathing tube and blower interior that will be difficult to remove.
- Use a lint-free cloth moistened in a mild solution of soap and warm water to clean the outer surface of the equipment.

Failure to observe the instructions and warnings in this manual invalidates all performance statements and approvals for this equipment and could result in death or serious injury.

The following chemicals have been tested and approved as cleaning agents for the blower housing, belt and battery:

- A. Process NPD (1.256) from Steris
- B. Spor Klenz (undiluted) from Steris
- C. Clorox liquid bleach at 10% concentration
- D. Sani-Cloth HB wipes
- E. 100% Methanol
- F. 70% IPA

Once filter/cartridges have reached the end of their useful life, discard in accordance with federal, state, and local guidelines, and in conformance with plant safety regulations.

PAPR Maintenance

DO NOT open the PAPR Housing Assembly. Internal repairs should only be performed by authorized personnel at the manufacturer's facility. The user should inspect the PAPR before each use. Contact Bullard at 877-BULLARD or info@bullard.com for any questions.

PAPR Storage

When the blower is completely dry, store in a clean, dry area, away from direct sunlight and sources of direct heat.

The storage temperature should be between 32°F to 90°F (0°C to 32°C) with humidity less than 90% RH.

Instructions for use of the SparxLift Welding Helmet

Thank you for purchasing SparxLift welding helmet.

ⓘ NOTE

For your own protection, safety and to ensure the maximum service life of your new helmet please read this manual carefully before use. Misuse or abuse may result in injury or reduced protection and may also void your warranty.

Before Use

The auto darkening welding filter in the SparxLift has been designed for arc welding and gas cutting. It is suitable for all normal arc welding processes such as MIG, MAG, TIG, SMAW, Plasma Arc and Air Carbon welding.

Before use the shade control should be adjusted to the appropriate level based upon EN169 (European Standard specifications or equivalent) or other appropriate safety guidelines. When in doubt please consult your safety representative or your authorized Bullard distributor.

The SparxLift provides continuous protection from ultraviolet and infrared radiation to the maximum level indicated on the product and as described in the relevant Standards. This protection is fail-safe and is not compromised by loss of battery power or other electronic failure.

The SparxLift welding filter cartridge is fitted with two independently operated sensors that detect the welding arc and respond accordingly resulting in the appropriate darkened filter state as set by the user and as indicated on the scaled adjustment. Please note that professional judgement may be required to achieve the best results. When in doubt consult an authorized safety representative or your Bullard distributor and always maintain a conservative attitude towards operation.

Two replaceable lithium batteries type CR2032 (3V) are used as major power sources. An additional solar cell panel extends battery life and ensures efficient operation. When operating normally the welding helmet will switch on automatically and switch off automatically to save power a few minutes after the last welding arc has been detected.

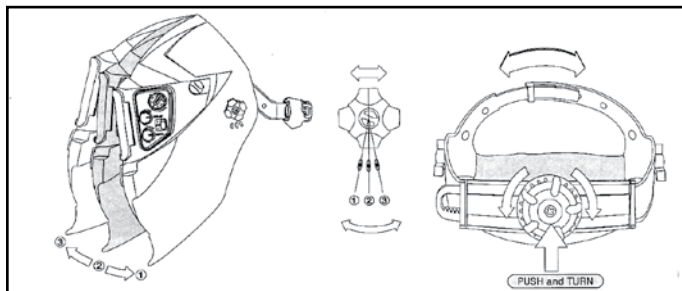
To provide a general check of system status you may wish to set the shade control to 11 and hold the helmet towards a bright incandescent light source. Under normal circumstances the filter will change from light to dark state and back to light state again as you move the helmet away. Please note that if you have any questions or there is any doubt about the performance of your Bullard product you should refer to your authorized safety representative or Bullard distributor.

ⓘ NOTE

- Always use genuine SparxLift front and inside cover plates. Failure to do so may result in injury and will void the warranty.
- The SparxLift is not designed for overhead welding without the use of additional protection.
- Check your helmet for physical damage and test it regularly. If your helmet is damaged or is not working normally have it tested and repaired before use.
- Always select the appropriate shade before use according to the type of welding and current/amperes used. When in doubt refer to your authorized safety representative.

Helmet and Head Harness Adjustment

Please make the appropriate adjustment(s) to the head harness to ensure a comfortable and secure fit. It only takes a minute and helps ensure you are properly protected. The SparxLift harness allows you to adjust the distance and angle between your eyes and the filter window. You can also adjust the circumference of the headband to ensure a comfortable but firm fit. Please make these adjustments before use based on the illustrations in figures shown below.



Markings

The appropriate available shade number markings and range are indicated on the product. Please ensure that the appropriate shade number is selected before welding. Used properly the SparxLift provides eye and face protection to meet or exceed EN379 and EN175 and other relevant Standards where indicated. The following example illustrates these requirements. Please note this example is provided for illustration purposes only.

Light Shade	CE 4
Dark Shade	9-13
Manufacture Identification	SERVORE*
Optical Class	1
Diffusion of Light Class	1
Variations in Luminous Transmittance Class	1
Certification Mark of Number of Standard	379

*SEVORE manufactures the helmet for Bullard

Technical Specifications

Switching time (light-dark)	1/25,000(0.04msec)	
Shade Level	Inactivated	Shade #4
	Activated	Shade #9 ~ #13
Sensitivity Adjustment	Dual sensors plus pre-shading (Low-High)	
Switching Delay (dark to light)	Adjustable 0.05s – 0.8s	
Tig rating	RF(H) >1Amp / RF(L) >10Amp	
Power supply	3V Lithium battery (CR2032) 2ea (replaceable)	
Battery life	3000 hours (Approximately)	
Supplementary power	Solar cells (Auto On/Off)	
Battery replacement	Replaceable (Low battery indicator)	
Cartridge size	110x90mm (4.3x3.5 in)	
Filter window	97x46mm (3.8x1.8 in)	
Total weight	Autolift : 610g (21.5 oz)	
Operating temp.	-5°C ~ +55°C	
Storage temp.	-20°C ~ +70°C	

Solar Cell Power Saver

The SparxLift solar cell array minimizes battery use by supplying continuous power during welding. The optimized auto on/off power management circuits ensure stable performance and maximum battery life under all conditions.

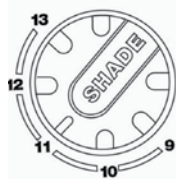
Dual Sensors Plus Pre-Shading

Z-Slide cartridges incorporate the latest advances in sensor and preshading technology. By sensing FR and using specially programmed circuits the Z-Slide responds reliably under the most demanding conditions. From Low amp TIG work to simple stick welding, the Z-Slide can be depended upon to respond reliably every time and with the Brilliant Clear X-View screen, welding is now even easier and more enjoyable.

Brilliant Clear X-View Technology

By incorporating the best optically correct UV and IR filters with special ultra-fast low-distortion LCD panels the SparxLift has made a quantum leap in filter clarity and performance. When combined with the proprietary electronic control technology the results are simply amazing. Blazingly fast, beautifully clear and extremely stable the SparxLift series cartridge sets new industry standards in performance, protection and control.

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. When in doubt please consult the relevant Standards or your authorized safety representative.

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

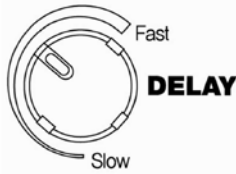
Welding Process	Current in amperes														
	0.5	2.5	10	20	40	80	125	175	225	275	350	450			
Covered Electrodes					9	10		11		12		13		14	
MIG on heavy metals							10	11		12		13		14	
MIG light alloys							10	11		12		13		14	15
TIG on all metals and alloys					9	10		11		12		13		14	
MAG							10	11		12		13		14	15
Arc-air gouging										10	11	12	13	14	15
Plasma jet cutting											11	12		13	
Microplasma arc welding	4	5	6	7	8	9	10	11	12		13		14		15

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

EVA Series Powered Air-Purifying Respirator Blower Assembly User Manual

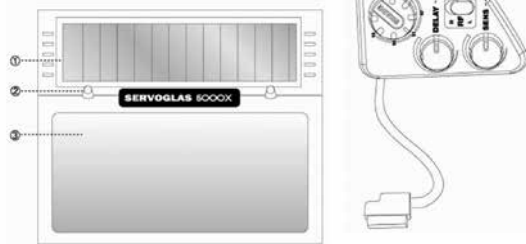
(for use with SparxLift Welding Helmets)

Delay Control



The delay functions should be used to set the recovery delay from dark to light of the welding filter according to welding method and current.

Control Function

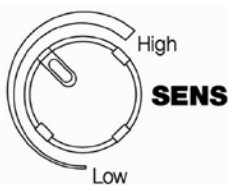


Parts

1. Solar Cell Panel
2. Sensor
3. LCD Filter Plate
4. Shade Control
5. Delay Control
6. Sensitivity Control
7. RF Sensor Switch
8. Low Battery Indicator



Light Sensitivity Control



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. First try adjusting the sensitivity control switch. 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. If the welding filter still does not respond appropriately, please adjust the sensitivity control again (having previously adjusted the shade control as explained above). [To achieve optimum results in very unusual circumstances you may need to perform this process again having first reset the sensitivity control to low.]

RF Sensor



New RF High/Low switch for even better RF sensitivity control. Switch to high for extremely low amp TIG (down to 1 amp) or when using shielded cables and welders. Switch to low when working near other welders or in areas of high RF interference to avoid false triggers and for general welding.

Tig Rating	RF HIGH	>1 Amp
	RF LOW	>10 Amp

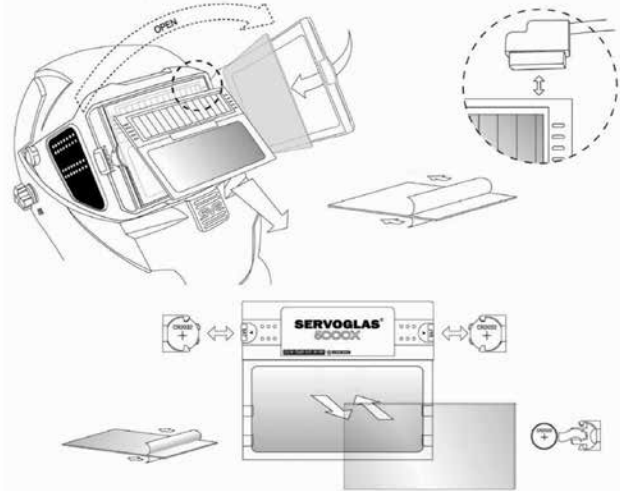
Maintenance

NOTE

Always ensure that all maintenance procedures are conducted in a clean dry place. Use clean dry hands and avoid direct contact with any glass surfaces. Handle cover plates and welding filter by the edges and carefully clean off any dirt or debris before re-use.

Changing the Front and Rear Cover Plates

- Unclip and open the front cover as shown in the diagram. You will then be able to remove and replace the front cover lens as required.
- Before installing the new cover lens remove the protective film from both sides.
- To change the rear cover lens gently remove the cartridge from the helmet you will then be able to unclip the inner cover lens and replace it. Again, you must remove the protective film from both sides of the cover lens before installing it.



NOTE

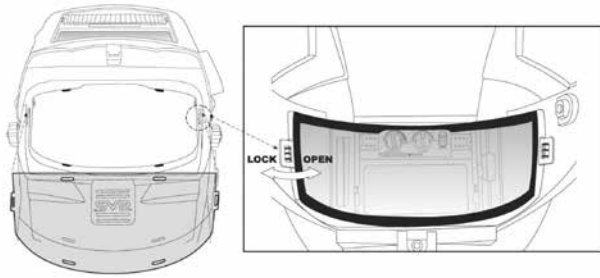
Always use genuine Bullard parts. Never use a welding helmet without both front and rear cover lenses installed.

Changing the battery

- The SparxLift uses two 3V lithium Ion batteries (CR2032) as a main power source. These batteries are user replaceable and should be replaced immediately when the battery warning light comes on and/or at least every three years. Always replace both batteries at the same time with brand new batteries. Never install previously used batteries in your helmet.
- To replace the batteries slide out the battery holders from either side of the cartridge and discard the old batteries. Install the new batteries in the battery holders and slide the battery holders back into the cartridge.

NOTE

Always note the polarity of the batteries and install them as shown in the diagram and as marked. Batteries rely on good electrical contact to function properly and so always use clean dry hands and avoid getting dirt inside the cartridge when exchanging batteries.



Changing the Inner Cover Plate on the SparxLift

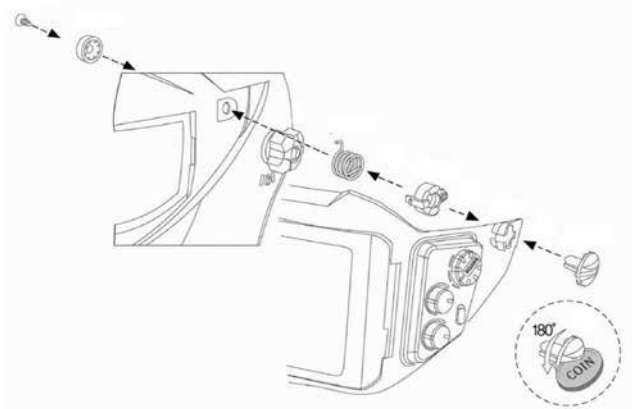
- From inside the helmet unclip the installed cover plate from the shell noting the locking tags on either side of the helmet (see diagram).
- Remove the film from both sides of the new cover plate and then insert first one side and then the other into the relevant slots on each side of the helmet.

NOTE

Always check to ensure that the locking tags on each side of the helmet are properly mated with the slots in the cover plate and that the four raised guides on the helmet shell are located in the matching slots in the cover plate.

Maintaining the Auto Lift assembly on the SparxLift

- 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 handed (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.
- 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 over-tightening.
- 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.



Storage and Temperature Range

Your Bullard welding helmet is strong and durable. It is designed to work in temperatures between -5C and +55C. Do not use your helmet in very hot conditions where temperatures exceed +65C. 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 -20C ~ +70C).

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.

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

NOTE

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.

EVA Series Powered Air-Purifying Respirator Blower Assembly User Manual

(for use with SparxLift Welding Helmets)

▲ CAUTIONS

- The SparxLift is designed for personal eye and face protection from harmful radiation, sparks and welding spatter produced under normal welding conditions. Please follow good industry and safety practices and use additional protection where necessary.
- Cover plates are strong and of industry standard quality but they are breakable. The SparxLift is a quality welding helmet but is not designed to provide protection from severe impact such as broken grinding wheels or debris from other broken tools, corrosive liquids, explosions, or other extreme incidents. We recommend you always adopt a conservative attitude towards safety and take additional precautions as required and recommended in the relevant safety standards relating to the operation you are undertaking.
- The welding filter is not designed to be waterproof. Please do not use your helmet in the rain or other inclement weather. To do so may reduce the life of your helmet and result in damage or injury.
- In the event that your helmet or welding filter is exposed to direct contact with, or is submerged in water or other liquid immediately stop using the helmet, remove the filter cartridge from the shell, remove the batteries from the filter, inspect carefully for damage and if necessary mop-up excess moisture with a paper towel and then leave to dry in a warm (not hot) place out of direct sunlight. Never place your helmet in an oven or microwave to dry. Before use perform all normal system checks and if in any doubt contact your Bullard distributor. Your Bullard helmet is a precision engineered professional protection product and must be maintained in good condition to ensure your personal protection.
- When working in the vicinity of other welders it is necessary to adopt good industry standard practice and ensure a minimum distance of 1M between workers. Failure to do so may result in injury or malfunction of the auto darkening mechanism.
- Please do not wear the helmet when you are not welding. In some circumstances the auto darkening mechanism may be unexpectedly triggered resulting in reduced vision and subsequent injury to yourself or others.
- Bullard does not support the use of SparxLift range of products in combination with any other manufacturers' products. To use parts that are not approved by Bullard may void your warranty and result in personal injury. Please use only genuine SparxLift parts and spares as provided by your authorized Bullard distributor.
- Bullard reserves the right to make improvements, change or otherwise modify the specifications, materials and design of any and all Bullard products at their sole discretion with a view to ensuring continuous improvement. Never attempt any unauthorized modifications or alterations to your Bullard product. To do so may result in personal injury and void your warranty.

Thank you for purchasing a Bullard product. If you have any questions regarding this or any other Bullard product please contact your authorized Bullard distributor.

Ordering Information

Respirator Assemblies (includes blower, battery, charger, breathing tube, breathing tube cover, spark arrest cover, helmet, shroud, and HE filter)

EVASLS1	Loose-Fitting Facepiece Shroud System
EVASLS2	Hood Style Shroud System

Blower Assemblies

EVA1	Blower Unit Only
EVA2	Blower Unit, Battery, and Charger
EVA3	Blower Unit, Battery, Charger, and HE filter

Replacement Batteries and Chargers

EVABAT1	Lithium Polymer Battery Back (black)
EVASMC	Single Port Charger
EVASMC2	Single Port Analyzing Charger
EVAGC	Six Port Gang Charger

Replacement Filter Cartridges

PAPRFC3	HE Particulate Filter (6 per box)
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Replacement Shrouds

SLS1	Loose-Fitting Facepiece Shroud
SLS2	Hood Style Shroud

Replacement Breathing Tubes and Covers

PAHBT	Powered Air Hood Breathing Tube Assembly (standard length)
PAHBTXS	Powered Air Hood Breathing Tube Assembly (short length)
PAHBTXL	Powered Air Hood Breathing Tube Assembly (long length)
PAHBTBK	Powered Air Hood Breathing Tube Assembly for Back Pack
EVADCFR1	Spark Arrest/Dust Cover, Fire Retardant for use with PAPRFC3
EVABPDCFR1	Spark Arrest/Dust Cover, Fire-Retardant for use with Back Pack and PAPRFC3

Replacement Belts, Back Packs, and Suspenders

EVABELT1	Foam Closed Cell Comfort Belt
EVABELT2	Urethane Decon Belt
EVAEXT1	Belt Extenders
PAPRSUSP1	Suspenders
EVABKPK1	Back Pack

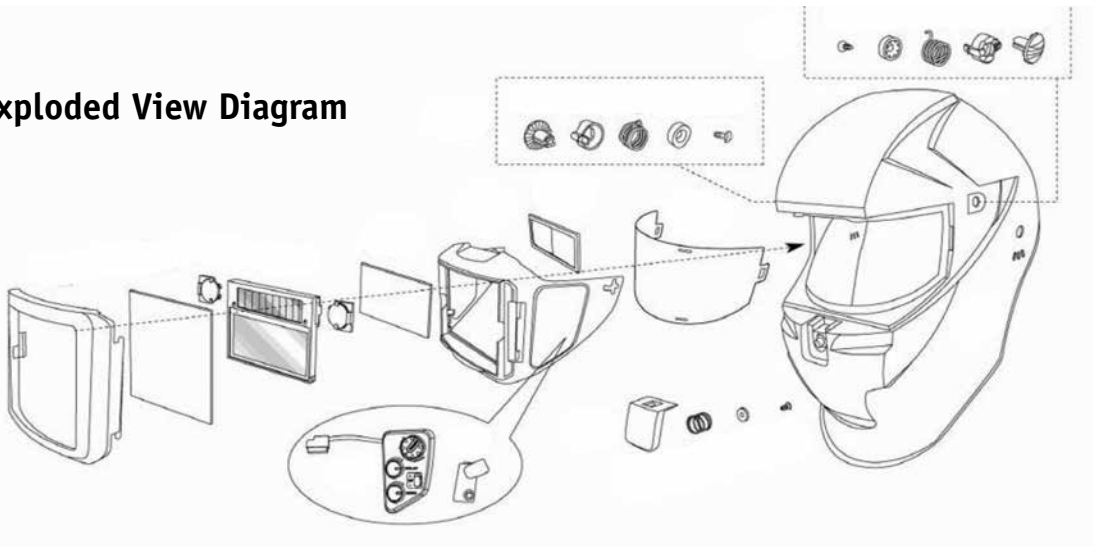
Replacement Air Flow Indicator

PAIAFI	Air Flow Indicator, Rotometer
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Replacement Welding Helmet Parts

1.	SLSHELLBLU	Helmet Shell, does not include harness or knob set
2.	SLGL	Inner Protective Lens (Grinding), 3 pack
3.	SLRCL	Inside Cover Plate, 5 pack
4.	SLADF	Auto Darkening Filter
5.	SLPBA	Push Button Assembly
6.	SLHCA	Hinge Cap Assembly
7.	SLHG	Head Gear (including harness and knob set)
8.	SLBAT1	Battery
9.	SLCLP	Lens Cover Pack (five front lenses, two inner lenses)
10.	SLFCL	Front Cover Lens, 10 pack

Exploded View Diagram



EVA Series Powered Air-Purifying Respirator Blower Assembly User Manual

(for use with SparxLift Welding Helmets)

One Year Limited Warranty

Bullard warrants to the original purchaser that the EVA Powered Air-Purifying Respirator and Helmet will be free of defects in material and workmanship under normal use and service for a period of one (1) year from the date of purchase. Bullard's obligation under this warranty is limited to repairing or replacing, at its option, articles that are returned within the warranty period and that are, after examination, shown to Bullard's satisfaction to be defective, subject to the following limitations;

- a) EVA Powered Air-Purifying Respirator and SparxLift Helmet and Shroud must be returned to the Bullard factory with shipping charges prepaid.
- b) EVA Powered Air-Purifying Respirator and SparxLift Helmet and Shroud must not be altered from its original factory configuration.
- c) EVA Powered Air-Purifying Respirator and SparxLift Helmet and Shroud must not have been misused, subjected to negligent use, or damaged in transport.
- d) The date of purchase is within the one year warranty period. (A copy of the purchaser's original invoice showing the date of purchase is required to validate warranty coverage.)

In no event shall Bullard be responsible for damages for loss of use or other indirect, incidental, consequential or special costs, expenses or damages incurred by the purchaser, notwithstanding that Bullard has been advised of the possibility of such damages.

ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO ONE (1) YEAR FROM THE DATE OF PURCHASE OF THIS PRODUCT.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Return Authorization

The following steps must be completed before Bullard will accept any returned goods. Please read carefully.

Follow the steps outlined below to return goods to Bullard for repair or replacement under warranty or for paid repairs:

1. Contact Bullard Sales Support by telephone or in writing at:

Bullard
1898 Safety Way
Cynthiana, KY 41031-9303
Toll-free: 877-BULLARD (285-5273)
Phone: 859-234-6616

In your correspondence or conversation with Sales Support, describe the problem as completely as possible. For your convenience, your sales support specialist will try to help you correct the problem over the phone.

2. Verify with your sales support specialist that the product should be returned to Bullard. Sales Support will provide you with written permission and a return authorization number as well as the labels you will need to return the product.
3. Before returning the product, decontaminate and clean it to remove any hazardous materials which may have settled on the product during use. Laws and/or regulations prohibit the shipment of hazardous or contaminated materials. Products suspected to be contaminated will be professionally discarded at the customer's expense.
4. Ship products to be returned, including those under warranty, with all transportation charges pre-paid. Bullard cannot accept returned goods on a freight collect basis.
5. Returned products will be inspected upon return to the Bullard facility. Bullard Sales Support will telephone you with a quote for required repair work which is not covered by warranty. If the cost of repairs exceeds stated quote by more than 20%, your sales support specialist will call you for authorization to complete repairs. After repairs are completed and the goods have been returned to you, Bullard will invoice you for actual work performed.



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