

SALUS HC User Instructions

Limitations of Use and Warnings

Failure to follow these warnings AND INSTRUCTIONS could result in death or serious injury.

Use strictly in accordance with instructions, labels and limitations pertaining to the EVA/EVAHL/SALUS HC-series respirators.

1. This 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), i.e. – one for which the wearer cannot escape without the aid of a respirator without suffering injury either immediate or long term. See 29CFR 1910.134 (b).
3. Do not use this respirator 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:
 - a. Breathing becomes difficult
 - b. Dizziness or other distress occurs
 - c. You taste or smell the contaminant
 - d. Unit becomes damaged
 - e. Battery alarm activates
 - f. 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 manufactured components and replacement parts for use with this respirator. Failure to use Bullard manufactured components and replacement parts, as listed on the NIOSH approval label, voids NIOSH approval of the entire respirator, and invalidates all Bullard warranties.
8. This device is not immune to highly powered RFI/EMI emissions.
9. Use strictly in accordance with instructions, labels and limitations pertaining to this respirator

In addition to the above stated warning and instructions, the SALUS HC respirator is intended to be used only in a pharmaceutical, hospital and/or medical setting.

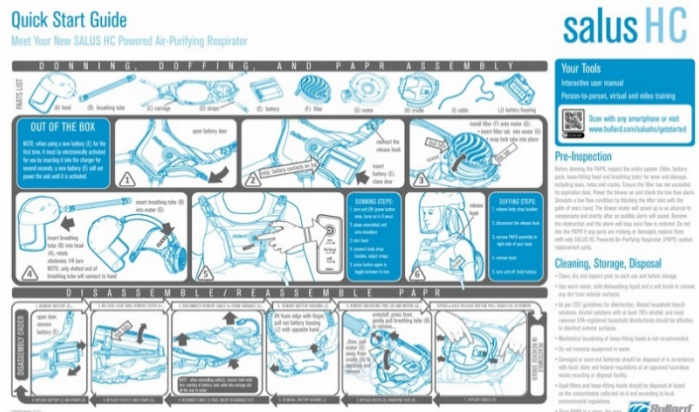
Approvals and Certifications

The SALUS™ HC Powered Air-Purifying Respirator (PAPR) system, manufactured by Bullard, meets the NIOSH PAPR100-P standard
Bullard is certified to ISO 9001:2015

What is a PAPR

A PAPR or powered air-purifying respirator protects the user by filtering out contaminants in the air. The system uses a blower to force the ambient air through an air-purifying element to the hood and the breathing zone of the wearer. This process creates an airflow inside the hood, providing a higher assigned protection factor (APF) than the reusable elastomeric non-powered air-purifying half facepiece (half mask) or N95 FFRs. A PAPR can be used for protection during healthcare procedures in which HCP are exposed to greater risks of aerosolized pathogens causing acute respiratory infections.

What's in the box





BULLARD
1938 Safety Way
CYNTHIANA, KY 41031 USA
877-BULLARD (285-6273)



MODEL SALUS HC SERIES POWERED AIR PURIFYING RESPIRATORS

THESE RESPIRATORS ARE APPROVED ONLY IN THE FOLLOWING CONFIGURATIONS:

TC-	PROTECTION ¹	RESPIRATOR COMPONENTS										CAUTIONS AND LIMITATIONS ²				
		ALTERNATE HOOD ASSEMBLIES					BREATHING TUBE	BLOWER ASSEMBLY	FILTER ASSEMBLY	BATTERY	CHARGER		CARRIAGE ASSEMBLY			
		20LFZL	20LF2M	20LF2S	20LF3L	20LF4L	20LF5M	20LF6LHE	20LF7LHE	20LF8HE	SALICBT	SALIC1	PAPRCB	SALICBT	SALIC1C	SALICCA
21C-1235	PAPR100-P	X	X	X							X	X	X	X	X	X
21C-1236	PAPR100-P				X	X	X				X	X	X	X	X	X
21C-1237	PAPR100-P							X	X	X	X	X	X	X	X	X

- 1 PROTECTION**
PAPR100-P - PAPR100-P Particulate Air Filter for Powered, Air Purifying Respirators
- 2 CAUTIONS AND LIMITATIONS**
- A. Not for use in atmospheres containing less than 19.5 percent 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 Powered Air-Purifying Respirators if airflow is less than four cfm (115 lpm) for tight-fitting facepieces or six cfm (170 lpm) for hoods and / or helmets.
 - 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, canister 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 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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PAPRC6 FILTER

THIS FILTER IS APPROVED ONLY IN THE FOLLOWING CONFIGURATIONS:

TC-	PROTECTION ¹	RESPIRATOR COMPONENTS										CAUTIONS AND LIMITATIONS ²				
		ALTERNATE HOOD ASSEMBLIES					BREATHING TUBE	BLOWER ASSEMBLY	FILTER ASSEMBLY	BATTERY	CHARGER		CARRIAGE ASSEMBLY			
		20LFZL	20LF2M	20LF2S	20LF3L	20LF4L	20LF5M	20LF6LHE	20LF7LHE	20LF8HE	SALICBT	SALIC1	PAPRCB	SALICBT	SALIC1C	SALICCA
21C-1235	PAPR100-P	X	X	X							X	X	X	X	X	X
21C-1236	PAPR100-P				X	X	X				X	X	X	X	X	X
21C-1237	PAPR100-P							X	X	X	X	X	X	X	X	X

- 1 PROTECTION**
PAPR100-P - PAPR100-P Particulate Air Filter for Powered, Air Purifying Respirators
- 2 CAUTIONS AND LIMITATIONS**
- A. Not for use in atmospheres containing less than 19.5 percent 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 Powered Air-Purifying Respirators if airflow is less than four cfm (115 lpm) for tight-fitting facepieces or six cfm (170 lpm) for hoods and / or helmets.
 - 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, canister 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 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.

SALUS HC diagram



Pre-Inspection

Closely inspect the entire PAPR (Powered Air-Purifying Respirator) system paying attention to component connection points for wear and damage. If parts are missing or damaged, replace them with only SALUS HC replacement parts before proceeding.

- Inspect the filter for physical damage and check the label to ensure the filter has not exceeded its “use-by” date.
- Inspect the battery for any physical damage and check the fuel gauge to determine sufficient charge is available.
- Inspect the loose-fitting facepiece for any physical damage.
- Examine the breathing tube for tears, holes, or cracks. The breathing tube should fit securely into the blower unit connection and the loose-fitting facepiece.
- SALUS HC is pre-calibrated to ensure required airflow. With the system completely assembled, the blower unit automatically checks upon start up that the system is delivering adequate airflow.

Checking for adequate airflow

With the blower motor OFF, press and hold the power button for ten (10) seconds until there is an audible sound. This audible sound indicates that there is adequate airflow to create a positive pressure inside the hood.

Setup and Getting Started

Initial unboxing

SALUS HC will ship in an outer pack box and packaged up to three (3) units per box. The inner box is intended to keep your SALUS HC free from damage, clean and organized for long term storage. The unit will arrive partially assembled only requiring the user to install the HEPA filter, battery and attach the breathing tube and hood.

The Quick Start Guide that comes with SALUS should remain with the user or in an area accessible by the user(s). The Quick Start Guide provides two (2) useful QR codes and web address to enhance your experience.

- SALUS HC online User Instructions provides an online and printable reference to detailed information about your PAPR. www.bullard.com/SALUS/usermanual
- SALUS HC onboarding give you the opportunity to sign up for product training, virtually or in person, register your product, and get to know Bullard. www.bullard.com/SALUS/onboarding

Complete assembly

1. Charge and install battery

Note: The battery initially ships with an approximately 30% charge but must be placed on the charging dock to activate. It is recommended to charge the battery fully before operating the respirator.

Battery charging

- a. Connect the power cord to the power supply and the power supply to the battery charging dock
- b. Plug the battery charger into a 110-120V electrical outlet
- c. Place the battery into the battery charger



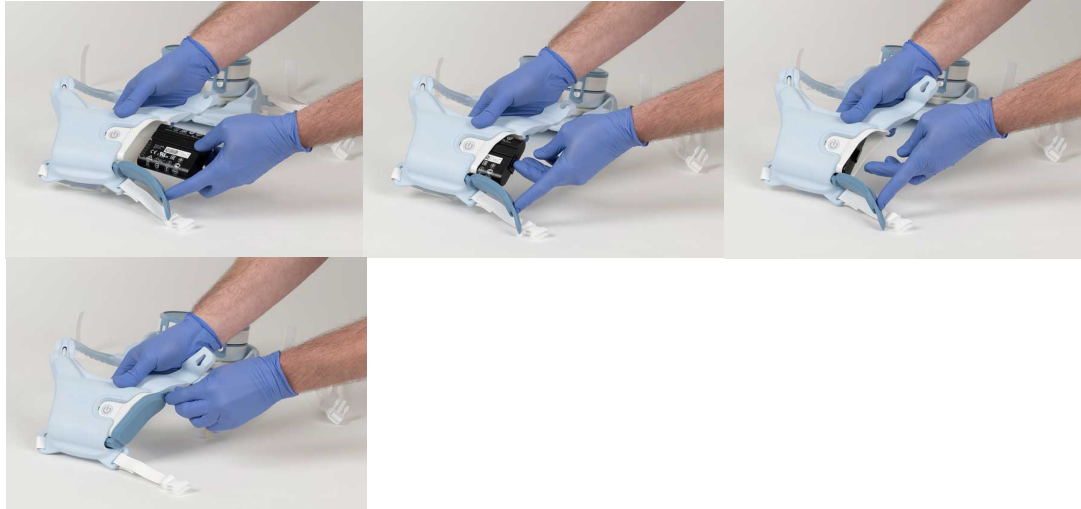
Battery fuel gauge

- d. Remove the battery to check battery level

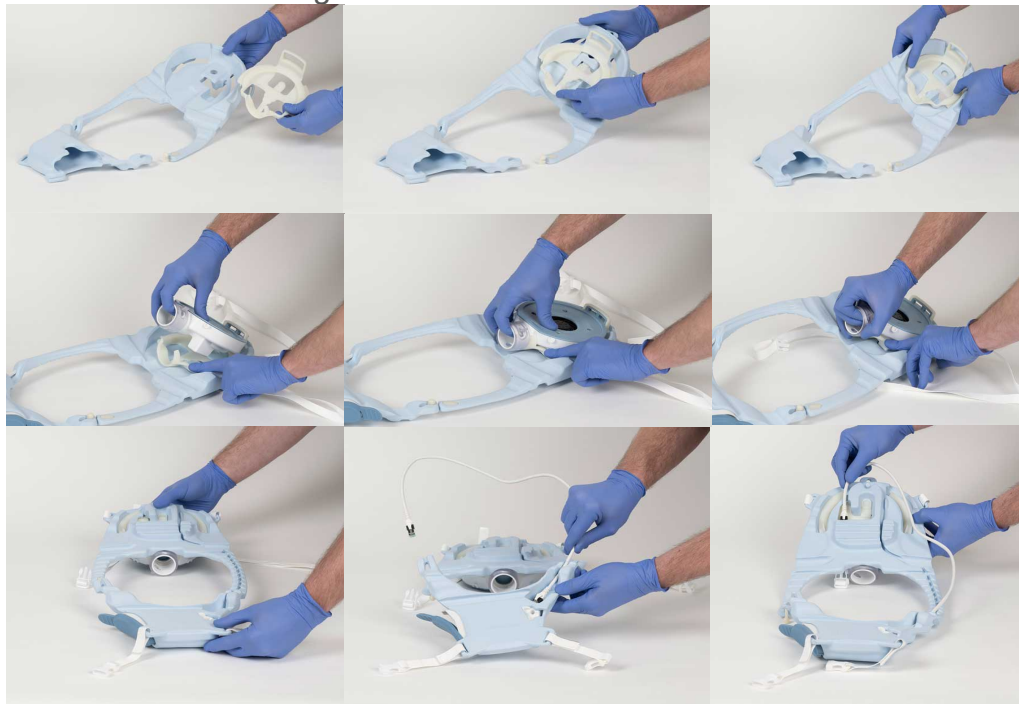


Battery installation

- e. Open battery door on the SALUS HC
- f. With battery pull tab facing out and the battery terminal on top, insert the battery into the battery housing
- g. Close the battery door on SALUS HC



2. Install blower motor on shoulder carriage
 - a. Press the carriage release hook into the opening on the shoulder carriage
 - b. Insert blower motor cradle into shoulder carriage
 - c. Insert slotted tabs of blower motor into the blower motor cradle
 - d. Gently press the neck of the blower motor down until you hear a CLICK
 - e. Turn the shoulder carriage over to connect the power cord to the battery and blower motor unit
 - f. Connect one (1) end of the power cord to the battery terminal and the other end to the blower motor terminal
 - g. Begin pressing the power cord into the groove starting at the battery terminal and working towards the motor





3. Install the HEPA filter
 - a. Insert the slotted tab of the filter into the blower motor
 - b. Press filter down onto blower motor and lock filter tabs
 - c. The filter will be secured when you hear both filter tabs CLICK



4. Connecting hood and breathing tube
 - a. Insert the bayonet-style connection end of the breathing tube into the hood
 - b. Turn clockwise a quarter turn until it locks into place
 - c. Insert the other end of the breathing tube into the blower motor until you hear a CLICK



Complete Disassembly

1. Disassemble SALUS HC in reverse order of assembly
 - a. Breathing tube
 - i. Engage the breathing tube release lever on the blower motor to uninstall the breathing tube



- b. Blower motor
 - i. Disconnect the power cord from the blower motor prior to removing the blower motor from the shoulder carriage
 - ii. Place thumb or finger on the blower motor cradle and gently lift blower motor up



- c. Battery housing
 - i. The battery housing and battery door can be removed from the shoulder carriage for deep cleaning
 - ii. Disconnect the power cord from the battery housing prior to removing the battery housing from the shoulder carriage



Donning and Doffing

Prepare to don the PAPR system in a safe, hazard-free area. Prior to entering a contaminated area and donning, complete the Pre-Inspection process.

Donning

Warning: Turn blower motor ON before donning the hood



1. With SALUS HC completely assembled, place the PAPR onto your shoulders.



2. Turn the blower unit on. See Operating Setting for details.



3. Don the hood starting with your chin and pulling over your head. Make any final adjustments to the fit as required to ensure a comfortable and stable fit.



4. Connect the buckles on the body straps.



5. Adjust body straps to ensure a comfortable and stable fit.



6. Excess body strap material can be cut for a more customized fit.

Note: See Selecting Hood Size for more guidance in selecting an appropriate hood size



7. Donning complete

Note: SALUS can be worn under isolation gowns with special consideration. The blower motor must not be covered by the isolation gown to allow the respirator to actively draw air through the filter and into the hood or breathing zone. Air flow may be reduced and trigger the low airflow alarm if the isolation gown is covering the air inlet or filter of the respirator.

Doffing

1. Disconnect both body straps and allow to hang freely at your side
2. With the breathing tube still connected, doff the hood back to front
3. Slide the ball of the carriage release hook down and through the opening on the left shoulder of the carriage
4. Move the shoulder carriage and entirety of the PAPR system to the right side of your torso to prevent the potential contamination of your breathing zone
5. Turn blower OFF. See Operating Instructions for details

Note: Bullard does not make any specific claims around this doffing method relating to sterility. Please follow your organization's standard operating procedures for specific donning and doffing instructions.

Operating Instructions

Operating Settings

When removed from the shoulder carriage, the battery housing includes a diagram of the operational functions of SALUS.

1. ON/HIGH-SPEED
Press the button one time to turn the blower unit ON, confirmed by a short beep. The blower unit automatically turn ON at the high-speed setting after approximately 3 - 4 seconds.
2. LOW-SPEED
Press the button again to toggle from High-Speed and Low-Speed, confirmed by a short beep.
3. OFF
Press and hold the button for approximately 3 seconds to turn the blower unit OFF, confirmed by a short beep.



Understanding Alarms

Low Battery Alarm

The Low Battery Alarm will sound an electronic beep indicating that there is approximately 5% charge remaining.



Low Airflow Alarm

The Low Airflow Alarm will sound a continuous electronic beep indicating that the flow to the hood has dropped below the designed specifications of 170 L/min (6 CFM)



Loss of Communication

The Loss of Communication will sound a continuous electronic beep of varying frequencies indicating that the blower motor and battery are no longer communicating.



Changing the HEPA filter

If the SALUS respirator is being used to reduce exposure to airborne biological aerosols such as droplets containing viruses or bacteria, the HEPA filter will likely not load (clog) from these particles to the point that they will affect airflow. Loading of the HEPA filters is typically not an issue when used for biological aerosols.

In healthcare facilities, PAPR filter change schedules for airborne biological aerosols are primarily determined by the facility's infection control policy, which should be developed based on applicable national, state, and local guidelines. Most healthcare systems develop their filter use and reuse policy based on the biological agent of concern, likelihood of the filter becoming contaminated, and potential for patient-to-patient and patient-to-worker cross-contamination.

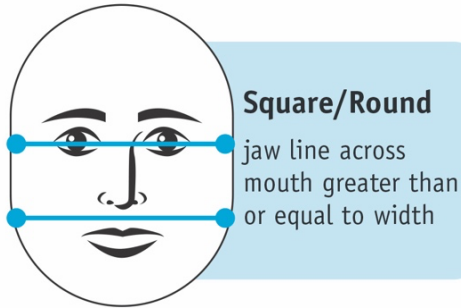
While the outside filter body can be wiped down for cleaning, do not attempt to clean the filter media inside the filter body. When changing the HEPA filter, follow the hygiene and infection control practices established by your employer based on the specific contaminants to which the respirator assembly has been exposed and the cleaning agent used.

Selecting Hood Size

The LF-Series hood is available in two (2) widths and three (3) sizes in each width to accommodate various face and head sizes for maximum comfort and protection.

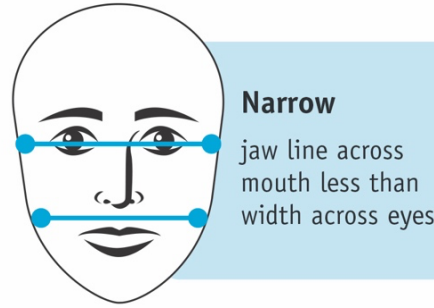
The comfort-fit, designated by 20LF, has a wider profile while the contour-fit, designated by 20LF2, has a narrower profile.

If using the LF-Series hood, select the size that fits most comfortably and where the entire elasticized edge of the faceseal encounters your face. For additional guidance, refer to the LF-Series Sizing Chart to further match your face shape and head size. If your proper fit falls between two (2) sizes, default to the smaller size to ensure a snug fit.



Square/Round

jaw line across mouth greater than or equal to width



Narrow

jaw line across mouth less than width across eyes

Step 1: Face Shape		Step 2: Head Diameter	
		Option 1: hat size US size (EU size)	Option 2: measure circumference at forehead (cm)
20LFM/20LFMHE	square/round	7 1/4 - 7 3/4 (58 - 62)	57 - 62
20LFL/20LFLHE	square/round	7 3/8 - 8 (59 - 64)	58 - 65
20LFXL/20LFXLHE	square/round	7 3/4 - 8 (62 - 64)	61 - 69
20LF2S	narrow	6 5/8 - 7 3/8 (53 - 59)	< 55 - 59
20LF2M	narrow	6 7/8 - 7 5/8 (55 - 61)	55 - 61
20LF2L	narrow	7 1/2 - 8 (60 - 64)	59 - 66

The LF-Series hood is available with a built-in PTFE-based HEPA panel along the jaw of the hood, which replaces the perforated panel under the user's chin in the 20LF/20LF2 models.

This model is designated with an HE suffix. Users should select their size using the same methodology as the 20LF model.

The 20LF model with the HE suffix can be used in any application where the SALUS HC respirator, certified under the PAPR100-P standard, is appropriate. Additionally, it is intended to block large-particle droplets, splashes, sprays, or splatter from entering the hood.

Battery Maintenance and Operation

The blower motor speed, number of charge/discharge cycles, and battery age has a direct relationship to battery life between charge cycles. A higher speed will result in more airflow but reduce the battery run time.

Batteries should be stored in a cool, dry location and with a temperature between -20°C to 60°C (max). Optimal temperature is -20°C to 25°C.

Batteries have a life expectancy of greater than 300 cycles with a minimum of 75% of initial capacity or 1 year per the product warranty.

See section called Supplemental Battery & Charger Instructions for additional battery information.

Cleaning, Storage, and Disposal

Cleaning – Hood, filter

- Clean, dry and inspect prior to each use and before storage.
- Use warm water, mild dishwashing liquid and a soft brush to remove any dirt from exterior surfaces.
- Do not immerse equipment in water.
- Mechanical laundering of loose-fitting hoods is not recommended.
- Do not soak components in cleaning solutions or solvents.
- Thoroughly rinse the loose-fitting hood with clean, fresh water and allow to air-dry.
- Bullard has tested several common decontamination and cleaning agents to determine if the integrity of the loose-fitting hood has been compromised after decontaminating. Based on this testing, it was determined that the hoods did not suffer any significant degradation when cleaned with these agents after eight times
 - Coverage Plus NPD (Steris) 1:256 concentration with distilled water
 - Process NPD (Steris) 1:256 concentration with distilled water
 - Spor Klenz (Steris) undiluted
 - Bleach (Clorox) 1% concentration
 - Decon Alcohol (Veltek) 70%
 - Decon Spore (Veltek) 6.4:128 concentration
 - Quant 256 (Buckeye) 1:256 concentration with distilled water
 - Superguard (Buckeye) 1:256 concentration with distilled water
 - Sanicloth HB (Nice-Pak) undiluted
 - SaniWipes (Prochem) undiluted
 - Cavacide (Metrex) undiluted
 - Cidex OPA (Johnson & Johnson) undiluted

Cleaning – Blower motor, breathing tube, shoulder carriage

- Clean, dry and inspect prior to each use and before storage.
- Use warm water, mild dishwashing liquid and a soft brush to remove any dirt from exterior surfaces.
- As per CDC guidelines for disinfection, diluted household bleach solutions, alcohol solutions with at least 70% alcohol, and most common EPA-registered household disinfectants should be effective to disinfect exterior surfaces of the blower motor, breathing tube, exterior surface of the HEPA filter and shoulder carriage. Possible disinfection methods include:
 - ECOLAB® KLERCIDE™ 70/30 IPA (EPA Reg. No. 1677-249)

- PeridoxRTU™ (EPA Reg. No 8383-13)
- Sani-Cloth® Bleach Germicidal Disposable Wipes (9480-8)
- Clorox Healthcare® Bleach Germicidal Disinfectant Wipes (EPA Reg. No. 67619-12)
- Sodium hypochlorite solution (free chlorine concentration of 5,000 ppm)
- Process NPD (1.256) from Steris
- Spor Klenz (undiluted) from Steris
- Clorox liquid bleach at 10% concentration
- Sani-Cloth HB wipes
- 100% Methanol
- 70% IPA
- D-wipe
- D-lead
- 3% hydrogen peroxide
- 1:10 ratio of bleach to water (0.5% sodium hypochlorite)
- Clorox Healthcare Bleach Wipes (EPA ID 67619-12) - 0.55% Sodium Hypochlorite
- Clorox Healthcare Bleach Trigger Spray (EPA ID 56392-7) – 0.65% Sodium Hypochlorite
- Sani-Cloth® Bleach Germicidal Disposable Wipe (product of PDI Inc.) – Orange Top (EPA ID 9480-8)
- Peridox RTU (EPA ID 8383-13)

Warning: Always read and follow the user instructions and/or EPA label for your selected disinfectant. Bullard strongly recommends that a water rinse/wipe down occur after disinfection to thoroughly remove disinfection solution and reduce the possibility of user irritation and premature degradation of equipment.

- Components of PAPR respiratory systems may become damaged over time with prolonged or extended use of disinfecting products. Users must inspect the components of their PAPR respiratory systems following each disinfecting cycle and prior to use. If you discover any signs of damage, remove the component from service and either discard and replace or repair as appropriate.
- It is the responsibility of the employer to ensure appropriate cleaning chemicals are used which do not damage the PAPR system and components or cause harm to the wearer.

Storage

- The SALUS packaging is designed to store the respirator system where all system components have a place and everything in its place. All contents of the system are identified on the outside of the packaging for intuitive identification. Packaging is constructed to utilize the stacking of multiple respirator systems for long term storage.
- Store in a clean, contaminant free environment, protected from prolonged exposure to heat, sunlight, radiation, and chemicals.

- For prolonged storage, the motor/blower should be run at least once per year for 5 minutes to ensure continued proper lubrication of the motor.
- Respirators used for emergency purposes must be inspected monthly per OSHA 29CFR1910.134. This should include running the motor/blower.

Disposal

- Damaged or worn-out batteries should be disposed of in accordance with local, state and federal regulations at an approved hazardous waste recycling or disposal facility.
- Used filters and loose-fitting hoods should be disposed of based on the contaminants collected on it and according to local environmental regulations.

Powered Air Purifying Respirator Limited Warranty

Models EVA, EVAHL AND SALUS HC

Congratulations on your purchase! Bullard is to provide you with one of the best Limited Warranties in the industry to cover your Powered Air-Purifying Respirator (PAPR). Please read this document carefully as it contains information to help you protect and service your investment.

This document contains important information about the limited warranty, the purchaser's obligations, warranty coverage and exclusions and other terms and conditions that may affect Bullard's obligations under this warranty.

Warranted Party

Bullard provides the following warranty to the Purchaser upon the terms and conditions set forth herein. For purposes of this warranty, Purchaser shall mean the original purchaser of the product.

This warranty is not transferrable.

WARRANTY PERIOD AND COVERAGE

PAPR sold after May 1, 2021, subject to the terms and conditions set forth herein, shall have the following warranty periods:

WARRANTY COVERAGE

Defects in materials or workmanship. Bullard has the discretion to either repair or replace the covered items. Covered items:

- PAPR blower motor & assembly
- Loose-fitting hood
- Breathing tube
- Filter / cartridge

SALUS HC blower motor – optional free Standard Warranty Extension, upon product registration, within ninety (90) days of purchase. Please review the SALUS HC WARRANTY EXTENSION section below for details.

SALUS HC BLOWER MOTOR WARRANTY EXTENSION

The SALUS HC blower motor is eligible for a one (1) year Standard Limited Warranty Extension, if the Purchaser registers the product online, WARRANTY PERIOD ABOVE. NEITHER BULLARD NOR ITS DISTRIBUTORS SHALL BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, LOST PROFITS, BUSINESS INTERRUPTION, OR ANY OTHER DAMAGE WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.

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

THIS LIMITED WARRANTY EXPRESSLY EXCLUDES ROUTINE PRODUCT MAINTENANCE AND SOFTWARE UPDATES. ANY MISUSE, ALTERATION, MODIFICATION, REPAIR, ATTEMPTED REPAIR, IMPROPER MAINTENANCE, NEGLIGENCE, ABUSE OR FAILURE TO FOLLOW THE PRODUCT INSTRUCTIONS, DAMAGE OR ANY OTHER IMPROPER CARE OR HANDLING OF THE PRODUCT VOIDS THIS LIMITED WARRANTY.

The foregoing is the only warranty made by Bullard. No representative, dealer or any other person is authorized to make any warranty, representation, condition or promise on behalf of Bullard with respect to this product. No terms or conditions other than those stated herein or provided by law, and no agreement or understanding, oral or written, in any way purporting to modify this warranty shall be binding upon Bullard, unless made in writing and signed by an authorized employee of Bullard.

RETURN AUTHORIZATION

Please read the information below carefully and follow the process outlined prior to returning any item(s) to Bullard. within ninety (90) days of purchase. Purchaser may complete the SALUS HC product registration at www.bullard.com/salushc/getstarted.

LIMITED WARRANTY CONDITIONS

Bullard's obligation under this limited warranty is only to repair or replace, at Bullard's option. Items may be covered under this limited warranty period if returned within the warranty period and determined by Bullard to be defective, subject to the following limitations:

- a. this warranty does not apply to any parts that have been misused, altered or had repair attempted, or have been subject to abuse, accidental or otherwise.

- b. this warranty does not apply to expendable consumables, accessories or fabric components, such as, but not limited to, filters/cartridges, loose-fitting hoods/visors that have already been used.
- c. Bullard and all subsidiaries reserve the right to use replacement parts that are refurbished. Replaced or repaired parts, whether they have been refurbished or are original equipment, will operate properly and be free from defects in materials and workmanship for a period of ninety (90) days from the date of shipment to the customer, or for the remainder of the original warranty period, whichever is longer.
- d. All products must be returned to Bullard with shipping charges prepaid.

WARRANTY EXCLUSIONS AND DISCLAIMERS

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT ANY IMPLIED WARRANTY IS REQUIRED BY LAW, IT IS LIMITED IN DURATION TO THE EXPRESS. If you would like to make a warranty claim, please follow these steps:

1. Submit an online RMA request to customerservice@bullard.com. Upon receipt, the Customer Service Representative will initiate a case.
2. Your claim will be processed if found valid. You will be provided written permission, an RMA number and instructions for where to return the product.
3. Shipping costs for warranted products are to be sent to Bullard pre-paid. Bullard cannot accept returned goods on a freight collect basis. Bullard is responsible for shipping costs for repaired or replaced products.
4. Prior to returning the product, you must submit a PAPR Service-Certificate of Decontamination form found at www.bullard.com and submit to customerservice@bullard.com. Before returning a 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.
5. Returned products will be inspected upon return to the Bullard facility. A Customer Service Representative will call or email 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 Customer Service Representative will call you again 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.

Supplemental Battery & Charger Instructions

Warning: This manual contains instructions for use and important safety information. Read the instructions carefully before using the product.

Safety

- Do not open or dismantle batteries.
- Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
- Do not short-circuit a battery.
- Do not store batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
- Do not remove a battery from its original packaging until required for use.
- Do not subject batteries to mechanical shock.
- In the event of a battery leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- Do not use any charger other than that specifically provided for use with the equipment. See also chapter “Charging”.
- Observe the plus (+) and minus (–) marks on battery and equipment and ensure correct use.
- Do not mix batteries of different manufacture, capacity, size or type within a device.
- Keep batteries out of the reach of children.
- Keep batteries clean and dry.
- Secondary batteries need to be charged before use.
- Use only the battery in the application for which it was intended.
- When possible, remove the battery from the equipment when not in use.
- Do not store batteries longer than 1 month in discharged state.
- Do not storage batteries longer than 1 year without recharge.
- The battery must be recycled or disposed of properly.

Operating Temperature

For charge: 0°C to +45°C

For discharge: -20°C to +60°C

Storage Temperature:

< 1 year: -20°C to +20°C

< 3 month: -20°C to +45°C

< 1 month: -20°C to +60°C

Recommendation

Store the battery at below 20°C, low humidity, no dust and no corrosive gas atmosphere. Store the battery with a state of charge between 40-60%.

Charging: Charge only with a SMBUS compliant charger, e.g. RRC-SMB-MBC. Refer also to the manufacturer's instructions or equipment manual for proper charging instructions.

Specifications

Type	RRC2057
Voltage	7.50V
Capacity	6.40Ah
Max. charge current	4.34A
Max. charge voltage	8.70V
Max. discharge current	8.50A
Dimensions (L x W x H)	85.35mm x 77.65mm x 23.0mm (max.)
Weight	240g

















Recycling

Recycle batteries according to national and local regulations. Contact your local representative for assistance. The batteries must be disposed only in a discharged state at the collection center. In case of not fully discharged batteries, provide for a risk against short circuits. Short circuits can be prevented by isolating the terminals with tape.

Declaration of conformity

CE: The battery complies with the current regulations of the EU guidelines.

FCC: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Symbols: Explanation of symbols which are on the battery and/or in this manual.			
	Caution, consult accompanying documents		UN Transportation Test
	Operator's manual; operating instructions		Recycling Symbol
	Mark of conformity to applicable European Directives		Dispose of this product according to local regulations.
	Regulatory Compliance Mark of Australia and New Zealand.		For Canada & USA: Please call 1-800-822-8837 for information on how to recycle this battery
	UL Recognized for Canadian and US market		China RoHS
	Recycling Symbol Taiwan		Regulatory Compliance Mark of Japan
	KC		EAC/Gost
	China CQC		India BIS

Introduction

The smart battery charger is used to charge SMBUS batteries (Smart Batteries) with form factors RRC2040, 2040-2, 2054, 2057 or smart batteries with a similar footprint e.g. 204x range, 205x range, etc..

Caution

Only batteries that comply with the Data Specification 1.0 or 1.1 can be charged with this battery charger. Other rechargeable batteries or conventional batteries may not be used.

Tip

Use smart batteries for as long as possible in your device before recharging. The more completely they are discharged, the more exact the charger can calculate capacity and charge requirements.

Making Connections

1. Connect the cable from the mains adapter to the battery charger.
2. Connect the power cable to the mains adapter and plug it into the mains socket.
3. The LED is going out after the selftest of the battery charger. The battery charger is ready for use.
4. If the red control lamp remains on and no battery is in the charger, the battery charger is defective.

Charging Batteries

1. Connect up the battery charger as described above.
2. Place a discharged Smart Battery into the battery charger.
3. The battery charger makes a battery recognition and initialisation.
4. The battery will be charged. Leave the battery until the green control lamp lights.
5. Then the battery is fully charged. Remove the battery for use.

LED Indications	
One time Red/Orange/Green	Self test: Charger is ready for use.
Red/Green blinking	The battery was not recognised as a Smart Battery. Either a conventional battery is inserted or an extremely discharged Smart Battery. If it is a Smart Battery, it will be reactivated within 15 minutes and recharged. If this is not the case, the LED will light red – see below.
Orange light	The inserted battery is the correct type and is currently being charged.
Green light	The battery is charged and can be removed for use.
Red blinking	The battery is too hot or too cold to be charged without damage. If the battery is too cold it will be charged as soon as it has warmed up sufficiently. If the battery is too hot it should be removed to cool down.
Red light	Either - the battery is badly damaged and must be replaced, or - it is a conventional battery which cannot be recharged.

FCC Advice, valid in USA

Warning: This battery charger may not be located in the vicinity of a patient. In accordance with EN60601-1-1, the horizontal distance must be at least 1.5 meters.

Do not insert a fully charged battery into the charger repeatedly. Due to the high initial charge, the battery could be overcharged which could lead to damage to the battery and to the battery charger. Use the battery charger only in dry indoor environments! Wet and moisture covered products should not be used!

This product has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.








However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications of the device are not allowed.

Declaration of Conformity:

The battery charger complies to the current regulations of the EU guidelines.

Symbols	
	Caution / Warning
	Instructions for use
	Use only in enclosed spaces
	Sign of conformity to the applicable EC Directives
	The product should be disposed of according to local guidelines
	RoHs (China)
	DC voltage

Technical Specifications	Battery Charger	Power Supply	
		RRC-SMB-MBC	RRC-SMB-MBC-M
Input Voltage	19 - 26VDC / 2.8A max.	100-240VAC / 50-60Hz	100-240VAC/50-60Hz
Charging and Output Voltages	0 - 17.4VDC / 0 - 4A	19VDC ± 5% / 3.4A	19VDC ± 5% / 3.43A
Power	50W max.	65W	65W
Measurements (L x B x H)	120 x 64 x 43 mm	95 x 51 x 25.4 mm	119 x 60 x 36 mm
Operating / Storage Temperature	0°C to 40°C / -10°C to 70°C	0°C to 40°C / -10°C to 70°C	0°C to 40°C / -20°C to 80°C
Weight	110g	270g	310g
Safety Standards / EMC Standards	IEC/EN60950-1 UL60950-1* / EN55011 / EN55022 / EN55024* / FCC15 class B / IEC/EN61000-4-2,-3,-4,-5,-6,-8,-11* / EN61000-3-2,-3-3*		

* valid only for power supply

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