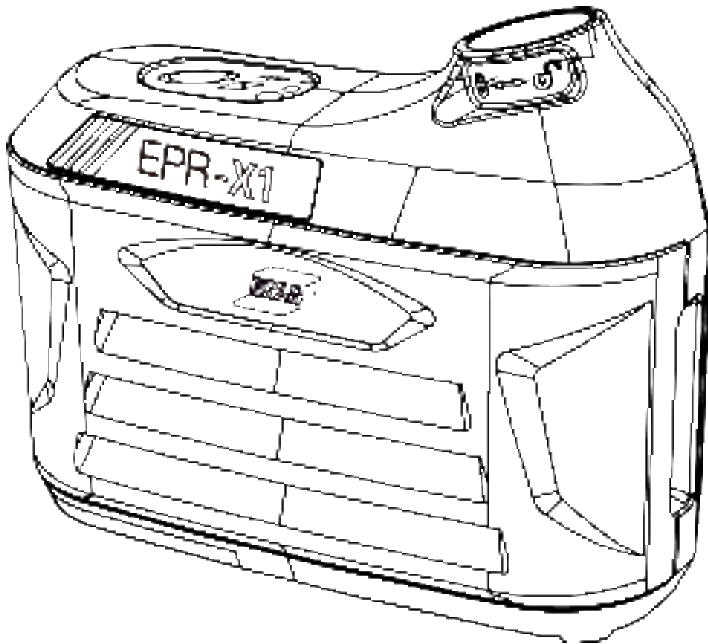




# Powered Air-Purifying Respirator User Instructions



**Please read these instructions carefully before using the equipment!  
Incorrect use can result in danger to life and health!**

**Manual Number:** 0700500912  
**Revision Date:** 03-08-2022  
**Revision Number:** AB  
**Language:** English

<http://manuals.esab.com>



# 1. SAFETY

## 1.1 Meaning of symbols



Meaning of symbols - As used throughout this manual: Means Attention! Be Alert! Your safety is involved.



### **DANGER**

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



### **CAUTION**

Means hazards which could result in minor personal injury.



### **WARNING**

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Material Safety Data Sheets (MSDS).



### **NOTE!**

An operation, procedure, or background information which requires additional emphasis or is helpful in efficient operation of the system.

## 1.2 Safety precautions



### **WARNING**

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



### **WARNING**

Only qualified personnel should install, operate, maintain, and repair this unit.



### **ARC RAYS -- Can injure eyes and burn skin.**

**The arc, like the sun, emits ultraviolet (UV) and other radiation and can injure skin and eyes. Hot metal can cause burns. Training in the proper use of the processes and equipment is essential to prevent accidents. Therefore:**

1. Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching.
2. Wear approved safety glasses with side shields under your helmet.
3. Before welding, adjust the auto-darkening filter lens sensitivity to meet the application. Warn bystanders not to watch the arc and not to expose themselves to the rays of the electric-arc or hot metal.
4. Wear protective clothing made from durable, flame-resistant material. A flameproof apron may also be desirable as protection against radiated heat and sparks.
5. Protect other personnel from arc rays and hot sparks with a suitable non-flammable partition or curtains.
6. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can fly far. Bystanders should also wear goggles over safety glasses.



## **NOISE -- Excessive noise can damage hearing**

Protect your ears. Wear approved ear protection if noise level is high.



## **FUMES AND GASES -- Fumes and gases can cause discomfort or harm, particularly in confined spaces. Shielding gases can cause asphyxiation. Therefore:**

1. Keep your head out of the fumes. Do not breathe the fumes and gases.
2. Always provide adequate ventilation in the work area by natural or mechanical means. Do not weld, cut or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead beryllium or cadmium unless positive mechanical ventilation is provided. Do not breathe fumes from these materials.
3. Do not operate near degreasing and spraying operations. The heat or arc can react with chlorinated hydrocarbon vapors to form phosgene, a highly toxic gas and other irritant gases.
4. If you develop momentary eye, nose or throat irritation while operating, this is an indication that ventilation is not adequate. Stop work and take necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.
5. Refer to ANSI/ASC Standard Z49.1 for specific ventilation recommendations.



## **FIRES AND EXPLOSIONS -- Heat from flames and arcs can start fires. Hot slag or sparks can also cause fires and explosions. Therefore:**

1. Protect yourself and others from flying sparks and hot metal.
2. Remove all combustible materials well away from the work area or cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints and coatings paper, etc.
3. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal.
4. Do not weld, cut or perform other hot work until the work piece has been completely cleaned so that there are no substances on the work piece which might produce flammable or toxic vapors. Do not do hot work on closed containers, they may explode.
5. Have fire extinguishing equipment handy for instant use, such as a garden hose, water pail, sand bucket, or portable fire extinguisher. Be sure you are trained in its use.
6. Do not use equipment beyond its ratings. For example, an overloaded welding cable can overheat and create a fire hazard.
7. After completing operations, inspect the work area to make certain there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.



### **CAUTION**

This product is solely intended for arc welding.



### **CAUTION**

Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.





## NOTE!

### Dispose of electronic equipment at the recycling facility!

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.



As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.

## 2. INSTRUCTION

Use the ESAB PAPR System during welding in unconfined spaces, strictly in accordance with this Instruction manual and the instructions supplied with the corresponding helmets.

Do not use the unit:

- When the blower unit is switched OFF. Little or no respiratory protection is to be expected. Rapid buildup of carbon dioxide and depletion of oxygen may occur in the head unit.
- In an atmosphere that poses an immediate health or hygiene hazard and/or has less than 19.5% oxygen content, or contains unknown substances.
- In confined spaces or unventilated areas such as tanks, pipes and canals.
- Near flames and/or sparks.
- In areas with danger of explosion.
- In areas with high winds.
- If the blower unit malfunctions.

To ensure the unit is functioning properly please do not:

- Alter or modify in any way.
- Touch any of the moving parts.
- Allow water or other liquids to enter the impeller chamber, the filter or battery compartment.

Make sure blower moving parts are not blocked and are free to move.

Do not modify or alter the unit or the particle filter in any way.

Make sure that the approved air-equipped helmet and associated shroud fit perfectly. The efficiency of the system is only sufficient in this case. The protective factor of the complete system is reduced if the seal of the headpiece is not fitted properly, for example if long hair or facial hair is extending into the seal line.

Correct respiratory protection will not be provided if any part of the PAPR and approved air helmet modified in any way.

Position the blower unit in a way that minimizes the risk of the air-equipped welding helmet hose becoming caught up during use.

At elevations above 5,000' (1500 meters), the PAPR will provide reduced air pressure of at least 5%, with the affects increasing as elevation increases.

Leave the contaminated area immediately and if needed seek medical advice if:

- The Manufacturer's Minimum Design Flow (MMDF) warning alarm sounds.
- Breathing becomes difficult.
- Dizziness or distress occurs.
- Any part of the system becomes damaged.
- Airflow into the head unit decreases or stops.
- Contaminant can be smelled or tasted inside the head unit
- In the unlikely event of an allergic reaction to the air-helmet materials

### 3. APPROVALS

The system complies with the requirements of PPE Regulation 2016/425 and European Standard EN 12941: 1998+A2:2008 class TH3 P R S L. The Respiratory System is designed to provide a supply of filtered air via a breathing tube to a helmet or a hood. The equipment can be used in any environment that requires a class TH3P breathing protection device. It protects against particulate contamination.

All components used in Respiratory System must be ESAB approved parts and must be used in accordance with the instructions in this manual.

Module B Notified Body: Vyzkumny ustav bezpecnosti prace, v. v. i., Jeruzalemska 1283/9, 110 00 Praha 1, Czech Republic (Notified body number 1024)



**1. The approval is valid only if the product is used together with approved parts and filters.**



**2. Only listed particulate filter and pre-filter can be used together with this system. Filters from other manufacturers shouldn't be used under any circumstances, and voids both the certification and warranty.**

### 4. WARNING AND LIMITATIONS TO USE

Before each use, inspect the Respiratory System for damage and verify it operates properly. Before using the Respiratory System, test air flow using the included air flow test meter to verify it is providing an adequate volume of air.

Continuously wear the Respiratory System and do not remove the helmet or turn OFF the air filter unit until outside the contaminated area, otherwise, there is a risk of high concentration of CO<sub>2</sub> and oxygen level in the helmet will fall, resulting in little or no protection.

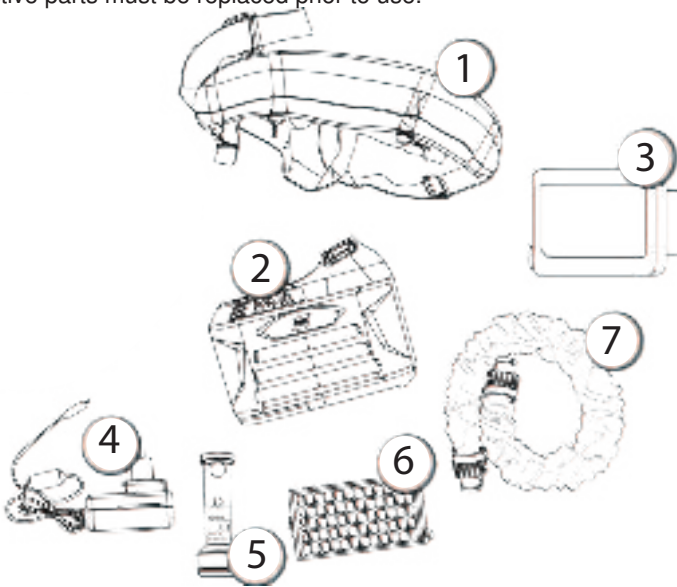
If you are not sure about the concentration of pollution, or about equipment performance, consult an industrial safety engineer or EHS manager.



Users of this respiratory device should be properly in its correct wearing and use.

## 5. UNPACKING/ASSEMBLY

Check that correct number of components have been provided, as in Figure 1. Check that the apparatus is complete, undamaged and correctly assembled. Any damaged or defective parts must be replaced prior to use.



**FIGURE 1**

The package must include:

1. Waist belt and the shoulder harness
2. EPR-X1 blower assembly
3. Rechargeable lithium ion battery
4. Battery charger
5. The air flow tester
6. Main HEPA filter assembly (includes pre-filter and spark arrestor - not shown)
7. The tube, its flame-retardant cloth and both end fittings


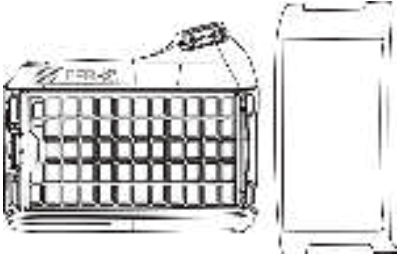
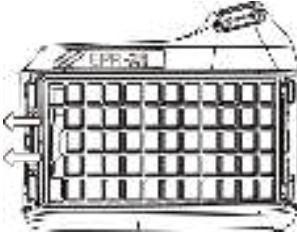
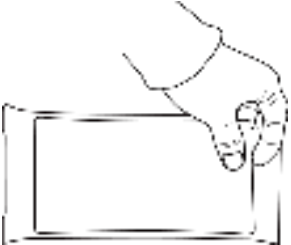
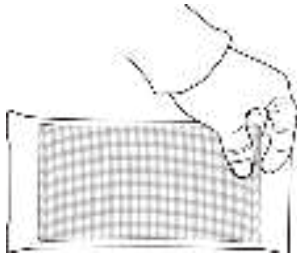
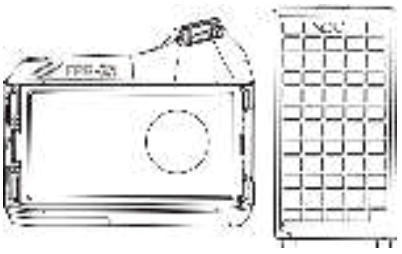
If any of the above components are not included in your kit, please contact ESAB immediately.



### **WARNING**

The manufacturer is not responsible for personal injury due to the incorrect usage or incorrect choice of equipment.

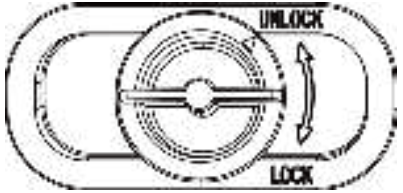
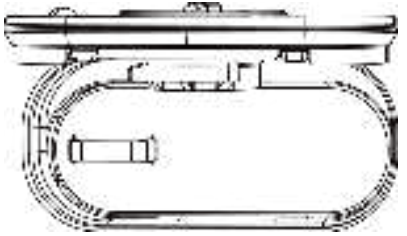
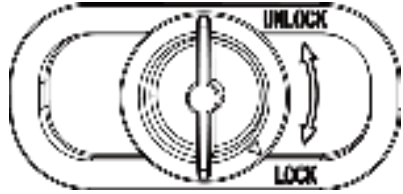

## 5.1 Filter installation and replacement


1	 <p>Open and remove the filter cover</p>	2	 <p>The filter cover is released.</p>
3	 <p>Remove the used filter by depressing the filter latch and lifting it out from cover.</p>	4	 <p>Remove the pre-filter.</p>
5	 <p>Clean the spark arrester if necessary</p>	6	 <p>Install a new filter by reversing the actions in steps 3 and 4</p>




If the filter is wet or heavily loaded with particles or damaged, it should be replaced. Never attempt to clean the filter by any means, it can damage the filter media easily. The pre-filter should be intact without any tears or cuts. Please replace the pre-filter if it becomes wet or heavily loaded with particulate.

## 5.2 Installing and charging the battery

1	 <p>Rotate the battery house cover knob to "Unlock" position; Pull battery house cover out.</p>	2	 <p>Insert battery into battery house.</p>
3	 <p>Close battery house cover and turn the knob to "Lock" position</p>	4	 <p>Take battery out from battery housing and charge battery</p>

 The battery is partially charged when delivered. It is recommended to charge the batteries to 100% before the first use.

 It is recommended to charge the batteries at 100% before each use.



The charger must not be used for anything else than it was designed for. Do not charge the battery in a potentially explosive area. The charger must only be used indoors. The charger regulates the charge automatically, once the battery is fully charged, it will maintain it at a 100% (floating charge).

The charge time is 3 to 4 hours.


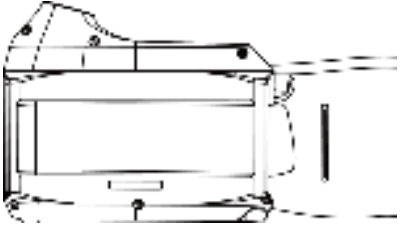





The battery will discharge itself after long storage periods. Always charge the battery if the device was stored for more than 15 days. When the battery is new or has been stored for more than 3 months, charge it and discharge it at least twice in a row to resume the nominal/rated charge capacity.

### Battery charge:

1. Take battery out from battery housing
2. Connect the battery to the charger using the input located at the top of the battery.
3. Connect the charger to the main power source.
4. The state of charge is displayed via a red LED on the main power source charger.
5. Once the charge is finished, the floating charge becomes active: the red LED switches OFF and a green LED switches ON.
6. Disconnect the charger from the outlet (do not keep the charger plugged to the main power source if it's not in use).


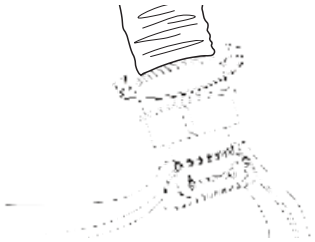
## 5.3 Installing the respiratory system on the belt

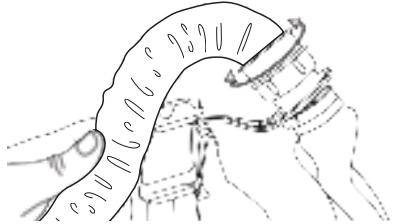
1	 <p>Place belt and PAPER unit at correct position</p>	2	 <p>Unlock the hook and loop fastener and pass through the blower assembly's belt loops;</p>
3	 <p>Pass the fastening belt through the gap on belt.</p>	4	 <p>Attach the hook and loop fastener onto the belt.</p>
5	 <p>Attach the harness to the belt's 4 plastic rings.</p>		



Make sure the belt is securely fastened while wearing.

## 5.4 Connecting the tube

1	 <p>Install the hose fire retarding sleeve over hose</p>	3
2	 <p>Connect the air tube to the Respiratory System and twist it clockwise to lock its position.</p>	



Connect the other end of the tube to the headgear in the same way.



1. Check that the respiratory tube is securely connected. If the tube is broken, replace it.







### **WARNING**

All components must be installed/ used in accordance with this manual if the equipment is to offer the specified protection. If any component is missing, or if anything is not clear, contact ESAB.

## 6. BEFORE USE / FITTING

### 6.1 Air flow test


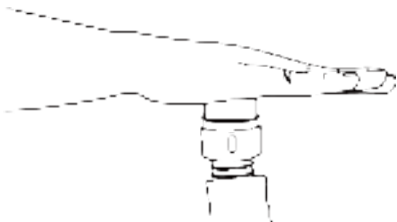
1	 <p>Connect the breathing tube to the blower unit and twist it clockwise to lock it.</p>	2	 <p>Insert the airflow tester at the top of the tube.</p>
3	 <p>Press the ON button and maintain the tube in a vertical position at eye height.</p>	4	 <p>The air flow is sufficient if the marble reaches the minimum flow level O.</p>



### **WARNING**

1. The airflow must be tested before using.
2. If the ball can't reach the minimum flow level, don't use the system. Change the filter or the battery and retest the air flow.

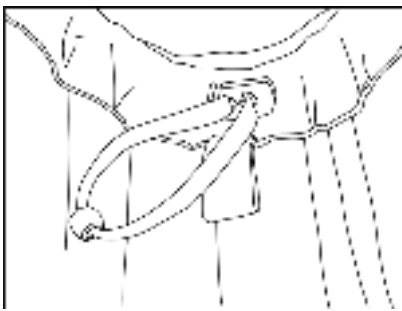
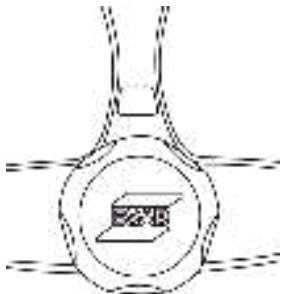
## 6.2 Air flow alarm test

<p>1</p>  <p>Remove the tube from the helmet and press the ON button.</p>	<p>2</p>  <p>Cover the air output with your hand and wait approximately 45 seconds.</p>
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If the alarm does not work, please repair or change Respiratory System.

## 6.3 Fitting

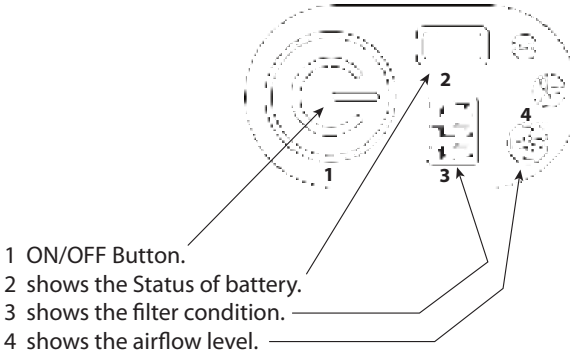
<p>1</p>  <p>Adjust the tightness of the face seal and put on the head top.</p>	<p>2</p>  <p>Adjust the headgear to suitable tightness (push and turn left to loosen, turn right to tighten)</p>
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Make sure the face seal is positioned properly, otherwise, you will not get sufficient sealing needed to offer the correct protection factor.

# 7. Operation interface and Operation

## 7.1 Operation interface



**FIGURE 2**

## 7.2 Operation



Switch the device on by activating the ON/OFF button and hold for 3 seconds, the air flow will be at level 1 (~170L/min).



Press the ON button once again, the air flow will be at level 2 (~190L/min).



Press the ON button once again, the air flow will be at level 3 (~210L/min).



Press the ON button once again, the air flow reverts to level 1 (~170L/min).



Press the ON/OFF button and hold for 3 seconds, Device will be OFF.

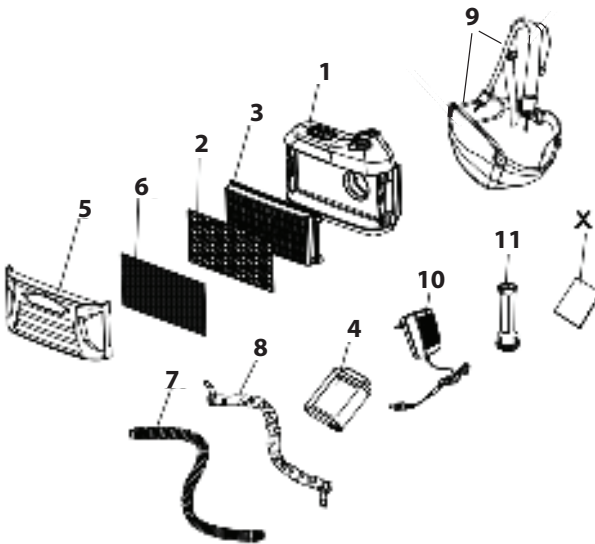


The Respiratory System must be operated in the temperature range of  $-5^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  and relative humidity less than 90%RH.

# 8. PARTS LIST

## 8.1 EPR-X1

Drawing No.	Part No.	Description
	700500900	EPR-X1 PAPR system
1	700500901	EPR-X1 PAPR blower unit
2	700500902	EPR-X1 PAPR pre-filter
3	700500903	EPR-X1 PAPR P3 filter
4	700500904	EPR-X1 PAPR battery
5	700500905	EPR-X1 PAPR filter cover
6	700500906	EPR-X1 PAPR spark arrestor
7	700500907	EPR-X1 PAPR breathing tube
8	700500908	EPR-X1 PAPR FR fabric tube cover
9	700500909	EPR-X1 PAPR waist and shoulder harness
10	700500910	EPR-X1 PAPR universal battery charger
11	700002413	EPR-X1 PAPR Air Flow Tester



## 9. MAINTENANCE & STORAGE

Inspect the equipment daily and always check it for any sign of malfunction.

### 9.1 Maintenance

The Respiratory System unit must be checked regularly and must be changed if it is damaged and cause leakage.

The filter must be changed if it is broken, or it is blocked and does not give enough airflow.

The breathing tube must be changed if it is broken or has creases.

The battery must be charged when the low battery alarm sounds.

Use a soft cloth to wipe the external surfaces. Do not use water or other liquids!

Always replace the pre-filter when the main filter is replaced.

### 9.2 Storage


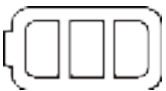

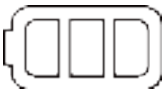
The Respiratory System must be stored in a dry, clean area, in the temperature range of -10 °C to +55°C and relative humidity less than 90%RH.

If the equipment is stored at temperature below 0°C, the battery must be allowed to warm up to achieve full battery capacity. The equipment must be protected from dust, particles and other contamination.

If the equipment is not used for a long time, the battery should be fully charged, removed from Respiratory System unit and stored separately.

Transport the equipment with original packaging box and away from direct sunlight.

## 10. TROUBLE SHOOTING

Problem	Probable cause	Action
 <p>blinks + alarm sounds</p>	<ol style="list-style-type: none"> <li>1. Motor is stuck</li> <li>2. Motor is damaged</li> <li>3. Blower structure failure caused by outer force</li> <li>4. Circuit failure</li> </ol>	<p>Check and remove physical obstruction and restart the system. Return to dealer if problem continues</p>
 <p>Red blinks + alarm sounds</p>	<p>Low battery</p>	<p>Charge the battery</p>
 <p>blinks + alarm sounds</p>	<ol style="list-style-type: none"> <li>1. Filter blocked</li> <li>2. Tube blocked</li> </ol>	<p>Remove obstruction, change filter Clean tube</p>
 <p>Green blinks + alarm sounds</p>	<p>Battery high temperature</p>	<p>Power unit OFF and allow it to cool.</p>
<p>No air flow, no alarm</p>	<ol style="list-style-type: none"> <li>1. No power</li> <li>2. Battery contact damaged</li> </ol>	<p>Charge the battery Check battery contact</p>
<p>Battery run time is too short</p>	<ol style="list-style-type: none"> <li>1. Battery is not fully charged</li> <li>2. Filter blocked</li> <li>3. Battery is damaged</li> </ol>	<p>Charge the battery Remove obstruction, change filter Replace battery</p>
<p>Air supply to hood smells unusual</p>	<ol style="list-style-type: none"> <li>1. Filter broken</li> <li>2. Tube broken</li> <li>3. ADF helmet broken</li> </ol>	<p>Leave current area immediately. 1. Replace filter 2. Replace tube 3. Replace ADF helmet</p>
<p>Supply insufficient air to hood</p>	<ol style="list-style-type: none"> <li>1. Breathing tube broken off</li> <li>2. Breathing tube broken</li> <li>3. Filter is blocked</li> </ol>	<p>Check tube connection to hood and Respiratory System unit Replace breathing tube Remove obstruction, change filter</p>

## 11. SPECIFICATION

Size	210*169*78mm (L*W*H)
Weight	Complete unit <1.2 kg
Particle Filter	1*TH3 P R SL
Air Flow	Manufacturer minimum design flow rate: 170 L/min Airflow: Level 1: >170 L/min Level 2: 190 L/min Level 3: 210 L/min
Noise Level	Max 75dBA
Operate Temperature	23°F to 131°F (-5°C~55°C)
Storage temperature	14°F to 131°F (-10°C~55°C)
Battery Type	Rechargeable Li-ION 4000mAh
Expected Battery Operation Time	Level 1 > 10h Level 2 > 8h Level 3 > 6h
Battery Charging Time	3.5 Hours
Battery Life	500 Charges Run Time Dependent On Air Flow Rate and Filter Load.
LED light	Air flow level Battery capacity Filter status

## 12. MARKING EXPLANATION

### Powered filtering device:

- EN 12941:1998 Respiratory protective devices- Powered filtering devices incorporating a helmet or hood- Requirements, testing, marking.
- TH3 P R (SL) classification of the unit. "TH3" defines the level of protection, "P R" indicates the filter type ("P"= Particle filter, "R"= Reusable type of particle filters) and "SL" reflects the filter has been tested against particles of liquid and solid matter.

### Warning indication

This EPR-X1 PAPR has both sound and vibration alarm function.

Each grid stands for a period of 100ms. Gray is the beep sound and blank grid is a quiet period. If several continued grids are in gray then there is a continuous beep sound.

For example, when the current is overloaded, the system sounds like beep~beep~beep~~~~~.

100ms per grid											
	0	1	2	3	4	5	6	7	8	9	10
Install the battery	■										
Turn ON the system	■										
Change air flow speed	■										
Turn OFF the system	■	■	■	■	■						
Current overload	■		■		■	■	■	■	■		
Air outlet jam	■		■	■	■	■	■	■	■		
Over heat	■		■		■		■	■	■	■	■
Low battery	■		■								
Filter jam	■		■		■						

### Symbols:



=Read instructions before use



**2797** = CE mark followed by number of notified body who carried out module D surveillance.

### Warranty:

The EPR-X1 Blower unit is guaranteed for a period of 12 months from date of purchase against mechanical or electrical defects.

The EPR-X1 battery is guaranteed for a period of 6 months from the date of purchase.

The company undertakes to exchange or repair without charge, if any part found to be defective within this period alternatively and at its discretion. The Company may replace.

This guarantee is subject to:

The EPR-X1 unit has been used solely for the purpose for which it is intended.

The EPR-X1 unit has not been subject to misuse, accident, modification or repair.

In the event of a claim, contact the retailer from which the EPR-X1 unit was purchased.

The guarantee does not cover normal wear and tear.

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