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# ***R-TECH SPIRITUS PRO*** ***Owners Manual***

***POWERED AIR PURIFYING RESPIRATOR***

*Powered filtering devices incorporating a helmet*

**SKU: RT-PAPR-02**



Version 2023-03

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## 1. Field of application and conditions for use

The powered respirator is used for dust and particles removal only, not for gases or vapors and is used to reduce or remove resistance to inhalation during respiration by producing a constant airflow. The unit is designed with manufacturer's minimum design flow rate 170 litres per minute (the flow rate at which the equipment still will fulfill the requirements of the class in EN12941:1998 + A1:2003 + A2:2008). The actual working time will be about 8 hours.

## 2. Description

A complete powered respirator apparatus consists of :

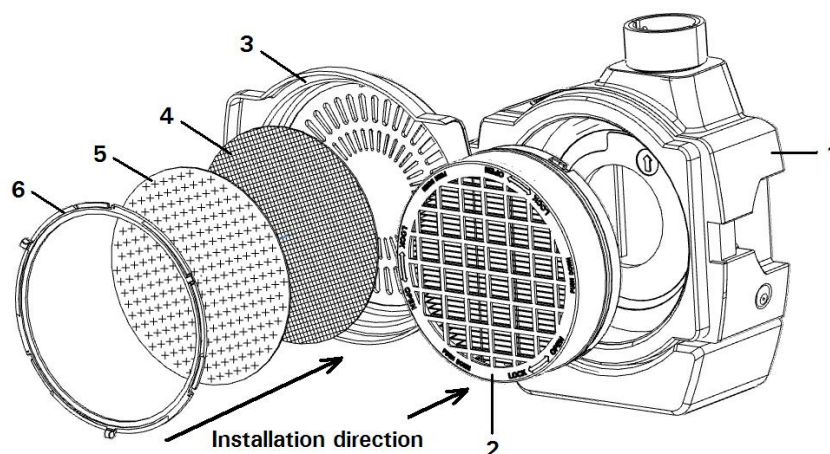
- ◆Blower master unit, provided with a dust TH3 filter, a steel pre-filter and an activated carbon filter (chart 1), supplied with a belt and a comfort plate.
- ◆Rechargeable battery, which is equipped underside the apparatus.
- ◆A hose with a bayonet connector to blower unit and a bayonet connector to mask,
- ◆Battery charger, fully automatic.

Spare parts list:

- 1.TH3 filter (RT-PAPR-10)
  - 2.Pre-filter (stainless Steel wire mesh) ( RT-PAPR-20 )
  - 3.Activated carbon filter (RT-PAPR-30)
  - 4.Standard rechargeable battery (RT-PAPR-50)
- \*\*\* Option : High capacity rechargeable battery(RT-PAPR-55)

## 3.Use

The unit supplies an overcapacity of clean and filtered ambient air, which is fed to mask. It allows the user to breathe in air without himself having to overcome the resistance of the filter. Considering that an adult person requires some 50 litres of air per minute, the overcapacity ensures an overpressure and thus a high degree of protection.



- |                 |                            |
|-----------------|----------------------------|
| 1、 Master       | 4、 Pre-filter              |
| 2、 TH3 filter   | 5、 Activated carbon filter |
| 3、 Filter cover | 6、 Holding frame           |

Chart 1

With a fully charged battery the unit will operate for about 8 hours. The unit contains a warning facility to warn the user against reduced air supply, due to clogged filter or low battery.

### 3.1 Prior to use

Before using the powered respirator, the user must ensure that all the conditions for safe use have been satisfied. See below in 8 for the applicable statutory regulations and rules.

- ◆ Check that the device is not damaged and the filter is not clogged.
- ◆ Check that the appropriate hose connector is fitted to the hose.
- ◆ Connect and tighten the two ends of the hose with the air outlet of the powered respirator and the air inlet of the hood respectively. The following picture shows how the hose is connected:

Connection of the air hose to the turbo unit:

Align the stud of the hose interface with the chute of the unit air outlet and insert to the end, then rotate the hose clockwise to lock.

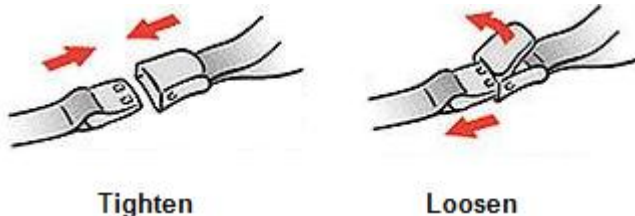


Connection of the air hose to the facepiece:

Align the stud of the hose interface with the chute of the hood air inlet and insert to the end, then rotate the hose to lock.



- ◆ Check before use that the battery is sufficiently charged and that the free flow of air is not obstructed by a blocked hose or other causes.
  - ◆ Check that a set of filters is fitted correctly.
  - ◆ Check that the lock of the battery box and the lid filter housing are closed.
  - ◆ Check that the warning facility is functioning. The device has a low flow alarm function. Users can verify this alarm function by blocking the air intake panel or the air outlet. After about 15 seconds of shielding the air intake or air outlet completely, the machine will emit a repetitive single "beep" alarm sound. Once the blockage is removed, the alarm sound stops in about 10 seconds.
  - ◆ Tie the respirator around the waist with a belt, then put the hood on the head, adjust the headband and the elastic cloth to the most comfortable state.
- The headpiece must fit the user's face for total efficiency.
  - Efficiency is reduced if the seal is not fitted properly (beard, long hair, etc).
  - The user must ensure that the elasticated chin fits comfortably under the chin.
  - For the belt, tightening or loosening is the same as Aircraft seat belt. As icons below:



- ◆ Check the flow rate by turning on the unit and observing the LCD digit that can indicate the actual flow rate.

### 3.1.1 Usage limitations system

- ◆ The space in which the unit is to be used must contain at least 17% oxygen and must not contain any explosive gases or vapors. In enclosed spaces where there is a risk of oxygen deficiency, use of the unit should be avoided.
- ◆ In case of physical effort, it is possible that a temporary negative pressure occurs in the blower unit, resulting in a reduction of the protection factor of the system.
- ◆ Air speed in excess of 2m/s can affect the protection factor.
- ◆ The ambient usage temperature should be between the limits of -5 and +50°C
- ◆ Do not use the unit in circumstances where explosive atmosphere, hazardous gases and/or vapors, corrosive liquids, solvents, hot solids, electrical hazards, infrared and ultra violet radiation are present.

That if one of this situation is met (situation above, or any of those explained in the manual), the user must not use the device, nor enter the area and must contact the manufacturer. The user must not modify the device or its components in any way.

#### Warning

If the wearer of the respirator feels dizzy or uncomfortable or can smell/taste something, he should abandon the contaminated area immediately.

The risk for which the device is intended to protect: respiratory protection (and eye protection). This excludes any other risk (head protection, etc.)

In the power-off state, little or no respiratory protection is to be expected. This is considered to be an abnormal situation. A rapid build-up of carbon dioxide and depletion of oxygen within the hood may occur.

Filters shall only be fitted to the turbo unit and not directly to the helmet/hood.

The user should not confuse the markings on a filter relating to any standard other than EN 12941 with the classification of this device when used with this filter.

### 3.1.2 Usage limitations filter element

- ◆ Used filter elements cannot be cleaned.

#### Warning

Never attempt to clean a filter element; the filter media may be damaged, resulting in loss of protection.

### 3.1.3 Charging batteries

The battery is supplied in a non-full charged state; the charging time for a fully discharged battery is approximately 3 hours. The automatic setting of the charger prevents damage to the batteries when the charging time is exceeded.

Under normal circumstances the battery can be charged and discharged approximately 500

times.

After the battery is completely charged, the charger will switch over to trickle charging. This will expand the lifetime of the battery beyond 500 charge cycles. If the unit is used for more than 8 hours a day, it is recommended that user carry a second battery for backup.

Batteries may be charged on or off the unit.

### **3.1.4 Filter assembling**

Open the front cover by releasing the retaining clip on the side of the unit by hand (do not use tools). Fit the filter squarely into the power unit by aligning the three concave points of the filter box to the three convex points in the cavity. Then press the filter hard and rotate a small angle clockwise to lock. To unlock the filter, press it and rotate anticlockwise. When air flow alarm is caused by blockage of filter, it should be replaced in time. Spare filters must be supplied by the manufacturer.

The pre-filter and the activated carbon filter should be installed on the inner side of the upper cover, assembled in the order and direction indicated in Figure 1, and then pressed by the frame. Three notches on the frame are aligned with three buckles on the top cover. Press the frame and rotated clockwise to lock. To disassemble them, press the frame and rotated anticlockwise to unlock.

### **3.2 Switching on**

The unit can be switched on by pushing the ON/OFF button for about three seconds. An audible beep will be heard and the LCD will display the real statuses of air flow, filter and the battery power. Then the unit will run on the low flow level. The flow digit on LCD will be stable in about 30 seconds after adjusting to each air flow level.

### **3.3 During use**

This product has three levels of air flow. By shortly pressing the "SET" button, the flow level will change according to "low - medium - high - low..." circulation accompanied by a audible beep. The icon on LCD also changes synchronously. At the same time, the digit on LCD indicates the real air flow rate. If during use the air supply drops or fails entirely, leave the work area immediately. If a signal for low battery (2 beeps repeatedly) or a clogged filter element is given (a single short beep repeatedly), leave the workroom immediately, and check according to chapter 6.

### **3.4 After use**

By pressing the ON/OFF button for 3 seconds, the motor will stop gradually accompanied by a long beep. When the icons on LCD disappeared after about 15 seconds, the apparatus will turn off completely.

### ***Cleaning and disinfecting***

After each session clean the unit, using a mixture of water and a mild detergent. Subsequently, rinse thoroughly with clean water. Do not use any solvent. During cleaning ensure that no water is allowed to enter the apparatus. The unit must not be immersed in fluid. Dry the unit with a cloth and/or leave it to dry in the open air.



For reasons of hygiene each operator should be equipped with his/hers own hood or mask.

## 4. Maintenance and inspection

Prior to use: functional checks for the user

After use: Cleaning and disinfecting of the blower unit. Cleaning, functional checking of the complete system.

Every 6 months: Cleaning and disinfecting of the blower unit.

Cleaning, functional checking of the complete system. Check the hose for leakage and inspect the connector for damage.

For cleaning, the device must not be in contact with water.

Use only moistened cloth to clean it.

## 5. Storage

Before storing the unit in the carrying case, it should be thoroughly dry.

Do not keep soiled filter together with the unit and the mask in the same enclosed storage space.

Remove the filters from the unit and seal them appropriately.

The unit is only recommended for storage in the temperature range  $-10^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  and in conditions where relative humidity does not exceed 85%.

## 6. Faults/troubleshooting

Blower unit fails to supply air:

- ◆ Battery is empty
- ◆ ON/SET button defective
- ◆ Plug connection defective
- ◆ Motor bearings defective
- ◆ Printed circuit-board defective

Blower supplies insufficient air:

- ◆ Filter unit blocked
- ◆ Hose blocked or leaking
- ◆ Blockage or leakage in mask, air hood or breathing helmet
- ◆ Suction opening clogged

Battery fails to charge:

- ◆ Power lead or plug connection defective
- ◆ Charger defective
- ◆ Battery defective or worn out

Battery life is too short:

- ◆ Charger defect
- ◆ Battery defect or worn out

### ***Repairs***



Note

All other repairs should only be carried out by the manufacturer, or an authorized service and

maintenance distributor.

## **7. Technical specifications**

### **7.1 Blower unit**

Airflow: 170 L/min,210L/min,250L/min  
Motor Speed: Electronically controlled  
Alarms: Electronically controlled, for low flow and  
Low battery  
Material: Impact proof ABS  
Colour: Black/ Blue  
Weight : 1080 grams (including battery and filter)  
Dimensions LxWxH: 165x95x200mm

### **7.2 Filter**

Filter class: TH3 P R SL  
Material filter medium: Efficient filtering low resistance papers  
Material support disks: ABS  
Colour: Black  
Weight: 90 grams  
Dimension: DxH: ø120x38mm

### **7.3 Battery**

Type: Lithium,rechargeable  
Voltage: 11.1 Volt  
Capacity: 5200 mAh  
Operating time: 8hrs approx  
Charging time: 3 h  
Charging cycles: > 500  
Material case: Impact proof ABS  
Colour: Black  
Weight: 350 grams  
Dimensions: 137x50x72 mm

### **7.4 Battery charger**

Type: Fully automatic, overcharge protection  
Primary voltage: 100-240 v, 50/60 Hz  
Secondary voltage: 12.6 Volt  
Colour: Black  
Weight: 200 g  
Dimensions: 110x48x30 mm

### **7.5 Hose**

Length: 800 mm  
Diameter(int): 35 mm  
Connection: Bayonets for blower unit and mask  
Material: PU



## 8. Statutory requirements and regulations

REGULATION( (EU) 2016/425

Norm EN12941:1998 + A1:2003 + A2:2008:

Powered filtering devices incorporating a helmet or a hood

## 9. General

Your supplier can not, in general terms, accept responsibility for damage incurred by the owner, user other persons using the safety product or third parties, which results either directly or indirectly from incorrect use and/or maintenance of the safety product, including use of the product for any purpose other than that for which it was supplied and/or the non compliance or incomplete observance of the instructions contained in this user manual and/or in connection with repairs to the safety product which have not been carried out by us or on our behalf. Our General Sales and Supply conditions are applicable to all transactions. The Safety Products continually strives to improve its products and reserves the right to change the specifications mentioned in this manual without prior notification.



The European guideline Regulation (EU) 2016/425 stipulates that only inspected protective bearing the CE mark may be traded and used. Use of substitute, none-original spare parts, invalidates the CE approval and, also, all rights regarding guarantee, whereby the user and, also, the person initially marketing these spare parts, shall be punished by the relevant authorities of the EEC member countries, whereby additionally, the entire product will be excluded from use and withdrawn from the commercial transactions respectively. Original spare parts can be recognized by the affixed code number, supplemented with the manufacturer's mark and the "CE approval" possibly supplemented with a year of applicability.

## 10. Guarantee

Your supplier will repair or, if necessary, replace this product free of charge in the event of a material or manufacturing defect within 12 months of the purchase date, provided that the product has only been subjected to normal usage in accordance with the user manual. The guarantee is invalidated if the type or serial number marking is modified, removed or made illegible.