Sundstrom SR 700 Fan Powered Particle Respirator Instruction Manual

SR 700
USER INSTRUCTIONS

Particle filter fan unit SR 700

Contents

General information

The use of a respirator must be part of a respiratory protection program. For advice see EN 529:2005 or S/NZS 1715:2009. The guidance contained in these standards highlights important aspects of a respiratory protective device program but does not replace national or local regulations. If you feel uncertain about the selection and care of the equipment, consult your work supervisor or get in touch with the sales outlet. You are also welcome to get in touch with the Technical Service Department at Sundström Safety AB.

1.1 System description

The SR 700 is a battery-powered particle filter fan unit that, together with particle filter and head top – hood, visor, welding shield, helmet with visor, half-mask or a full-face mask – is included in the Sundström fan-assisted respiratory protective device systems conforming to EN 12941 or EN 12942 and to Sundström Powered Air Purifying Respirator (PAPR)system conforming to AS/NZS 1716:2012. The fan unit is to be equipped with filters, and the filtered air is supplied through a breathing hose to the head top. The above-atmospheric pressure then generated prevents pollutants from the surroundings from penetrating into the head top. Before use, both these user instructions and those or the filter and head top must be carefully studied.

1.2 Applications

The SR 700 can be used as an alternative to filterrespirators in all situations for which these are recommended. This applies particularly to work that is hard, warm or of long- duration. When selecting filters and head top, the following are some of the factors that must be taken into account:

- Types of pollutants
- The possible occurrence of an explosive atmosphere
- Concentrations
- Work intensity
- Protection requirements in addition to respiratory protective device

The risk analysis should be carried by a person who has suitable training and experience in the area.

1.3 Warnings/limitations

Note that there can be national differences in the regulations for use of respiratory protective equipment.

Warnings

The equipment must not be used

- In the power-off state. In this abnormal situation, a rapid build-up of carbon dioxide and depletion of oxygen

may occur in the head top and no protection is given.

- If the surrounding air does not have a normal oxygen content.
- If the pollutants are unknown.
- In environments that are immediately dangerous to life and health (IDLH).
- With oxygen or oxygen-enriched air.
- If you find it difficult to breathe.
- If you can smell or taste the pollutants.
- If you experience dizziness, nausea, or other discomforts.

Limitations

- The SR 700 must always be used with two-particle filters.
- If the user is exposed to very high work intensity, negative pressure may occur in the head top during the inhalation phase, which may involve the risk of leakage into the head top.
- The protection factor may be reduced if the equipment is used in surroundings in which high wind speeds occur.
- Be aware that the breathing hose might make a loop and get caught up by something in your surrounding.
- Never lift or carry the equipment by the breathing hose.
- The filters must not be fitted directly to the head top.
- Only use Sundström filters.
- The user should take care not to confuse the markings on a filter to standards other than

EN 12941 and EN 12942 with the classification of the SR 700 fan unit when used with this filter.

Parts

2.1 Delivery check
Check that the equipment is complete in accordance with the packing list and undamaged.

Packing list
Fig. 1.
No. Part

1. Fan SR 700, bare
2. Battery, STD
3. Battery charger SR 713
4. Belt PES SR 508
5. Particle filter SR 510 P3 R, 2x
6. Filter adapter SR 711, 2x
7. Pre-filter SR 221, 10x
8. Pre-filter holder, 2x
9. Flowmeter SR 356
10. User instructions
11. Cleaning tissue SR 5226
12. Plug kit

Accessories / Spare parts

Fig. 2.

No. Part	Ordering No.
1. Hood SR 561	H06-5012
2. Hood SR 562	H06-5112
3. Hood SR 520 M/L	H06-0212
3. Hood SR 520 S/M	H06-0312
4. Hood SR 530	H06-0412
5. Hood SR 601	H06-5412
5. Hood SR 602	H06-5512
6. Face shield SR 570	H06-6512
7. Full face mask SR 200, PC-visor	H01-1212
7. Full face mask SR 200, glass visor	H01-1312
8. Full face mask SR 200 Airline, PC visor	H03-1012
8. Full face mask SR 200 Airline, glass visor	H03-1212
9. Half mask SR 900 S	H01-3012
9. Half mask SR 900 M	H01-3112
9. Half mask SR 900 L	H01-3212
10. Welding shield SR 592	H06-4412
12. Hose SR 550	T01-1216
12. Hose SR 551	T01-1218
13. Hose SR 951	T01-3003
14. Twin hose SR 952	R01-3009
15. Helmet with Visor SR 580	H06-8012
16. STD Standard battery, 2.25 Ah	R06-0708
16. HD battery, 3,5 Ah	T06-0701
17. Battery charger SR 713	R06-0706
18. Steel net disc SR 336	T01-2001
19. Storage bag SR 505	T06-0102
20. Leather belt SR 503	T06-0103
20. Leather belt SR 503, Large	T06-0107

21. Belt SR 508	R06-0101
21. Rubber belt SR 504	T06-0104
21. Belt PVC	T06-0124
22. Gasket to fan	R06-0107
23. Harness SR 552	T06-0116
24. Particle filter P3 R, SR 710	H02-1512

Use

3.1 Installation
See also the user instruction for the head top.
3.1.2 Filters
Read carefully the user instructions accompanying the filters.
Particle filter
The fan unit may be used with only particle filters P3 R (PAPR-P3), model number SR 510 with filter adapter or SR 710, which provides protection against all types of particles, both solid and liquid.
Note!
• When filters are changed, both filters must be changed at the same time.
Pre-filter
The pre-filters SR 221 protect the main filter against excessively fast clogging. The pre-filter holders also protect the main filters against handling damage.
3.2 Assembly
a) Battery
• Remove and charge the battery indoors at room temperature. Fig. 5, 6, 7.
The charger carries out charging automatically in three stages. Fig. 8.
1. Orange LED.
2. Yellow LED.
3. Green LED.
• Put the battery back. Fig. 9.

Warning!

- Always recharge the battery before it has become fully discharged.
- The charger may be used only for charging the batteries for the SR 700.
- The battery may be charged only with a genuine Sundström charger.
- The charger is designed only for use indoors.
- The charger must not be covered while it is in use.
- The charger must be protected against moisture.
- Never short-circuit the battery.
- Never try to dismantle the battery.
- Never expose the battery to a naked flame. There is a risk of explosion/fire.

b) Belt
• Assemble the belt. Fig. 10, 11, 12.
Note!
Study the illustrations carefully to ensure that the belt will not end up upside down or back to front.
c) Breathing hose
Read carefully the user instructions accompanying the head top.

Full face mask SR 200
• Assemble the hose between Full face mask SR 200 and particle filter fan unit SR 700. Fig. 13, 14, 15.
• Check that the hose is firmly secured.
Half mask SR 900:

- Assemble the hose between half-mask SR 900 and particle filter fan unit SR 700. Fig. 16, 17.
- Check that the hose is firmly secured.

d) Particle filters
Two filters must always be used at the same time.

- Check that the gaskets in the filter mounting of the fan unit are in place and are in good condition. Fig. 18.
- If particle filter SR 510 is used, snap it on the filter adapter without pressing it onto the center of the filter.
- Screw the filter into the filter mounting so far that the adapter will be in contact with the gasket. Then turn it about 1/8 of a turn further in order to ensure a good seal. Fig. 19.

e) Pre-filters SR 221
• Assemble the pre-filters. Fig. 20, 21.
f) Plug kit
The Plug kit is used for cleaning or decontamination of the fan unit and prevents dirt and water from entering the fan housing.
Disconnect the breathing hose and the filters and install the plugs. Fig. 35.
3.3 Operation/performance
Display
Fig. 22.
a) Battery symbol that lights up with a yellow light when the battery capacity is low.
b) Triangle that lights up with a red light if the airflow should cease or if the filters are clogged.
c) Small fan symbol that lights up with a green light during normal operation.
d) Bigger fan symbol that lights up with a green light during boosted operation

Warning system/alarm signals

- In the event of airflow obstructions
- A pulsating sound signal will be heard.
- The red warning triangle of the display will flash.

Action:
Immediately interrupt the work, leave the area, and inspect the equipment.

- If the particle filters are clogged
- A continuous sound signal will be heard for five seconds.
- The red warning triangle in the display will flash.

The warning triangle will flash continuously, whereas the sound signal will be repeated at intervals of 80 seconds.
Action: Immediately interrupt the work, leave the area and change the filter.

- If the battery capacity is lower than 5 %
- A sound signal will be repeated twice at intervals of two seconds.
- The yellow battery symbol of the display will flash.

The battery symbol will flash continuously, whereas the other signals are repeated at intervals of 30seconds until about one minute remains before the battery would be fully discharged. The sound signal then changes to an intermittent signal.
Action: Immediately interrupt the work, leave the area, and change/charge the battery.

Start/Switch off

- Start the fan by pressing the control button once. Fig. 23.
  The symbols on the display will light up and the sound signal will sound. The fan starts in normal operating status. Fig. 24.
- Switch between normal and boosted operating status with the control button.
- To switch off the fan unit, keep the control button depressed for about two seconds.

3.4 Performance check
The performance check should be checked on every occasion before the fan unit is used.

Check of the minimum flow – MMDF

- Check that the fan unit is complete, correctly mounted, thoroughly cleaned, and undamaged.
- Start the fan unit.
- Place the head top in the flow meter.
- Grip the lower part of the bag to seal around the upper attachment of the breathing hose. Fig. 26.
  Note! You must not grip around the breathing hose itself as this would either obstruct the airflow or cause failure to achieve a proper seal. Fig 25.
- Grip the flow meter tube with the other hand so that the tube points vertically upwards from the bag. Fig. 26.
- Read the position of the ball in the tube. This should hover at a level with or slightly above the upper marking on the tube, (175 l/min). Fig. 27.

If the minimum flow is not achieved, check that – the flow meter is held upright, – the ball moves freely, – the bag seals well around the hose.

Checking the alarms
The equipment is designed to provide a warning if the airflow is obstructed.

- Provoke an airflow stoppage by gripping the top part of the bag or by shutting off the flow meter outlet. Fig. 28.
- The fan unit should then initiate alarms by sound and light signals.
- If the air is again allowed to flow, the alarm signals will automatically cease after 10-15 seconds.

3.5 Donning

- Take the fan unit on and adjust the belt so that the fan unit is firmly and comfortably secured at the back of your waist. Fig. 29.
- Start the fan.
- Put the head top on.
- Make sure that the breathing hose runs along your back and is not twisted. Fig. 29.

Note that when a full face mask is used, the hose should run along your waist and up along the chest. Fig. 30. When a half mask is used, the hose should run along your back and over your shoulders. Hose SR 951, see fig. 31. Hose SR 952, see fig. 32.

3.6 Doffing
Leave the polluted area before taking the equipment off.

- Take off the head top.
- Switch off the fan.
- Release the belt and remove the fan unit.

After use, the equipment must be cleaned and inspected.

Maintenance

The person who is responsible for cleaning and maintenance of the equipment must have suitable training and be well acquainted with work of this type.
4.1 Cleaning

Sundström cleaning tissues SR 5226 are recommended for daily care. At more thorough cleaning or decontamination -proceed as follows:

- Assemble the plug kit. See 3.2 f.
- Use a soft brush or sponge moistened with a solution of water and dishwashing detergent or the like.
- Rinse the equipment and leave it to dry.
- If necessary, spray the fan unit with 70 % ethanol or isopropanol solution for disinfection.

NOTE! Never use a solvent for cleaning.

4.2 Storage
After cleaning, store the equipment in a dry and clean place at room temperature. Avoid exposing it to direct sunlight. The flow meter can be turned inside out and can be used as a storage bag for the head top.

4.3 Maintenance schedule
Recommended minimum requirements on maintenance routines so you will be certain that the equipment will always be in usable condition.

Before use	After use	Annually
Visual inspection	•	•
Performance check	•	•
Cleaning	•	•
Change of fan gaskets	•	•

4.4 Change parts
Always use genuine Sundström parts. Do not mothe equipment. The use of non-genuine parts or modification of the equipment may reduce the protective function and put at risk the approvals received by the product.

4.4.1 To change the particle filter

Bear in mind that both filters must be changed at the same time.

- Unscrew the filters.
- Release the filter holders. Fig. 33.
- Remove the filter adapter from SR 510 Fig. 34.
- Change the pre-filters in its holders. Clean as necessary.
- Fit new filters. See 3.2 d and e.

4.4.2 To change the gaskets

- Screw out the filters.
- The gasket has a groove all around and is fitted on a flange below the threads in the filter mounting. Fig. 18.
- Remove the old gasket.
- Fit the new gasket onto the flange. Check that the gasket is in place all around.

Technical specification

Airflow rate

During normal operation, the airflow rate is at least 175 l/min, which is the manufacturer's recommended minimum flow rate or MMDF. On boosted operation, the airflow rate is up to 225 l/min. The automatic flow control system of the fan unit maintains these flows constantly throughout the operating time.

Batteries

STD, Standard, 14.4 V, 2.25 Ah, lithium-ion.
HD, Heavy Duty, 14.4 V, 3.5 Ah, lithium-ion.

- The charging time for the STD battery is about 2 h.
- The charging time for the HD battery is about 3 h.

Operating times

The operating times may vary with the temperature and the condition of the battery and filters. The table below gives an indication of the expected operating times under ideal conditions.

STD	HD	Airflow rate	Expected ope
•		175 l/min	more than 6 h
•		225 l/min	4 h
	•	175 l/min	8 h
	•	225 l/min	5.5 h

Temperature range

• Storage temperature. Fig. 3.
• Service temperature. Fig. 4.

Shelf life

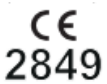
The equipment has a shelf life of 5 years from the date of manufacture. However, note that the battery must be charged at least every 6 months.

Key to symbols

 Recycling symbol

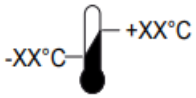
 See user instructions

 To be sorted out from other waste

 CE approved by INSPEC International B.V.

 Insulation class 2

Relative humidity



Temperature range

Approval

- The SR 700 in combination with face shield SR 570, welding shield SR 592, helmet with Visor SR 580, hoods SR 520, SR 530, SR 561, SR 562, SR 601 or SR 602 is approved in accordance with EN 12941:1998, class TH3.
- The SR 700 in combination with full face mask SR 200, SR 200 Airline, or half mask SR 900 is approved in accordance with EN 12942:1998, class TM3.
- The SR 700 conforms to the requirements of EN 61000-6-2:2005 (Immunity for industrial environments) and EN 61000-6-3:2007 (Emission for residential, commercial, and light-industrial environments) which makes the fan conform to EMC Directive 2014/30/EU.

The PPE Regulation (EU) 2016/425 type approval has been issued by Notified Body 2849. For the address, see the reverse side of the user instructions. The EU declaration of conformity is available at **www.srsafety.com**

Australian StandardsMark

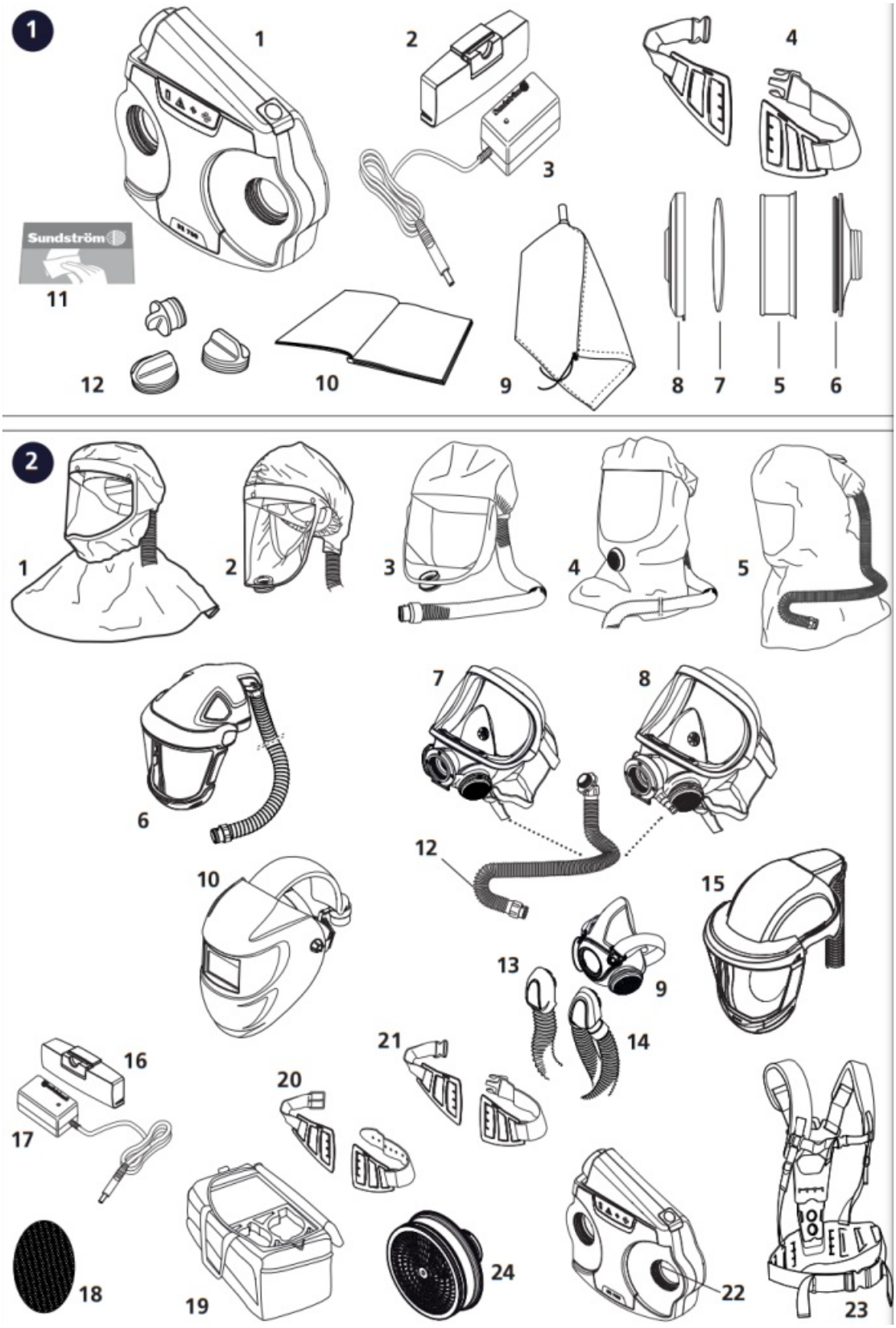
The fan SR 700 is tested and certified to comply to AS/NZS 1716:2012. The StandardsMark is issued under license by SAI Global Certification Services Pty Limited Lic No.766 (ACN 108 716 669) (“SAI Global”).

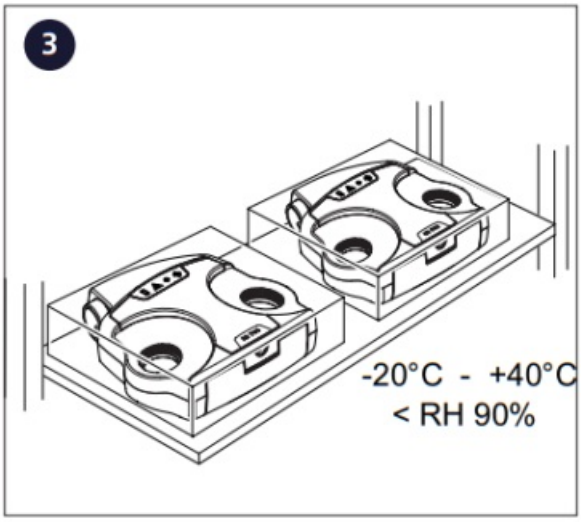
Worn-out products

The Information on hazardous substances The battery’s connector and circuit board contain small amounts of lead. In normal handling, this means no danger to human health or the environment.

Handling of worn-out products

The battery should be removed from the fan unit and sorted as battery waste. A worn-out battery can be handed into the retailer or to a recycling center at no cost. The fan unit is sorted as electrical waste. The battery charger is sorted as electrical waste. Recycle in accordance with local regulations. Proper recycling of products contributes to the efficient use of material resources and reduces the risk of the spread of hazardous substances.

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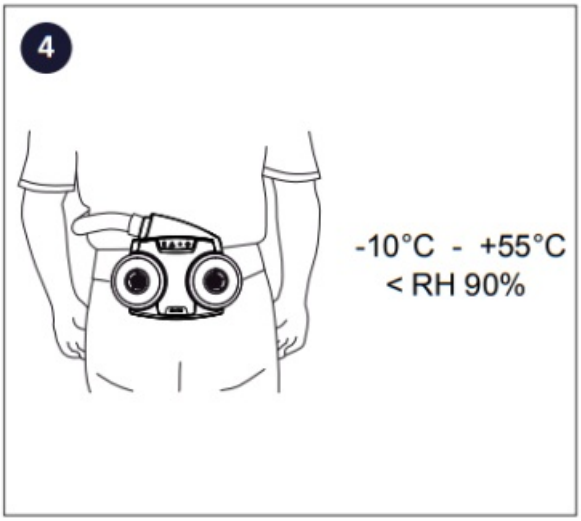
-20°C - +40°C
< RH 90%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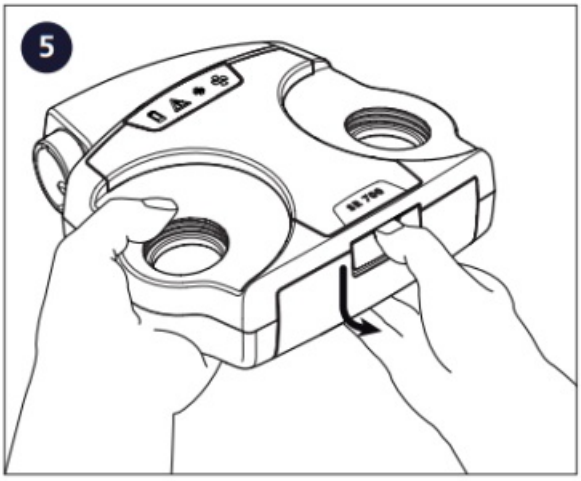
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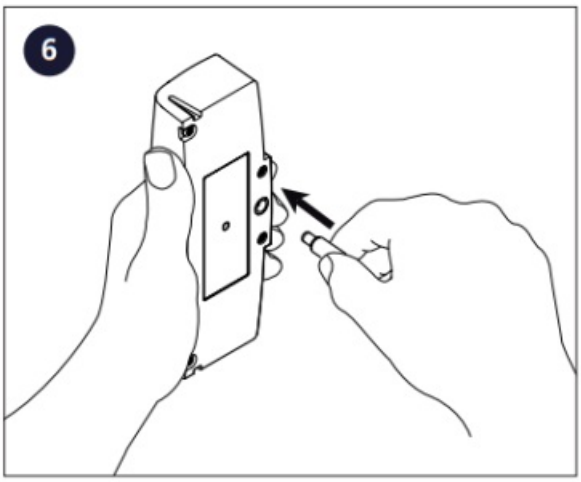
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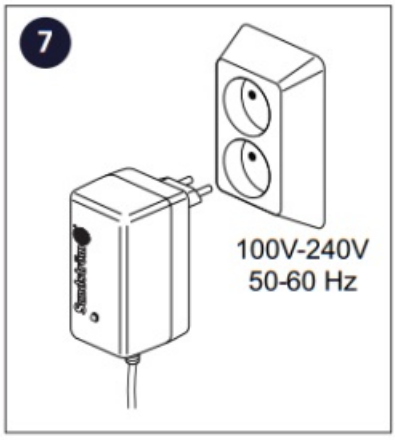
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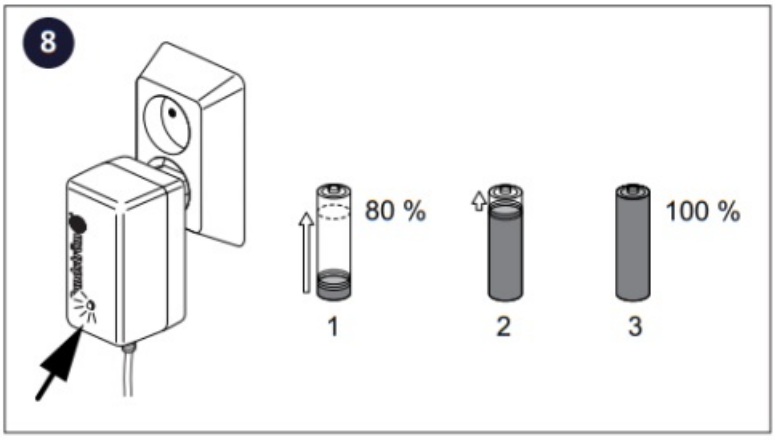
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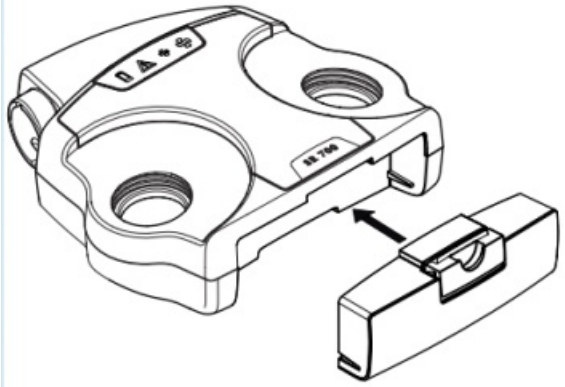

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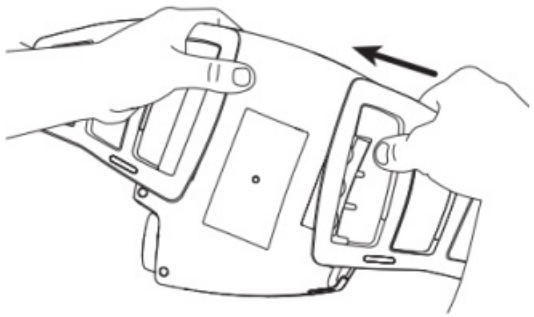

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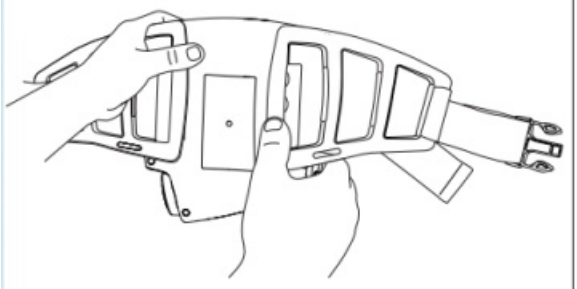

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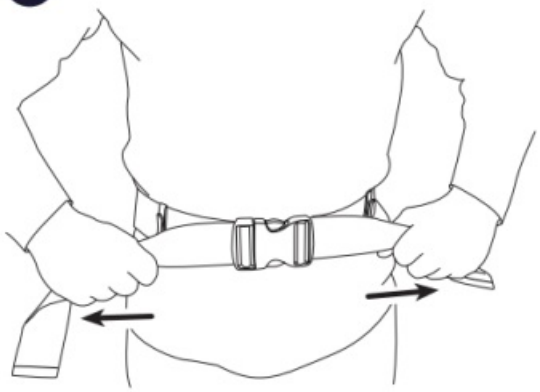

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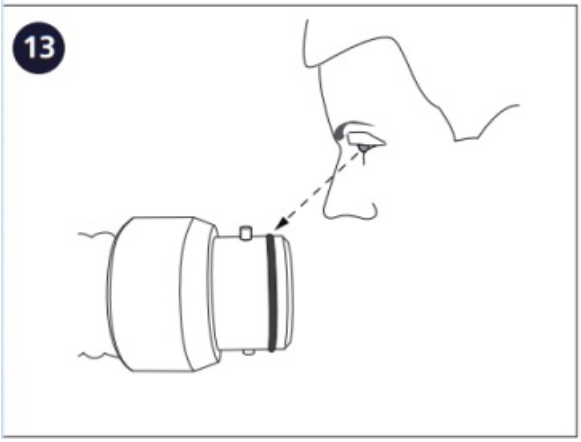

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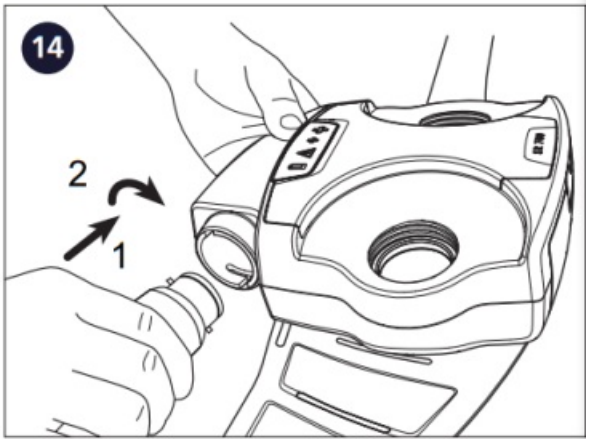

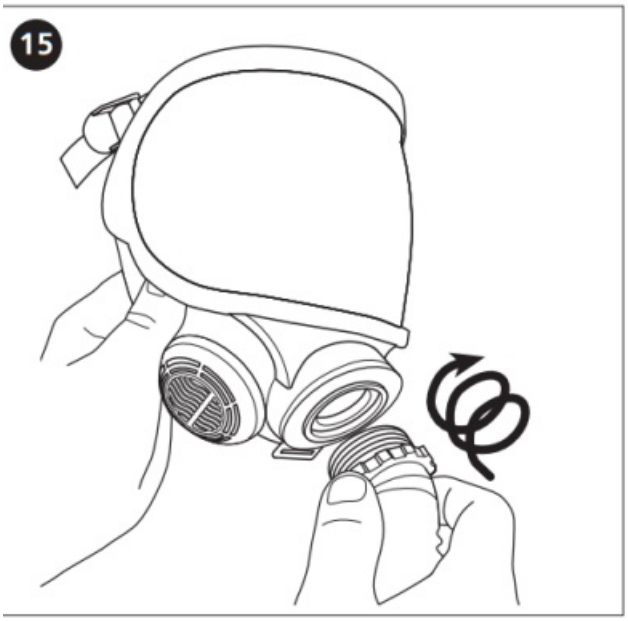
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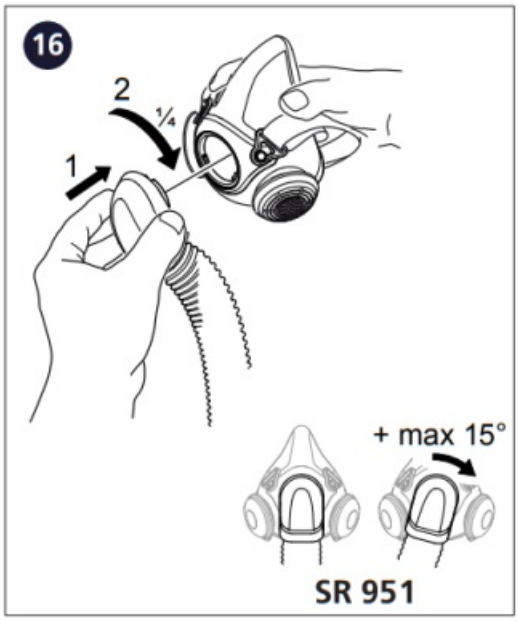
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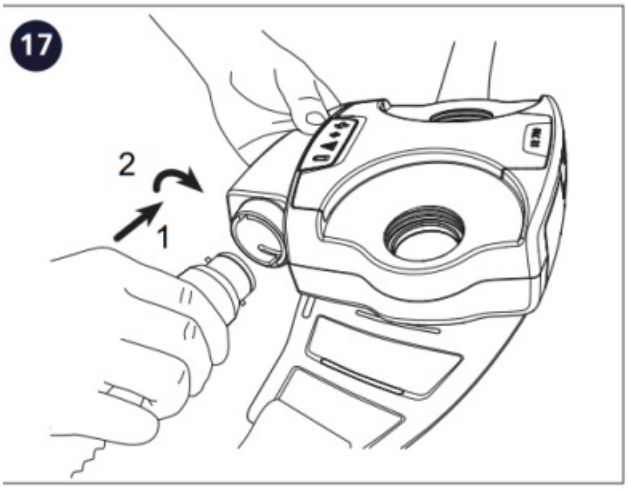
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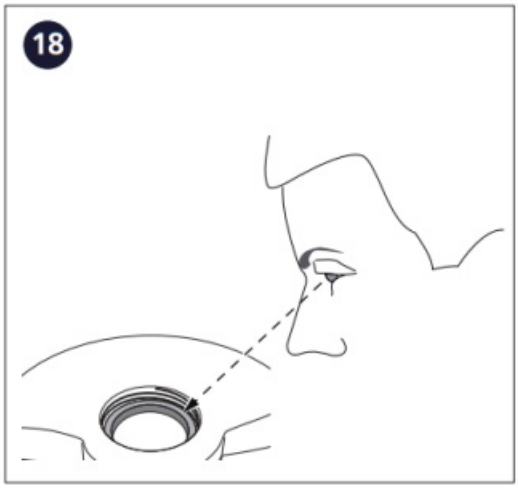
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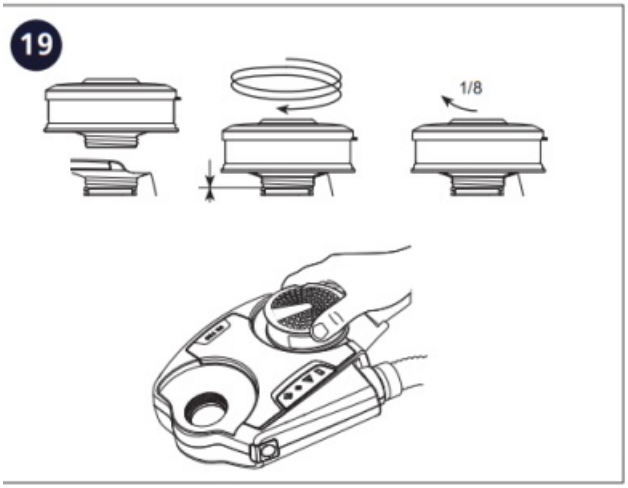
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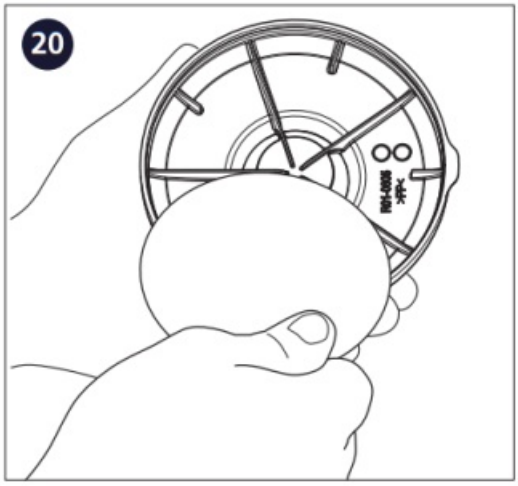
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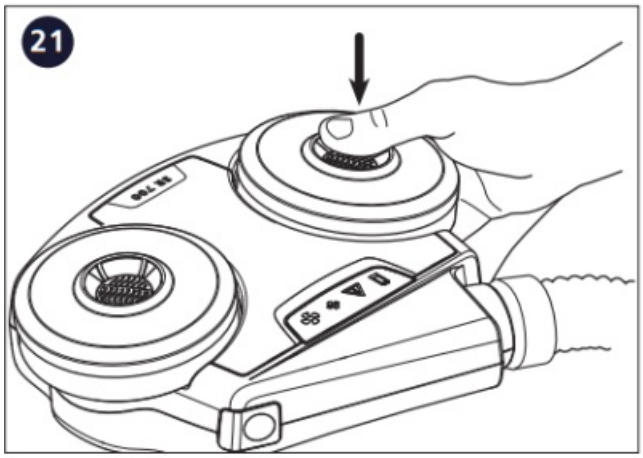
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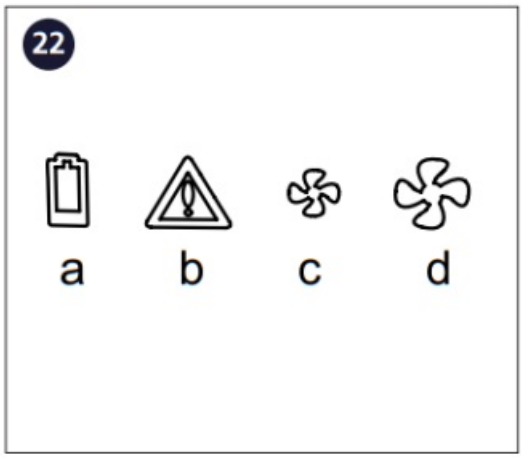
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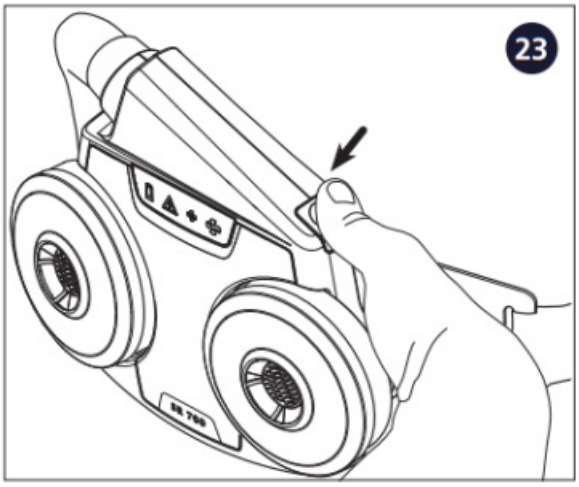
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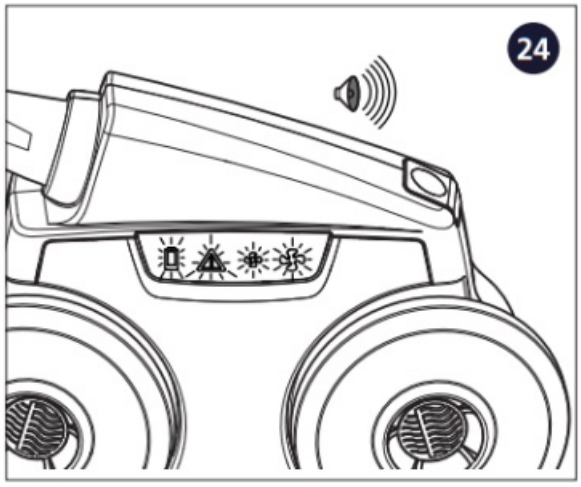
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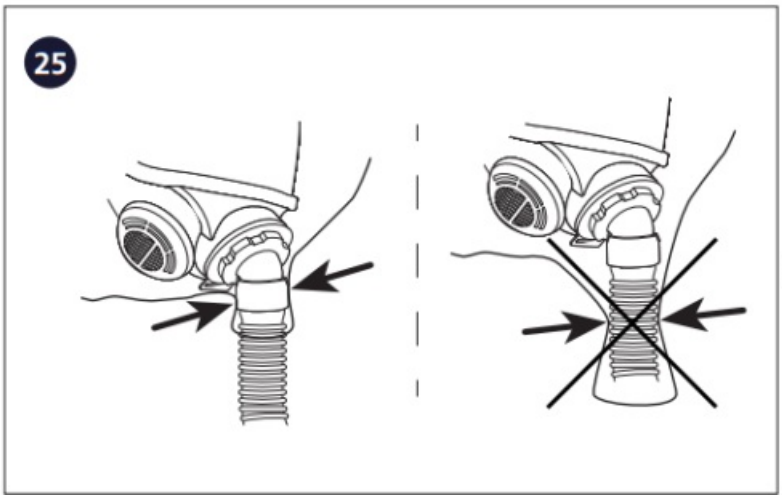
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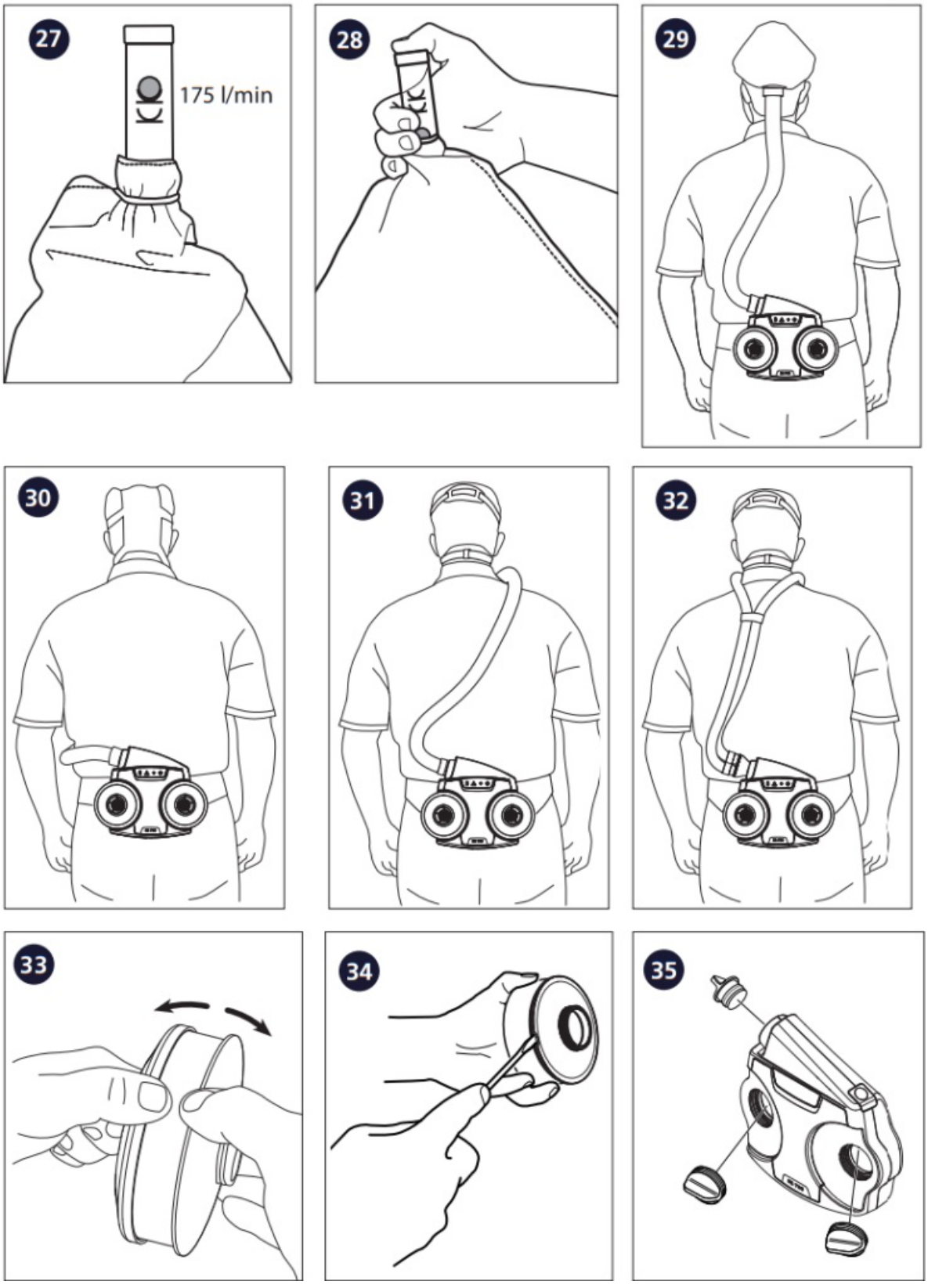

The fan unit SR 700 is manufactured within a quality management system accepted by
Notified Body 2849: INSPEC International B.V.,
Beech avenue 54-62, 1119 PW,
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Documents / Resources

	Sundstrom SR 700 Fan Powered Particle Respirator [pdf] Instruction Manual SR 700, Fan Powered Particle Respirator