



Operating Manual

S-Cap-Air

Compressed Air Escape Apparatus with Hood



Order N°. 10018537/10



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1. Safety Regulations

1.1. Correct Use

The S-Cap-Air is an apparatus for escape from areas with a toxic atmosphere. It protects the wearer during escape from a dangerous ambient atmosphere, with poisonous gases, damaging particles and from lack of oxygen.

The S-Cap-Air is only to be used for emergency escape situations and self-rescue. The duration of use is 15 minutes (class CL 15). The S-Cap-Air is specifically **not suitable for**

- Working applications
- Underwater applications
- Rescue applications
- Fire-fighting applications

It is imperative that this operating manual be read and observed when using the S-Cap-Air. In particular, the safety instructions, as well as the information for the use and operation of the apparatus, must be carefully read and observed. Furthermore, the national regulations applicable in the user's country must be taken into account for a safe use.



Danger!

This product is supporting life and health. Inappropriate use, maintenance or servicing may affect the function of the device and thereby seriously compromise the user's life.

Before use the product operability must be verified. The product must not be used if the function test is unsuccessful, it is damaged, a competent servicing/maintenance has not been made, genuine MSA spare parts have not been used.

Alternative use, or use outside this specifications will be considered as non-compliance. This also applies especially to unauthorised alterations to the apparatus and to commissioning work that has not been carried out by MSA or authorised persons.

1.2. Liability Information

MSA accepts no liability in cases where the product has been used inappropriately or not as intended. The selection and use of the product are the exclusive responsibility of the individual operator.

Product liability claims, warranties also as guarantees made by MSA with respect to the product are voided, if it is not used, serviced or maintained in accordance with the instructions in this manual.

2. Description

2.1. Apparatus Overview

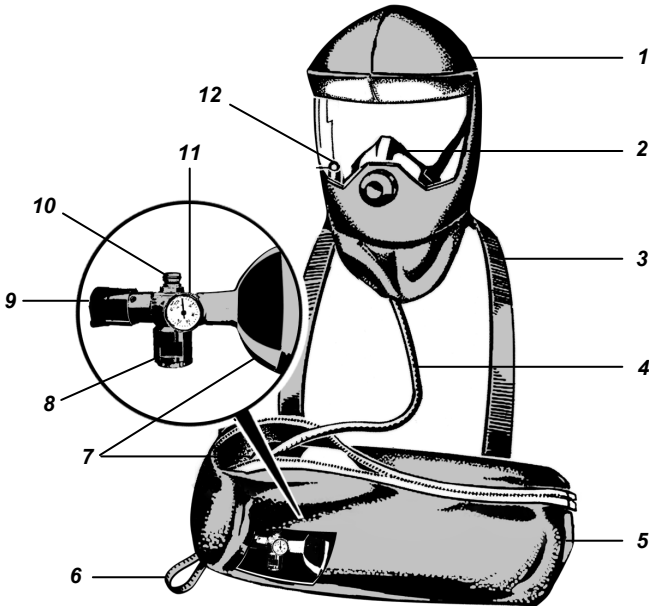


Fig. 1 Apparatus Overview S-Cap-Air

- | | |
|------------------------------------|--|
| 1 Hood (signal yellow) | 7 Compressed air cylinder |
| 2 Inner mask with exhalation valve | 8 Filling connection with red protection cap |
| 3 Neck strap (black) | 9 Valve with valve cap and start-up pin |
| 4 Medium pressure line | 10 Breathing tube connector |
| 5 Carry bag with inspection window | 11 Air pressure indicator |
| 6 Thumb loop (yellow) | 12 Warning indicator in the hood |

The S-Cap-Air consists of a hood which is connected to a compressed air cylinder via a medium pressure line. It is stored ready for operation in its carry bag and is started automatically when the bag is opened.

Compressed air cylinder and bag

The unit is supplied either with a full or an empty compressed air cylinder, as requested by the customer, and it may be necessary for the customer to fill the cylinder before first deployment (see enclosed leaflet 10019536). The group of components, with compressed air cylinder and valve / pressure reducer complies with European Directive 97/23/ EC.

The air cylinder is strapped into the carry bag and the air pressure indicator can

be read through the window in the bag. Air supply time and donning pictograms are shown on the bag.

Pressure reducer / cylinder valve

The valve is securely screwed into the compressed air cylinder. The valve cap with the incorporated start-up pin is located on the valve. Pulling the yellow unzipping loop pulls the start-up pin out of the valve cap, the valve opens and the air supply is activated (→ Section 3.3).

A continuous stream of air provides the user with air for breathing and prevents any increase in carbon dioxide in the hood. The air pressure indicator on the valve provides a continuous read out of the level of air in the cylinder.

Hood

The signal yellow hood is fitted with a large field of view lens, a half mask with external exhalation valve and a warning indicator which is located directly in the field of vision.

The warning indicator continuously indicates correct air flow (display: green) and warns the user to remove the hood by colour change (display: red) at the end of safe use time.

The internal straps in the hood automatically adjust to locate the half mask over nose, mouth and chin. The securely located half mask and constant air supply prevent any increase in carbon dioxide in the hood.

The flexible neck seal does not require adjustment with a properly donned hood. The hood provides protection for users wearing glasses and also with facial hair.

2.2. Function

The S-Cap-Air provides the wearer with breathable air in the event of an emergency, for a maximum period of 15 minutes, allowing escape from dangerous areas. The unit provides a constant stream of breathable air in to the hood.

The supply of air is started as soon as the unzipping loop is pulled upwards. When this happens, the seal is broken and the start-up pin is automatically pulled out of the valve cap on the cylinder opening the valve and bag. Air flows through the valve and into the hood via the flexible breathing tube and warning indicator. The hood can then be taken out and donned with a few hand movements.

During use, the hood continuously fills with breathable air which forms an air reservoir. Air is breathed in from this reservoir via the half mask and is subsequently breathed out through the exhalation valve into the ambient atmosphere.

3. Use

3.1. Safety Instructions

Training and knowledge of the operating manual

Regular training and knowledge of the operating manual is essential for correct use.

Suitability for adults and device weight

The S-Cap-Air is suitable for adults in good physical and psychological condition. If the S-Cap-Air weighs more than 5 kg (i.e. when using a 3L 200 bar steel cylinder), then the unit should not be carried continuously through the working shift to comply with EN 1146.

Suitability of compressed air cylinders and breathing air

Compressed air cylinders used must comply with national regulations and must be approved for the relevant pressure.

Only use breathable air which complies with the requirements of EN 12021 or USCGA grade D (or better).

Regular checking intervals

The unit should be checked at the prescribed intervals. Special care should be taken to ensure that the cylinder is always filled with breathable air (→ Section 6).

Use in explosive atmosphere

The device meets the requirements of class

I M1

II 1GD IIB 85°C (T6) $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

II 2G IIC T6 $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

Service only by authorised personnel

Tests and repairs may only be undertaken by service personnel trained and authorised by MSA.

3.2. Important Escape Rules

Possible escape routes should always be planned in such a way that they can be covered within the air supply time of the S-Cap-Air (max. 15 minutes). During escape the following rules must always be observed:

1. Keep calm, do not panic!
2. Choose the shortest route to safe ambient air!
3. Breathe calmly! Extra air will be consumed by breathing fast and irregularly.

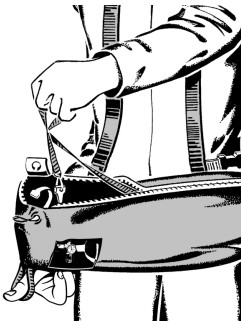
3.3. Donning the Respiratory Protection Device

The unit can be donned using a few simple hand movements in about 20 seconds as follows:



Hanging the S-Cap-Air around the neck

- (1) Hang the carry bag around the neck by the black neck strap.
The inspection window of the bag should point outwards and the thumb loop should point down and to the right.



Opening the bag / starting the unit

- (2) Insert the thumb of the right hand in the yellow thumb loop of the carry bag and hold the bag securely.
- (3) Hold the yellow unzipping loop in the left hand and pull firmly upwards. This pulls out the start-up pin from the valve of the compressed air cylinder valve, opening it. The air flow is audible.



Attention!

This action starts the air supply which lasts for 15 minutes.

- (4) Check that the start-up pin is clear of the valve cap, if not; fully unscrew the valve cap from the valve.



Donning the hood with the half-mask

- (5) Insert both hands in the 'prayer' position into the hole in the neck seal and then move them apart spreading the neck seal.
- (6) Slide hands and hood down over the head.
- (7) Adjust the half mask position on the chin and nose and press securely to locate.
- (8) Check the neck seal for secure sealing.



Checking the indicator in the hood

- (9) Check the warning indicator in the hood's field of vision:

GREEN: Air supply in the hood is correct.

RED: End of use.



Attention!

The indicator changes to RED when the air supply from the cylinder is coming to an end. The CO₂ concentration in the hood then increases and the hood must be removed.



Adjustment of the body belt

- (10) Close and tighten the body belt.



Starting the escape

- (11) Escape calmly and smoothly. Do not take off the hood until the danger area has been vacated.



After use the unit must be cleaned, disinfected and checked for damage (→ Section 6); the cylinder should be refilled (→ Section 4).

Afterwards put the unit into the carry bag (→ Section 5), seal the carry bag with leads and check the bag (→ Section 6).

If a unit has been made ready but not used, it must at least be checked visually for damage.

4. Filling the Compressed Air Cylinder

**Attention!**

Only breathing air in accordance with EN 12021 or USCGA grade D (or better) may be used.

Compressors and filling devices may only be operated by trained personnel. All warning and safety instructions must be observed.

The filling of the compressed air cylinder should be undertaken as follows:

- (1) Open the S-Cap-Air bag and remove the seal or its remains.
- (2) Carefully remove the cylinder together with the hood connected by the breathing tube.

If the S-Cap-Air has been used, the start-up pin will no longer be in the cylinder valve and the valve will be open. In this case the pin will be located on the unzipping loop of the bag. It has to be reinserted into the valve cap to close the valve before the cylinder can be refilled.

If the S-Cap-Air has not been used, the start-up pin will still be in the cylinder valve, with the unzipping loop connected and the valve will be closed. The pin should be aligned parallel to the breathing tube connection. When filling, check that the start-up pin securely seals the valve off. If necessary, screw the cap down a little to tighten it.

- (3) Remove the red protection cap from the filling connection.
- (4) Connect the filling connection to a 200 bar filling connection and fill to 200 bar at 15°C. Follow the compressor instructions and use the relevant adaptor if required.

After filling, open the valve for a short period by unscrewing the cap and then close it again until the flow of air stops.

- (5) Place the 60° template (→ Appendix: Template) over the valve cap on the cylinder valve and align one of the 60° markings with the line mark on the cap. Screw down the valve cap by 60° using the template, so that the start-up pin can be aligned parallel above the tube connection. If this is not possible, release the cap, remove the start-up pin and reinsert it on the opposite side of the cap. Close the valve again as described above.



The additional tightening down of the cap by turning 60° ensures that the valve is securely closed but not overtightened. If the cap is over tightened, the force required to open the valve when activating the unit with the unzipping loop will be increased.

- (6) After filling, bleed down the filling connection and release when pressure free (if necessary remove the adaptor).
- (7) Check the fill level, the cylinder indicator should read 200 bar.
- (8) Close off the filling connection using the protective cap.
- (9) Pack the apparatus away (→ Section 5).

5. Packing the Apparatus

After filling the compressed air cylinder, the S-Cap-Air is packed away in the carry bag as follows:

- (1) Insert the end of the cylinder carefully into the large black internal loop in the bag, holding the hood connected by the breathing tube carefully whilst doing so. Fix the cylinder indicator through the slot of the small black internal loop. The unit should be located in the bag in such a way that the breathing tube lies along the cylinder up to the end and the hood lies on top in the opposite direction. If the unit is packed correctly, the cylinder indicator is clearly visible in the inspection window of the bag.
- (2) Lay the yellow unzipping tape with the unzipping loop loosely along the cylinder to the cylinder valve. Hook the clip on the end of the unzipping tape into the start-up pin. Run the unzipping loop at the end of the unzipping tape above the cylinder valve to the outside of the bag.
- (3) Close the zipper completely up to the end over the tooth cut-out in the zipper chain.
When doing this, keep the hood in the packed position and make sure that nothing is caught in the teeth of the zipper and that the unzipping loop is outside the bag.
- (4) Make sure that the air pressure indicator can be seen through the window in the bag.
- (5) Push the orange strap of the bag at the end of the zipper through the unzipping strap and place the eyelet on the orange strap above the eyelet on the bag. Pull the seal through the eyelets on the bag and the strap.
This fixes the straps in position and secures the loop of the unzipping tape. The sealing should be as tight as possible without causing tension and still allowing movement.

The S-Cap-Air is now ready for operation.

6. Maintenance and Service

6.1. Intervals

This product should be regularly checked and serviced by specialists. Inspection and service records must be maintained. Always use original MSA parts.

Repairs and maintenance must be carried out only by authorised service centres or by MSA. Modifications to complete devices or components are not permitted and automatically result in loss of approved status.

Intervals	Maintenance and Service
after use	▪ Filling the compressed air cylinder (→ Section 4) ▪ Cleaning and Disinfection (→ Section 6.2) ▪ Visual check (→ Section 6.3).
unit was taken along, but not used	▪ Visual check (→ Section 6.4), clean if necessary
when moving	Check the units when moved to specific locations/persons (→ Section 6.4).
daily	Units which are stored on site for immediate emergency use (→ Section 6.4).
monthly	Regular checking of all units ready for service, even if stored centrally (→ Section 6.4)
annually	Visual check, functional check (→ Section 6.5)

6.2. Cleaning and Disinfection



Attention!

In order to prevent damage to the apparatus, it must not be immersed in cleaning solutions or in water. Cleaning and disinfection must be performed with a soft cloth.

Avoid drying in direct sunlight or radiated heat.

- (1) Separate the hood and the tube from the valve.
- (2) Thoroughly clean the hood and the inner mask with a Incides N cloth (Manufacturer Ecolab GmbH) or disinfect with Incidin Rapid (Manufacturer Ecolab GmbH).
(For concentration and residence time see instructions for Incidin Rapid)
- (3) Allow all hood components to completely dry at 50°C max.
- (4) Treat the lens on the inside and outside with a demisting agent (D2260700).

6.3. Visual Check for Damage / Level of the Compressed Air Cylinder

- (1) Check the apparatus for any possible damage. If there is any visible damage return for service, DO NOT USE!
- (2) Check the level of compressed air cylinder using the air pressure indicator. The cylinder should be refilled if less than 190 bar is displayed (→ Section 4).
- (3) Clean the unit if necessary and return it to the storage location.

6.4. Regular Checking

Checking should be performed regularly in accordance with the intervals shown in Section 6.1 and as follows:

- (1) Check the air pressure indicator.
Cylinder must be completely full
- (2) General condition check.
The unit, including bag must be clean and undamaged.
- (3) Check the seal.
The seal should be intact and undamaged.
- (4) Monthly check of the access to the unit.
The access to the unit should not be altered or blocked.

**Attention!**

Units which fail the check or which are due for their annual check must be returned for service.

6.5. Annual Check

Visual check

Checking for mechanical stresses such as cracks, material rupture, cuts, fraying or other material changes on the following components:

- Carrying bag, straps and the start-up device (Start-up pin, valve cap etc.).
- Breathing tube and connection piece with O-ring.
Hardened and / or brittle tubes must be replaced. O-rings are available as spare parts.
- Hood, neck seal and half-mask.
The valve disc in the exhalation valve should be replaced at least every 6 years.
- Cylinder valve and air pressure indicator.
- Perform checks on the compressed air cylinders in accordance with the national regulations.
- Check spring and sealing lip of exhalation valve for cracks, material rupture, cuts, fraying or other material changes.

Functional test

After the visual test, the functional test is to be performed as follows:

- (1) Start the filled unit and check the warning indicator in the hood:
After starting, the indicator must be green. After a minimum of 15 minutes air supply time (maximum 18 minutes), the indicator must change to red. During the air supply time, the pressure indicator should show fall from 200 bar to less than 50 bar.
- (2) Record the check in the log.
- (3) Mark the date of the next yearly check on the unit.
After successful checking, the unit should be filled and repacked in accordance with these instructions.



Attention!

In the event of damage or functional faults, the unit must be returned for service and repair.

7. Transport Regulations

Packing the S-Cap-Air for transport should be with regard to all applicable national regulations.

After transport the S-Cap-Air should, in all cases, be checked for readiness for service. In order to do this, a visual check should be performed in accordance with the following criteria:

- Damage
- Seal
- Level of the compressed air cylinder

**Attention!**

If the seal is missing, or if the cylinder is not full or in the event of any other visible faults, the unit must be returned for service and inspection.

8. Storage / Stowage

The equipment must be stored / stowed in accordance with the applicable national regulations, e.g. MSC / Circ. 849 "Guidelines for the performance, location, use and care of Emergency Escape Breathing Devices (EEBD's)" suitably protected from the environment, in particular dust and climatic influences. The unit shall be stored / stowed in a clean and dry condition, free of contaminants and protected from direct sunlight. Maximum temperature range -15° C up to +50° C. If the unit is stored / stowed at temperatures below 0°C the unit, especially the valve, must be completely dry.

**Attention!**

During storage / stowage do not forcibly bend materials, seams and zipper.

9. Technical Data

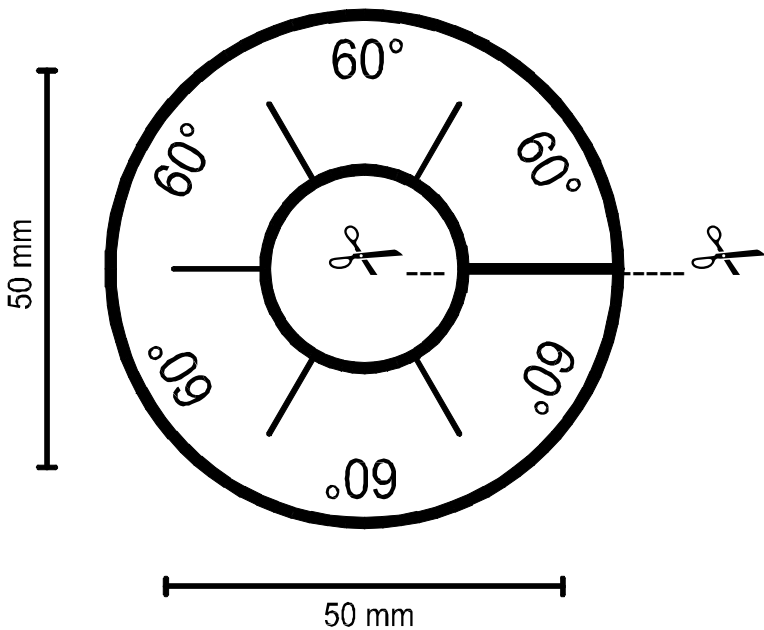
Weight	▪ With 3L 200 bar steel cylinder: approx. 6 kg ▪ With 3L 300 bar COMPOSITE-cylinder: approx. < 5 kg
Method of carrying	▪ On the chest with neck harness
Storage temperature	-15°C to +50°C
Service life	▪ Hood and tubing: if stored according to ISO 2230: 10 years ▪ Steel cylinder: Check intervals in accordance with national regulations ▪ COMPOSITE-cylinder: 15 years (see Label) Check intervals in accordance with national regulations.
Breathing air	▪ In accordance with EN 12021 or USCGA grade D
Temperature of the inhalation air	▪ Corresponding to the storage temperature
Air supply time	15 minutes

10. Ordering Information

Name	Part No.
S-Cap-Air, cylinder unfilled	10017668
S-Cap-Air, cylinder filled	10032181
S-Cap-Air light, cylinder unfilled	10033919
S-Cap-Air light, cylinder filled	10034561
Accessories	
Bag for S-Cap-Air (replacement)	10018520
Hood for S-Cap-Air (replacement)	10019481
Clips (Hose - pack of 5)	10019483
Filter, felt discs S-Cap-Air (pack of 10)	10019508
Valve cap and start-up pin	10019484
O-ring for connection piece (pack of 10)	10024118
Seal kit (pack of 25)	10023512

Appendix: Template

60° template for cutting out for closing the valve after filling the compressed air cylinder (→ Section 4 Point 5)



For local MSA contacts, please visit us at **[MSAafety.com](https://www.MSAafety.com)**

Because every life has a ***purpose...***