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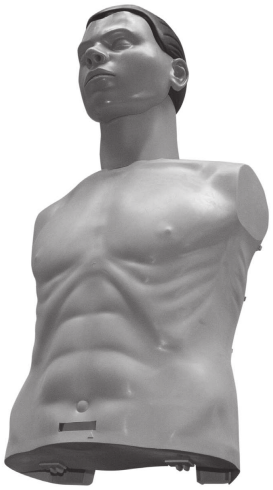
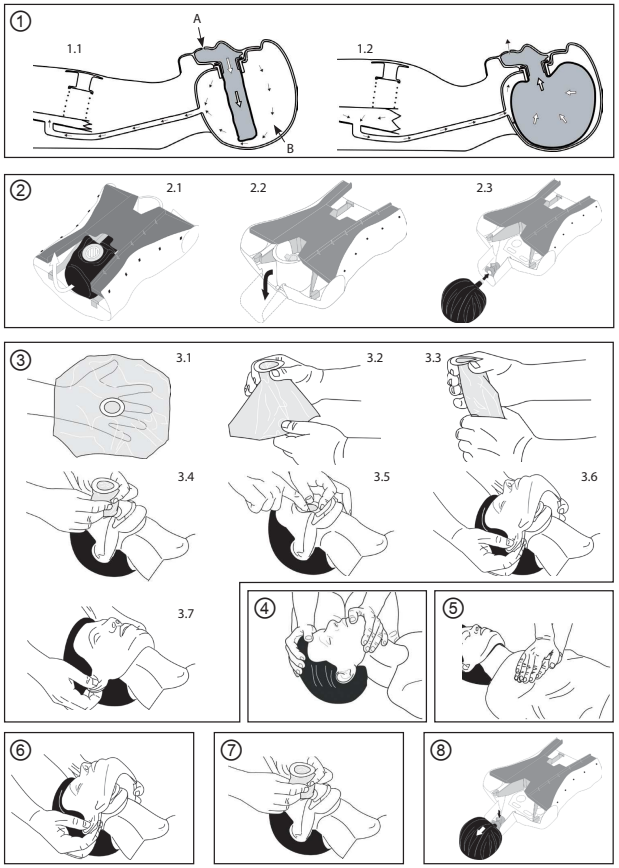
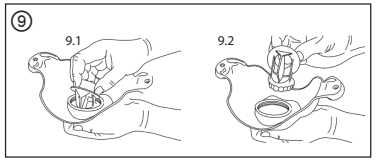
Directions for use

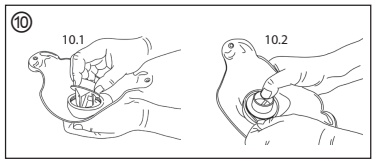
Ambu® SAM

The CPR simulator with hygienic system









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Ambu® is a registered trademark of Ambu A/S, Denmark.

1. Introduction

The Ambu® SAM is a basic instruction and training manikin for the practise of cardiopulmonary resuscitation by means of rescue breathing and chest compression.

The Ambu SAM incorporates a unique, patented hygienic system under which all trainees get their own face piece and head bag, thereby minimizing any risk of cross-infection between the trainees. The hygienic system also features realistic expiration from the Ambu SAM through the mouth and nose.

With the special hygienic system, disassembly and internal cleaning and disinfection are rendered unnecessary both during and after training.

The Ambu SAM is the size of a normal adult torso and provides a lifelike representation of the human anatomy, particularly of those features important to training in modern resuscitation techniques including the placement of AED pads.

2. Specifications

Weight: approx. 4,5 kg
Dimensions (L x W x H): 45 x 37 x 25 cm
Maximum insufflation volume: 1,8 Liter
Maximum chest compression: 7,5 cm

Part/Material	
Chest Unit	SEBS, Styrene-Ethylene-Butylene-Styrene
Neck	PP, Polypropylene
Skull	PP, Polypropylene
Face piece	PVC, Polyvinylchloride, soft
Head bag, disposable	PE, Polyethylene
Lung Plate	PP, Polypropylene
Basic Unit	ABS, Acrylonitrile butadiene styrene

For further product information see www.ambu.com

Usage and storage:
Storage temperature: –20 °C to 70 °C

3. Functions

3.1 Hygienic System (see picture ①)

Schematic diagram:
The head bag has been mounted in the skull and the face piece fitted. Ventilation has just started, see picture 1.1.
A: Trainee's air B: Ambient air
Ventilation is concluded and expiration has just started, see picture 1.2.

NOTE: If a leakage occurs around the mask or if insufflation proves difficult, it is normally due to incorrect positioning when lifting the chin or to insufficient hyperextension of the head.
To comply with the requirements of the hygienic system, and to achieve a proper seal and accurate measuring results, a head bag must always be used.
All trainees must use their own face piece and head bag only during training.

3.2. Compression indicator

The compression indicator shows the correct depth of the chest compression.
When compressing the chest of Ambu SAM the indicator will show a red bar until the correct depth is reached. Once the correct depth is reached the indicator will change into a green bar. If the compression is continued too deep the indicator will change back into a red bar.

The compression indicator will show a green bar at a compression depth of 5cm to 6 cm.

4. Preparation for training

The Ambu SAM training manikin is supplied in a carry bag. To start the training remove the manikin from the bag.

4.1. Mounting the head (see picture ②)

When the manikin is stored the head is placed inside the manikins and the neck if folded down.

Pull out the head of the torso, see picture 2.1 and fold up the neck see picture 2.2.
Press the head into the connector of the neck until you can hear a “click” sound. (2.3)

4.2. Mounting the head bag and face piece (see picture ③)

Unfold the bag and hold as shown, see picture 3.1.
Holding the neck of the bag, fold together as shown on the photos, see picture 3.2 and 3.3.
Insert bag in the head, see picture 3.4.
Smooth out the edges along the opening in the skull, see picture 3.5.
Hold the face piece by the ears and position on the skull so that the top is flush with the hairline, see picture 3.6.

Pull face piece downwards by holding firmly by the ears until in position. Make sure that the edges of the mask are located under the hair at the temples. Fix the openings at the back of the ears on the fixing prongs on each side of the skull, see picture 3.7.

5. Usage of the Ambu SAM

The Ambu SAM is designed to meet all the training recommendations of the AHA(American Heart Association) and the ERC(European Resuscitation Council). In general, however, it is recommended that instruction should be based on the techniques and provisions applicable locally

5.1 Ventilation

The patented hygienic system of the Ambu SAM enables the trainee to get a realistic feeling for performing ventilation.
The following techniques can be used:
Mouth-to-mouth ventilation
Mouth-to-nose ventilation
Mouth-to-mask ventilation

To ventilate ensure there is free access to the airway by hyperextending the head (see picture ④).

The movements of the chest can be clearly observed during insufflation and expiration. The expired air can be felt and heard from the mouth and nose of the Ambu SAM with no risk of infection, as the air is the same as that insufflated by the trainee into the head bag.

NOTE: Remember to change head bags and face pieces for each new trainee.

5.2 Compression (see picture ⑤)

External chest compression can be practised, and the depth of compression will be displayed on the indicator bar.

5.3 Placement of AED pad

If the training with AED is performed AED pads can be placed on the manikin.

NOTE: The manikin can only be used with Training AED's

5.4 Removal of Face piece (see picture ⑥)

Pull the ears outwards to release them from the two prongs on each side of the skull. Pull the mask upwards by the ears until free of skull.

5.5 Removal of Head bag (see picture ⑦)
Grip the bag on each side, but avoid closing the opening. Pull bag slowly upwards, twisting from side to side if necessary, to facilitate removal.

5.6. Removal of the Head (see picture ⑧)
To remove the head turn the manikin around. Press the red button down and pull the head out.

6. Cleaning and disinfection
With the patented hygienic system of the Ambu SAM, incorporating exchangeable face piece and head bag, no internal cleaning and disinfection is necessary.

6.1. Head bag
The head bag is disposable and should always be discarded after training.

6.2. Face piece (see picture ⑨)
The face piece may be reused after cleaning and disinfection. Remove the dental insert by pulling it from the face piece, see picture 9.1 and 9.2.

6.2.1 Manual cleaning
A. Rinse face piece and dental insert in clean water.
B. Wash items in warm water, max. 65 °C (150 °F), using a mild detergent.
C. Rinse thoroughly in clean water to remove all traces of detergent and let the parts dry.

6.2.2 Machine washing
The face pieces and dental parts can be washed in an ordinary washing machine. Apply normal dose of detergent and choose a washing programme with maximum temperature of 70 °C (158 °F). In order to avoid the dental inserts rattling against the drum of the washing machine, the face pieces can be placed in a bag made of loosely woven fabric. Leave the parts to dry before packing.

6.2.3 Disinfection
After separating and cleaning the face piece and dental insert, disinfection can be performed as follows:
A. Place the items in a sodium hypochlorite solution with minimum 500 ppm freely accessible chlorine (1/4 a cup of liquid household bleach per gallon (approx. 4 litres) of tap water for 10 minutes). This solution must be fresh and should be discarded after use. This method is recommended by AHA
B. Place the items in a 70% alcohol chlorhexidine solution for 2 minutes (70% Ethylalcohol and 0.5% chlorhexidine). This method of disinfection is recommended by the Australian Resuscitation Council.

C. Chemical disinfection can also be performed using recognised disinfectants suitable for use with polyvinylchloride (PVC). The supplier's directions on dosage and disinfection period should be closely followed.
D. Always rinse the items in clean water after disinfection and allow to dry before storing.

NOTE: The face pieces must not be exposed to boiling, autoclaving or gas sterilisation.

6.3 Cleaning of skull, neck and body

The skull, neck and body of the Ambu SAM should be wiped over with a cloth moistened in a mild detergent and then wiped over once more using a cloth moistened in clean water.
Marks on the Ambu SAM left by lipstick or a ball pen can penetrate the material and should therefore be removed as quickly as possible using alcohol.

6.4 Assembly of face piece (see picture ⑩)

Assemble the face piece by fitting the dental insert as shown and press it into the face piece so that only the flange and collar remain outside, see picture 10.1.
First, press the collar of the dental insert into the slot on one side of the face piece.
Next, take the edge and force it over the flange on the dental insert until the flange is seated in the slot in the mask all the way round, see picture 10.2.