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# ***OWNER'S MANUAL***

## ***RESPIRATOR MODEL***

### ***APOLLO 600 CE***

#### ***CLEMCO SUPPLIED AIR RESPIRATOR***

**Clemco**  
International GmbH

Carl-Zeiss-Straße 21  
83052 Bruckmühl  
Germany

Tel.: +49 (0) 8062 – 90080  
Mail: [info@clemco.de](mailto:info@clemco.de)  
Web: [www.clemco-international.com](http://www.clemco-international.com)

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## 1 Scope of Manual

This manual covers setup, operation, maintenance, replacement parts, and important warnings for safe operation of the Clemco Apollo 600 CE Supplied-Air Respirator.

**Read the entire manual before installing or operating the equipment.**

The following additional equipments may be used in conjunction with the Apollo 600 CE Respirator:

<b>Part no.</b>	<b>Titel / Description</b>	<b>Remarks</b>
03580 D resp. 03527 D	Air filter CPF-20 or CPF-80	Installation between air supply and air supply hose
23825D	Clem Cool air conditioner	In place of the air control valve to the air conditioning
04411I	Climate control	In place of the air control valve –optionally for heating or cooling the air
25189D	DLX padded suspension kit	Supplementary mounted in the Apollo 600, for a better more convenient fit.
24310D	Leather cape for Apollo 600	In place of the nylon capes (example during heavy abrasive recoil)
24405D	Rubber Cape 4436	Instead of the nylon cape when a very intense recoil of abrasive appears. Lighter than the leather cape.
24406D	ASS-Cape 4436 RA	Instead of the nylon cape to allow rope access. Heavy duty rubber front.

## 2 Applications and limitations

### 2.1 General Description

The Apollo 600 CE was specially developed and approved for blasting. (MSHA - NIOSH and EN 271)

The following Cautions and Limitations have to be followed:

**-The supplied air has to be in accordance with the EN 12021.**

- The Apollo 600 CE is **not suitable for any other work such as welding or painting!**
- Only for the use in atmospheres which do not represent any imminent danger for life and health and which contains a minimum oxygen volume of 19,5%.
- It is not allowed to use this product with pure oxygen or with oxygen enriched air.
- Not for the use in flammable atmospheres.
- The Apollo 600 CE protects the wearer's head and neck from impact and abrasion caused by rebounding abrasive.
- The helmet is suitable for the usual vertical or a bit slopy posture of the head. In forced postures like the horizontal posture when lying, the air indicator will not work.
- The helmet can be used at temperatures as follows:
  - o Working: -6° to +40°C.
  - o Shipping and transition -20° to +50°C
  - o Stocking : 0 to +30°C.
- If the product is used under a temperature of 4°C the water content has to be reduced to avoid freezing of the product.
- The supplied air must have a pressure between 6 and 8bar. To assure this pressure you can use our Air Filter CPF 20 which has an integrated pressure regulator (Part No: 03580 D). See also 5.2.

- In the moment of highest breathing air requirement during the highest work rate, a sub pressure in the helmet can appear.

## 2.2 Toxic Dust Poisoning

For operator safety clothing Type1 and Type 2, according to EN ISO 14877: 2002 (D) the following applies:

Recent research by the Occupational Safety and Health Administration (OSHA) has discovered potential risks of lead poisoning to unprotected abrasive blasting operators and other personnel who may be exposed to lead-containing dust in the abrasive blasting vicinity.

This lead poisoned dust is primarily a result of removing lead containing paint.

Danger for life and health can also be caused by colours which contain heavy metal, asbestos or other toxic material dust. Lead poisoning can cause death. The maximum ground level concentration is declared by TRGS 900 to 0,1 mg/m<sup>3</sup>.

For that reason it is very important that the Blasting Contractor determines which kind of paint he has to remove. If necessary he has to use then a helmet or an additional Air Respirator which is admitted for the use with one of those materials.

**The blasthood Apollo 600CE, can be used in any combination with operator safety clothing Typ 3 according to EN ISO 14877: 2002 (D) without any restriction in an ambient with such toxics.**

## 2.3 Ear Protection

Always use properly fitted ear plugs when using this equipment.

## 3 Description

The main components for the minimal version from a respirator are as follows:

- Helmet with cape attachment strap, suspension and adapted cape
- Breathing air-hose (length: approx. 1000mm)
- Breathing air-supply hose (length: 5m) with quick-fitting pipe union (female)
- Air control valve with belt
- Hood

## 4 Preparation

Please control respective prepare the following components:

(1) <i>Adjust Helmet Suspension.</i>	– Trim helmet suspension by adjusting screw to your head and adjust chin strap to correct length (see also 7.2).
(2) <i>Check that the lens system is in place.</i>	– Inner lens (Replacement see 8.1) – Outer lens (Replacement see 8.2) – Perforated cover lenses (Replacement see 8.2) <b>The respirator assembly must never be used without the fixed inner lens, outer lens and the cover lenses!</b>
(3) <i>Air Supply Hose.</i>	– Use the quick fitting pipe union to attach the air supply hose to the air control valve.

	<ul style="list-style-type: none"> <li>– The other end of the air supply hose attach to the Air Filter CPF - 20 respective CPF - 80 (more than one blaster).</li> </ul> <p><b>Use moulded-in handle to carry the respirator. Never hold, carry or hang the respirator by the breathing hose!</b></p> <p><b>Mishandling the respirator in this manner may damage the hose!</b></p>
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## 5 Air Supply

**Air supply to this respirator system is a critical component for the safety of the user and is not included in this delivery. Read this section carefully. Poor quality air will cause serious respiratory injury or death to the user (see 2.2).**

### 5.1 Air Quality

**The compressed breath air has to be conform to EN 12021.**

A supply pressure between 6-8 bars has to be assured. The supply pressure can be regulated over our CPF 20 filter with integrated pressure regulator (p/n 03580D) so that the blaster is provided with the right air quantity.

The quality of air supplied to the respirator is extremely critical to the safety of the user. Special care must also be taken to avoid accidental connection to any other gas lines, such as oxygen, acetylene or nitrogen.

**Never connect a breathing air line to an air source that has not been tested for gas and particulate contamination.**

**Do not use piston type (oil bath) compressors for breathing air. These compressors may produce dangerous levels of carbon monoxide.**

**The presence of unacceptable levels of carbon monoxide (CO) or other gases in the breathing air can cause death to the user.**

**Breathing air must be only used in following conditions:**

Prior to using the respirator, read the owner's manual and all instructions, labels, and warnings related to the compressed air source. Take special care about all the statements and warnings from the compressor producer.

**Warning: There could appear a negative pressure in the blast hood during inhalation caused by a high intensity of labour.**

That is why the air control valve should be opened wider while a high intensity of labour in order to avoid the infiltration of dust in the blast hood.

We recommend our carbon monoxide monitor, CMS-3 for controlling the concentration of carbon monoxide.

- Regardless to the air compressor type, precautions must be taken to prevent contaminants from entering through the compressor intake. The compressor inlet must be located away from all sources of toxic contaminants including carbon monoxide which is found in engine exhaust and in any form of combustion. No vehicles should be allowed near the compressor intake.

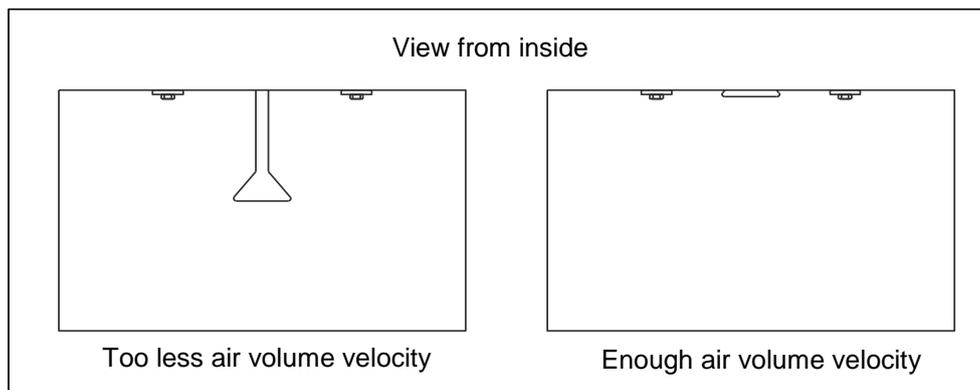
- The precautions described above also apply to portable compressors. In addition, in the case of engine-driven compressors, precautions must be taken to prevent engine exhaust gases from entering the air intake of the compressor. Compressor engine exhaust should be piped to a location safely downwind from the compressor air intake. Compressors may vary in design and operation.
- A fitted Air Filter like the CPF-20 Filter (part No 03580 D), has to be interconnected and must be maintained regularly, to filter bad smells, oil fog, condensed water, rust from pipes and other contents.
- For trouble-free blasting we recommend an air supply free of oil and water.

**5.2 Air Volume Velocity, Pressure and Hose Length**

The quantity of air needed from a blaster for having enough oxygen to breathe is between

**130l/min ... 190l/min.**

This minimal quantity makes sure that the volume indicator is on function, which means that the flag is pulled in – otherwise the flag falls down.



As supply hoses between the air filter and the control valve you may use only CE-approved hoses with safety couplings (see section 11 – spare parts).

The **maximum hose length** between the filter and the control valve can be **40m**. If it is necessary to use longer hoses you have to contact the manufacturer to take appropriate measures.

The **maximum pressure** at the supply hose is **8bar**.

**6 Operation**

**Prior to the operation, the helmet, breathing tube, air supply hose, air entry pots and fittings must be thoroughly inspected and cleaned of all dust and debris. Also inspect the helmet suspension and adjust it if necessary** (Adjustments see section 7.2).

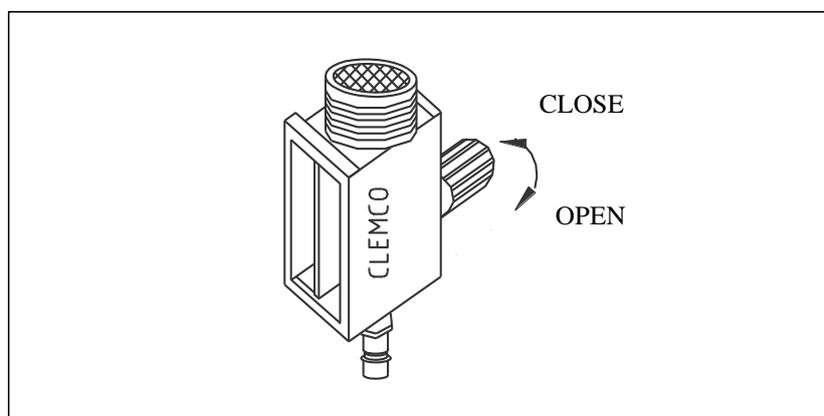
The following steps have to be done before setting into operation:

(1) Air supply.	<ul style="list-style-type: none"> <li>- Start compressor.</li> <li>- Open service valve to pressurize the air supply line.</li> </ul>
(2) Check air pressure.	Pressure must be set with the connected respirator.

(3) <i>Check equipment.</i>	– Check all safety and breathing equipment used in conjunction with the respirator, as recommended by the manufacturer.
(4) <i>Check air supply hose.</i>	– Check air supply hoses and connections for tightness and leaks.
(5) <i>Put the respirator on.</i>	<ul style="list-style-type: none"> <li>– Put the hood on.</li> <li>– Put the respirator on (keep it as upright as possible to prevent abrasive from falling inside).</li> <li>– Position the knit cuff on the inner collar so that it fits comfortably. The collar assists in the prevention of dust entering the helmet. Do not allow shirt collars or other matter to interfere with the fit the cuff provides around the user's neck.</li> <li>– Pull the cape down to fully extend it, and connect the straps on each side under the arms.</li> <li>– Put the belt and control valve on over the cape, Buckle the belt around the waist and tighten it using the adjusting slide.</li> </ul>

## 7 Adjustments

### 7.1 Control Valve (part. no.: 100074)

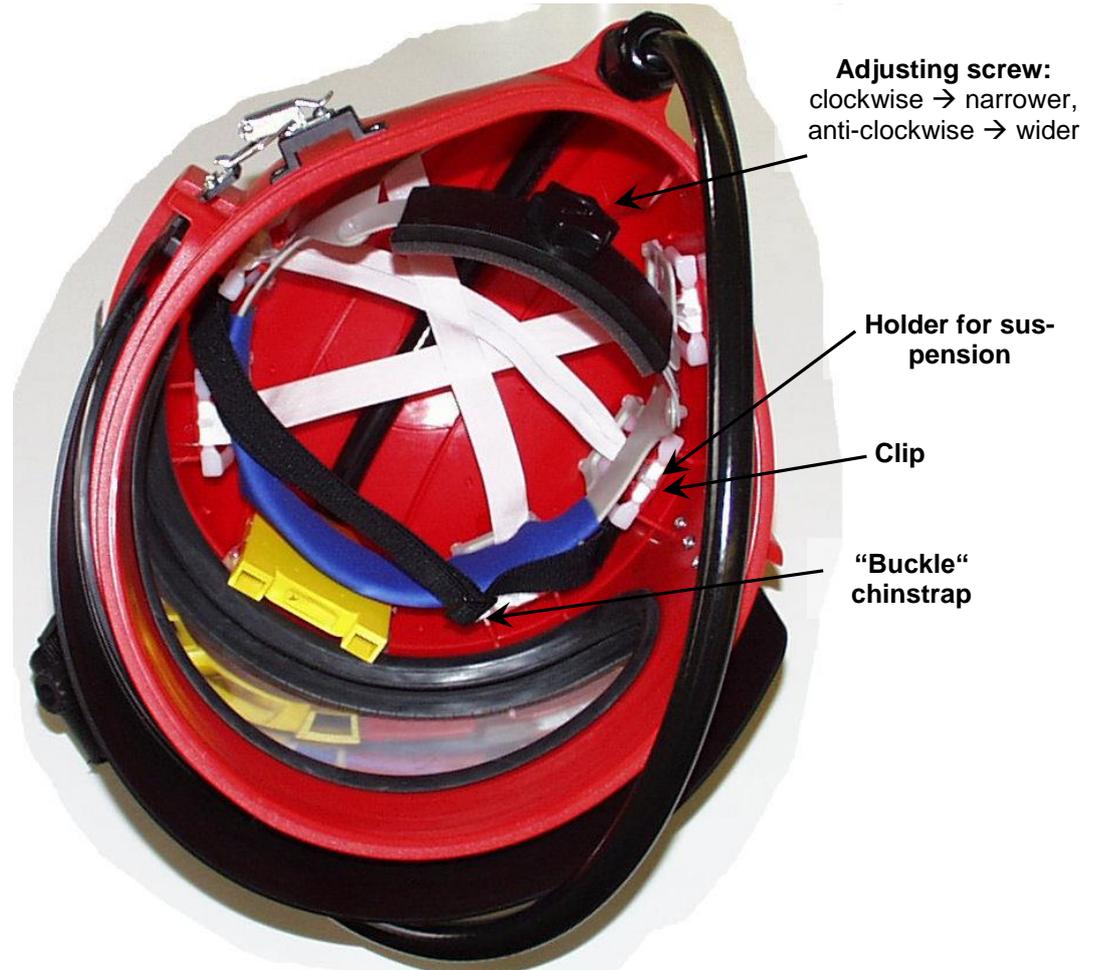


**Picture 1: Control valve**

Clemcos Air Control Valve allows the user to increase or decrease the volume of breathing air while wearing the supplied air respirator. To regulate it the button on the side has to be turned.

If connected properly to the air supply the valve allows a regulation of breathing air in a range of 130l/min to 400l/min.

## 7.2 Adjustment of Suspension



**Picture 2:** Suspension

The following steps have to be done before setting it into operation:

(1) <i>Remove Cape.</i>	<ul style="list-style-type: none"> <li>– Open buckle by pressing the small lever and pull out belt.</li> <li>– Remove cape.</li> </ul>
(2) <i>Adjust suspension.</i>	Trim suspension by adjusting screw to your head. Trimming clockwise → suspension gets narrower; trimming anti-clockwise → suspension gets wider.
(3) <i>Adjust chinstrap.</i>	Adjust chinstrap to correct length by moving the “buckle”.
(4) <i>Reattach cape.</i>	See 8.4.

**The suspension maintains a fixed distance between the head and the helmet. The suspension must be properly installed and adjusted to provide the protection and comfort for which the helmet is designed.**

## 8 Maintenance Program / Replacement Parts

- The helmet, the hoses, air entry pots and fittings should be checked for dust or debris every day, and should be cleaned before using.
- Periodically inspect and clean the foam filter and screen in the alternate air control valve.

- After using the helmet it should be stored in a clean and dry area by hanging the respirator by the handle.

### 8.1 Replacing Inner Lens

(1) <i>Open frame.</i>	Open latch and hang out frame.
(2) <i>Remove inner lens.</i>	<ul style="list-style-type: none"> <li>– Open window gasket in upper area from outside by hand.</li> <li>– With the other hand press out lens from inside.</li> <li>– Check that window gasket still fits well.</li> </ul>
(3) <i>Place new lens.</i>	<ul style="list-style-type: none"> <li>– Clean gasket and moisten groove for lens with a mild soap-water.</li> <li>– Place new lens centred on gasket and push it roundabout into the groove of the gasket by using the mounting-tool. Avoid scratches on the lens! (See also picture 3).</li> </ul>
(4) <i>Close frame again.</i>	Hook in frame in latch and close it.

### 8.2 Replacing Outer Lens and Perforated Cover Lenses

Up to five cover lenses may be installed at one time. For maximum visibility we recommend to install only so many lenses to last during a work period.

Preparing lenses in the following manner will permit lenses to be pulled off easily by a user wearing heavy gloves:

(1) <i>Open frame.</i>	Open latch and hang out frame.
(2) <i>Remove outer lens.</i>	Remove outer lens carefully from mushroom buttons.
(3) <i>Remove used cover lenses.</i>	Remove perforated cover lenses respectively frame of used cover lenses as well carefully from mushroom buttons.
(4) <i>Place new perforated cover lenses.</i>	Place straps to hinge side and pull through all straps except the last and press cover lenses on mushroom buttons.
(5) <i>Place new outer lens.</i>	<p>When placing the new outer lens look to it that there's no dust or dirt between the lenses.</p> <p>Press outer lens on mushroom buttons.</p>
(6) <i>Close frame again.</i>	Hook in frame in latch and close it.



**Picture 3:** Replacing inner lens by using mounting-tool

### **8.3 Replacing Suspension**

Pull out suspension carefully from adaptors (see also picture 2).

The clips are supposed to fix the suspension in the helmet well. The bent side has to face to the centre of the helmet.

When placing the new suspension look to it that the chinstrap is placed in front of the suspension.

### **8.4 Cape**

When the cape becomes soiled or requires replacement, it can easily be removed as follows:

(1) <i>Detach cape.</i>	<ul style="list-style-type: none"> <li>– Open buckle by pressing the small lever and pull out belt</li> <li>– Remove cape.</li> </ul>
(2) <i>Reattach new cape.</i>	<ul style="list-style-type: none"> <li>– Put in-sewed spring of cape in groove of helmet beginning at the front (seam of cape has to face backwards).</li> <li>– Attach spring of cape all around the helmet completely in groove.</li> <li>– Place belt that way that buckle is placed opposite to hook of frame and end of belt shows backward.</li> <li>– Mount belt, check position of cape and close belt with ratchet.</li> </ul>

### **8.5 Replacement of Collar (only required if the nylon cape is used)**

The inner collar plays an important roll in controlling air escape from the helmet and preventing ingress of dust. To replace or wash the collar it has to be detached with the zip from the cape (see point 9 for service maintenance and cleaning).

**The cape must be replaced when the collar is stretched to the point where it no longer fits snug around the neck.**

### **8.6 Replacement of Lens Frame**

The lens frame must be replaced if a sealing is not ensured anymore or if the rubber latch doesn't stay closed. When changing the lens frame the silencing in the inner part of the helmet should be changed, too.

### **8.7 Replacement of Chin Strap**

The chin strap must be replaced at the first sign of wear.

To get the chinstrap off the holder push it up into the helmet till it snaps out, then take it off the holders. When replacing the new chinstrap look to it that the bevelled side shows to the centre of the helmet.

## **9 Service Maintenance and Cleaning**

**Follow washing instructions described in this section. Do not use any caustic chemicals or solvents that may be irritating or harmful to the user, or which change the properties of the materials used in any part of the respirator.**

### **9.1 Filter**

The filter (foam) is in the air control valve. Replace the foam filter at the first sign of soiling.

Therefore you have to remove the spring ring with a small screw jack and take off the dirty foam. Afterwards reassemble these 3 parts in opposite order.

### **9.2 Nylon-Cape**

The cape can be machine washed using warm water and mild detergent. Dry it in a clothes dryer at the lowest temperature setting. Do not dry clean. See section 8.4 for removal and installation instructions.

### **9.3 Leather Cape**

The cape can be brushed or cleaned with a wet sponge (Washing, chemical cleaning, ironing and chlorine bleach are not allowed.)

### **9.4 Rubber and ASS – Cape**

The cape can be cleaned with a wet sponge. (Washing, chemical cleaning, ironing and chlorine bleach are not allowed.)

### 9.5 Collar

For removing transpiration and dust the collar should be washed daily. Remove the collar from the cape and wash it in warm water and mild detergent. Dry it in a clothes dryer at the lowest temperature setting. Do not dry clean. See section 8.5 for removal and installation instructions.

### 9.6 Sweatband / Suspension

The sweatband, suspension, and chinstrap should be washed using warm water and mild detergent. See section 8.3 for removing suspension.

### 9.7 Helmet Assembly

The helmet assembly should be cleaned with disinfectant. You can use the product "Indicur" made by „Henkel“.

**WARNING!** This product was only tested for agreeableness with our helmet. When using this product you have to follow the instructions in the manual. For eventually occurring indigestibility with the skin or other health damages we do not take any liability.

### 9.8 Lenses

Inner and outer lenses should be replaced when pitted or scratched. However mild detergent and water can be used to clean them. Volatile solutions such as alcohol, gasoline or ammonia must be not used to clean these lenses. Allow the lens to air dry; cloth and towels can scratch the lens surface.

## 10 Storage

### 10.1 Daily Storage

When respirator is not in use, it must be stored in a clean, dry area. Hang the respirator by the handle.

### 10.2 Long Duration Storage

After cleaning and thorough drying, the cape should be tucked inside the helmet (only the nylon, the rubber and the ASS- cape). The respirator should then be placed in a plastic bag and the bag sealed to keep out dust and moisture.

## 11 Spare Parts

### 11.1 Helmet

<i>Pos.</i>	<i>Part-No.</i>	<i>Model</i>	<i>Description</i>
-	24243 D	APOLLO 600 CE	Blast-Hood A-600CE + Air Control valve + Nylon cape
	24315D	APOLLO 600 CE	Blast-Hood A-600CE+ Air Control valve + Leather cape
-	24213 D	APOLLO 600 CE	Blast Hood A-600CE with hose 5m
	24244D	APOLLO 600 CE	Blast Hood A-600CE without auxiliary equipment

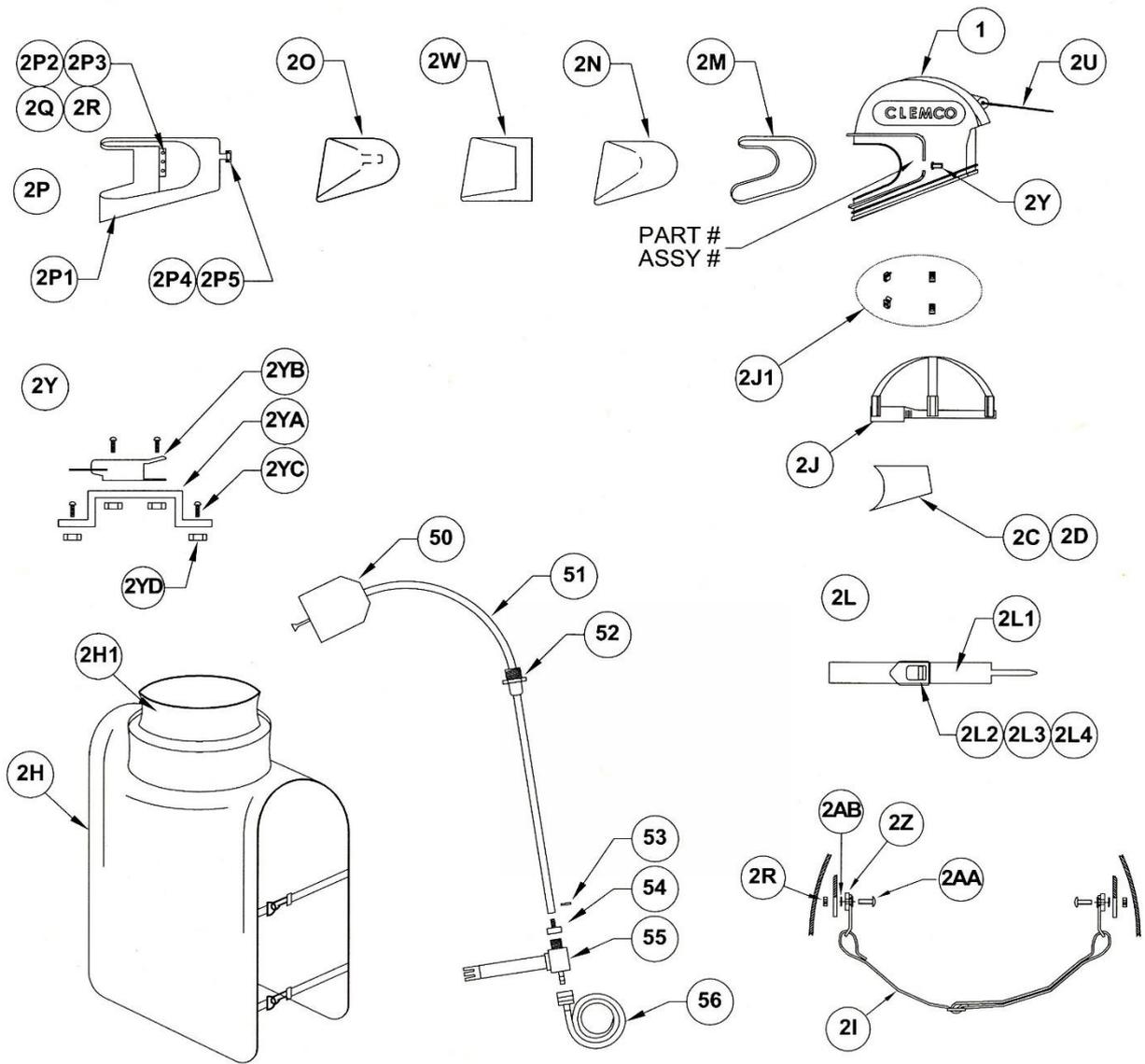
## 11.2 Air Control Valve

<i>Pos.</i>	<i>Part-No.</i>	<i>Model</i>
-	04381 I	Filter set (foam-filter, screen an spring ring)
-	100042	Air Control valve complete
55	100074	Air Control valve without belt

## 11.3 Components

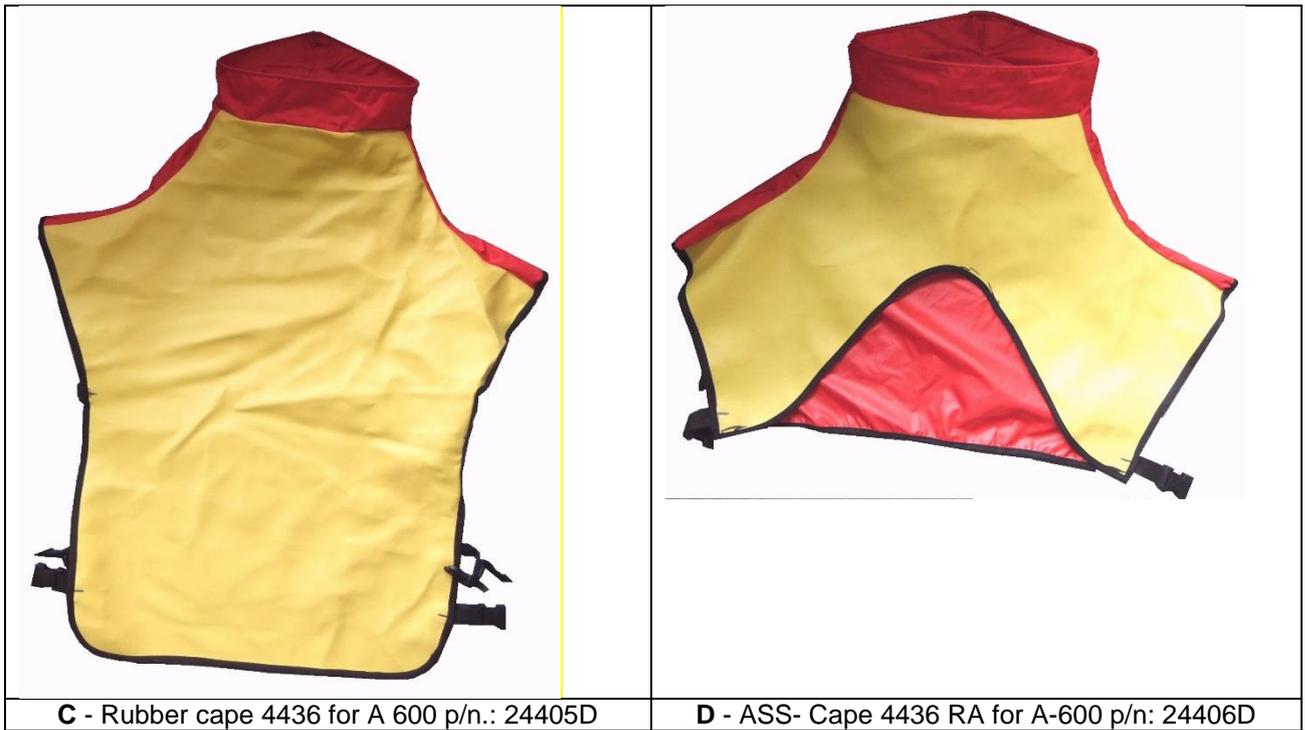
<i>Pos.</i>	<i>Part-No.</i>	<i>Model</i>
1	23800 A	Outer helmet shell A-600
2C	04491 I	Acoustical foam r.h.
2D	04492 I	Acoustical foam l.h.
2H	23815 D	Nylon cape A-600
	24310D	Leather cape A-600
	24405D	Rubber Cape 4436 for A 600
	24406D	ASS- Cape 4436 RA for A-600
2H1	08740 I	Inner collar for A-60 and A-600
2I	04460 I	Chinstrap
2J	23806 I	Suspension A-600
2J1	23821 I	Clip A-600 head suspension (4 units/head suspension necessarily)
2L	23801 D	A-600 cape attachment
<i>Pos.</i>	<i>Part-No.</i>	<i>Model</i>
2L3	23803 D	A-600 draw latch window frame
2L4	24245 D	Screw M6x8 for latch
2M	23819 D	A-600 window gasket
2N	24308 D	Inner lens (1mm Polycarbonate; 5 pcs.)
2O	04361 I	Perforated cover lens 0,2mm (25 pcs.)
2P	24012 D	A-600 window frame complete
2P1	23810 D	A-600 window frame black
2P2	23812 D	A-600 hinge black
2P3	99269 D	Rivet (base)
2P4	04454 D	Rivet (head)
2P5	08738 I	Strike for window frame
2Q	23805 I	Screw for A-600 (6/32 x 1/2")
2R	08924 I	Nut 3/8"
2W	04373 I	Outer lens 0,5mm (25 PK)
2Z	90266 D	Holder chinstrap
2AA	23805 I	Screw (6/32 x 1/2")
2AB	23817 I	External tooth lock washer

2Y	24316D	A-600 Latch base complete
2YA	23813 D	A-600 Latch base
2YB	04449 I	Draw latch
2YC	04438 I	Screw for A-600 (6/32 x 1/2")
2YD	08924 I	Nut #6
50	100913	A-600 CE air indicator complete with hose
50	100915	A-600 air indicator
51	100914	Air hose black 1m
52	100917	A-600 high-strength cable gland
53	24263 D	Hose shell for 9mm air hose
54	01030 D	Hose connection
55	100042	Air control valve complete with belt
56	100421	5m Air Supply Hose 9mm with safety coupling and socket (CE-approved)
	100406	10m Air Supply Hose 9mm with safety coupling and socket (CE-approved)
	100404	20m Air Supply Hose 9mm with safety coupling and socket (CE-approved)
	100405	40m Air Supply Hose 9mm with safety coupling and socket (CE-approved )
	100403	Safety coupling 9mm (CE-approved)
	100380	Ear plugs
	10533 D	Owner's manual
	100586	Hood (Polypropylene)
	24395D	Mounting-tool for inner lens



Picture 4: Single components of Apollo 600 CE





**C** - Rubber cape 4436 for A 600 p/n.: 24405D

**D** - ASS- Cape 4436 RA for A-600 p/n: 24406D

**Picture 5 A... D: CE-certificated Capes for Apollo 600**

**11.4 Additional parts - Options**

Clem Cool air conditioner	23825D
Climate control	04411I
DLX padded suspension kit	25189D