Apollo 100

Air Fed Helmet Owners Manual

Type APH 100CE

(Standard Unit Assembly)

APH 100CEC

(Optional Climate Control)

Designation
Compressed Airline BA EN 271

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EC Declaration of Conformity

Hodge Clemco Ltd., Orgreave Drive, Sheffield, S13 9NR

Declares that the new PPE described hereafter:

APOLLO 100 AIR FED ABRASIVE BLASTING HELMET

TYPES: APH 100CE AND APH 100CEC

Is in conformity with the provisions of Council Directive 89/686/EEC and with BS EN271 : 1995

Is identical to the PPE which is the subject of EC certification of conformity No**: 990602** issued by:

SGS Yarsley
SGS House
217 – 221 London Road
Camberley
Surrey
GU15 3EY

Notified body No. 0120

Is subject to the procedure set out in Article 11.B of Directive 89/686/EEC under the supervision of the notified body: SGS Yarsley, SGS House, 217 – 221 London Road, Camberley, Surrey GU15 3EY U.K.

Completed at Sheffield on **12th July 1995**

Industrial Sales Manager

Director

Contents

GENERAL DESCRIPTION

The Clemco Apollo 100 Air Fed Respirator System has been specifically designed for blast cleaning operative protection and comfort and satisfies the requirement of EN 271. This European Standard specifies minimum requirements for compressed air line breathing apparatus incorporating a hood when undertaking blasting work using solid abrasives

The above approval applies only when the respirator system is used complete, without modification, change or substitution

IMPORTANT: The use of unapproved spares on this helmet totally invalidates the approval and therefore contravenes the Statutory Requirements of COSHH regulations

WARNING: Adequate protection may not be provided by this apparatus in atmospheres that are immediately dangerous to health

WARNING: This apparatus in NOT suitable for use in flammable atmospheres, and is not designed for use in exceptional low or high temperatures were freezing up or heat exhaustion could result

2.0 COMPONENT PARTS

2.1 Ensure that all component parts of the respirator system are present. A complete system comprises

1 x Air fed helmet with suspension assembly
1 x Cape and muffler lining (or blasters tunic)
1 x Breathing air hose assembly
1 x Air control valve with bell (or climate control tube assembly)

3.0 SETTING UP INSTRUCTIONS

Adjust the helmet suspension assembly as follows:

Sweatband Adjustment

3.1 Hold the helmet upside down, with the front towards you.

3.2 Detach the helmet suspension assembly from the helmet by withdrawing the four tapered slides from their housings

3.3 Lift up both ends of the sweatband and disconnect the size adjustment slide

3.4 Insert the size adjustment slide into the appropriate holes for wearer comfort. Replace both sweatband ends

Depth Adjustment and Balance

3.5 The suspension assembly maintains a fixed distance between the wearer's head and the helmet

3.6 When refitting the helmet suspension assembly the tapered slides must be firmly seated in their housings

3.7 To attach the chin strap, insert the strap links over the two posts (10). Adjust for comfort using its slide adjuster

Window System

The window system is an important part of the helmet and comprises:-

a) An inner polycarbonate safety window secured by a moulded rubber gasket to the helmet shell

b) An intermediate window located in the window frame

c) Replacement outer windows retained in place by the hinged window frame

NB Optional Glass intermediate window and outer anti etch screen are available

With this system installed correctly the blaster can easily remove an etched outer replacement window when required by simply drawing his hand across the front of the helmet and pulling the tab. The window will tear along the perforations and the border is retained within the window frame ensuring the sealing effect is maintained throughout the life of the pack of outer windows

WARNING: The user must ensure that the windows are correctly installed prior to each blasting operation. Failure to do so could result in reduced visibility and/or personal injury

3.8 Unfasten the window frame latch and open the window frame assembly

3.9 Check seating of the window gasket

3.10 Check that the protective film has first been removed from both faces of the inner safety window and the window is correctly and securely in position in the root of the window slot of the window gasket and the gasket remains correctly positioned onto the helmet shell

3.11 Remove the intermediate window

3.12 Remove any retained replacement outer window material from the window frame and check that the sponge seal on the inside of the window framed is in good condition and in position

3.13 Locate the replacement outer window within the window frame so that the sets of tabs are located outside the frame

NB The windows may be installed left or right hand to suit user

3.14 Install the intermediate inner window onto the interior of the window frame

3.15 Securely fasten the window frame latch and ensure that all window are correctly clamped in position

NB The optional anti etch screen and intermediate glass window may be used to replace the outer tear off windows and intermediate polycarbonate window respectively

3.16 Attach the breathing hose assembly between the helmet inlet and air control valve outlet. Ensure the coupling gaskets or 'o' rings are in place and where appropriate the air flow is in the correct direction with the black hose cuff to the belt air control valve. **DO NOT OVER TIGHTEN.**

3.17 Connect the requisite lengths of breathing air supply hose (30) (31) to the inlet of the air control valve using the quick connector coupling (34)
NB It is recommended that 10mm bore breathing air supply hose (32) (33) be used when installing the optional Climate Control Tube (25A)

3.18 The air supply hose should then be connected to a Clemco breathing air filtration system (see separate owners manual)

4.0 AIR SUPPLY

Warning: Oxygen and oxygen enriched air supplies must not be used with this respirator system

4.1 The helmet must be supplied with minimum respirable breathing air at 170ltrs per min. (6 cubic ft per min)

4.2 The air compressor should be equipped with a high temperature or carbon monoxide (CO) warning device or both. An overloaded compressor, or one in poor mechanical condition may produce carbon monoxide (CO) and objectionable odours

4.3 When using portable compressors, precautions must also be taken to prevent exhaust gases from entering the air intake. It is advisable to have the exhaust gases ducted downwind to a safe non combustible area

4.4 A breathing air filter should be installed between the air compressor and the air fed helmet. This should remove objectionable odours, pipe scale, condensed moisture, oil mist, oil vapours and any other particulate matter

4.5 Checks should be carried out prior to use and at suitable intervals to ensure that the volume and quality of breathing air meets legislated Health & Safety requirements. The user shall ensure that the pressure range of the air supply to the helmet system is within the limits recommended by the manufacturer.
(See table 1 for guidance).

WARNING: Air flows greater than 170ltrs/min may generate intrinsic noise levels within the blasting helmet greater than 80dB(A). Therefore ear defenders, part no ED1 or earplugs part no EP1 must be worn

WARNING: An approved belt mounted air control valve must always be used with this air fed helmet system

WARNING: When using the optional climate control tube (25A) appropriate ear protection must be worn

5.0 OPERATING INSTRUCTIONS

5.1 Turn ON the air supply to the helmet

Table 1

Air Supply Hose length x i.d.	Pressure at Air Filter bar (psi)	Air Flow ltr/min
10 x 6mm	3.8 (55) 2.3 (33)	270 170
20m x 6mm	4.7 (68) 2.9 (42)	270 170
40m x 6mm	6.2 (90) 4.2 (61)	270 170
10m x 10mm	2.4 (35) 1.4 (20)	270 170
60m x 10mm	3.2 (46) 1.9 (26)	270 170

NB For hose lengths totalling more than 40m, 10mm breathing air supply hose should be used (32)(33)

5.2 Check all hoses and connections for air leaks. Take corrective action to eliminate any leaks

5.3 Ensure that air is entering the helmet and fully complies with 4.1. Prior to use this may be determined by attaching the air flow kit (WV 90 AFK) and optional air quality kit (D5185710) Frequent monitoring of air flow in use may be carried out by consulting the pressure indicator (28) which should read clear of the red sector

IMPORTANT - TO COMPLY WITH HEALTH AND SAFETY REQUIREMENTS IT IS ESSENTIAL THAT THE AIR FLOW AND AIR QUALITY BE FREQUENTLY MONITORED AND RECORDED

WARNING: At higher work rates the inhalation of the user will increase and can cause reduced/negative pressure within the helmet which could be dangerous. Air flow adjustments must always be made to ensure adequate air supply to the user in all conditions - Refer to Table 1 above and increase pressure accordingly

5.4 Place the helmet on the head ensuring that the cape's inner muffler fits snugly around the neck.

5.5 Readjust the air flow to suit personal preference. The air control valve (25) incorporates a fixed orifice. Therefore the air supply should be adjusted at the breathing air filter to provide a minimum of 170 ltrs/min into the helmet

5.6 Pull the cape down around the chest and connect the elasticated straps under the arms and tighten as required

5.7 Secure the waist belt complete with air control valve over the cape and around the waist. Adjust the fit using the slide adjuster

WARNING: Under NO circumstances must the helmet system be worn without the belt being securely fastened around the waist. Operation without the belt securely fastened can be dangerous

5.8 Ensure that the window frame latch is securely fastened

5.9 When the final replacement window has been frosted a new set should be introduced into the window frame as detailed in section 3

WARNING: Under NO circumstances must the helmet be used without the lens system being in place and window frame securely fastened

6.0 Maintenance

6.1 The helmet, hoses, air entry ports and fittings should be routinely checked for dust and debris and cleaned when contaminated or there is a suspicion of abrasive having entered the helmet (See7)

6.2 The inner safety window should not need changing often if properly protected by the intermediate and the out windows. To change an inner safety window, first remove the latex helmet cover (if fitted) then remove the old inner safety window. Ensure that the gasket is clean and fully seated within the helmet shell window aperture. Seat the new safety window fully into the root of the window slot of the gasket, ensuring perfect seal is made between gasket and helmet shell and between gasket and inner safety window

6.3 Check sponge seal (4) on inside of window frame. Replace if damaged or torn

6.4 The suspension assembly is a critical factor in assuring helmet wearer safety, and it should be replaced at the first signs of wear

6.5 When the helmet cape becomes soiled it may be removed and washed in warm soapy water. to remove the cape:

6.5.1 Slide one end out of the helmet attachment strap at the part where the groove is notched

6.5.2 Continue to slide the cape around the rim of the helmet until the cape is completely detached from the groove

6.6 To install the new cape:

6.6.1 Slide one end into the helmet attachment strap at the part where the groove is notched

6.6.2 Continue to slide the cape around the rim of the helmet until the whole cape is completely in the groove and the single line stitch on the cape is at the centre back position (See Fig 1)

6.7 Replace the chin strap if worn

6.8 Replace the window frame if badly worn or when it becomes difficult to maintain a seal between the window frame, outer windows, intermediate window and the window gasket

6.9 When the inlet filter screen (27) in the air control valve outlet needs to be replaced remove the retaining washer with a small screwdriver, remove dirty filter and replace with new kit N.B. 8mm thick smooth side face down

7.0 CLEANING

7.1 Remove cape and muffler lining (See 6.5) wash using warm soapy water

7.2 Detach chin strap (if fitted) from the two posts

7.3 Detach the suspension assembly (17) from the helmet by withdrawing the tapered slides from their housings

7.4 Unclip the air flow plenium (15) from the helmet shell and withdraw the silencer (16) by turning through 180 degrees

7.5 Remove the helmet window system from the window frame, together with the moulded rubber gasket (8)

7.6 Remove the self adhesive sponge seal (4) within the window frame if worn or damaged

7.7 Wash all components in warm soapy water

7.8 Fit new sponge seal (4) into the window frame

7.9 Ensure all components are dry before reassembling in reverse order

8.0 STORAGE

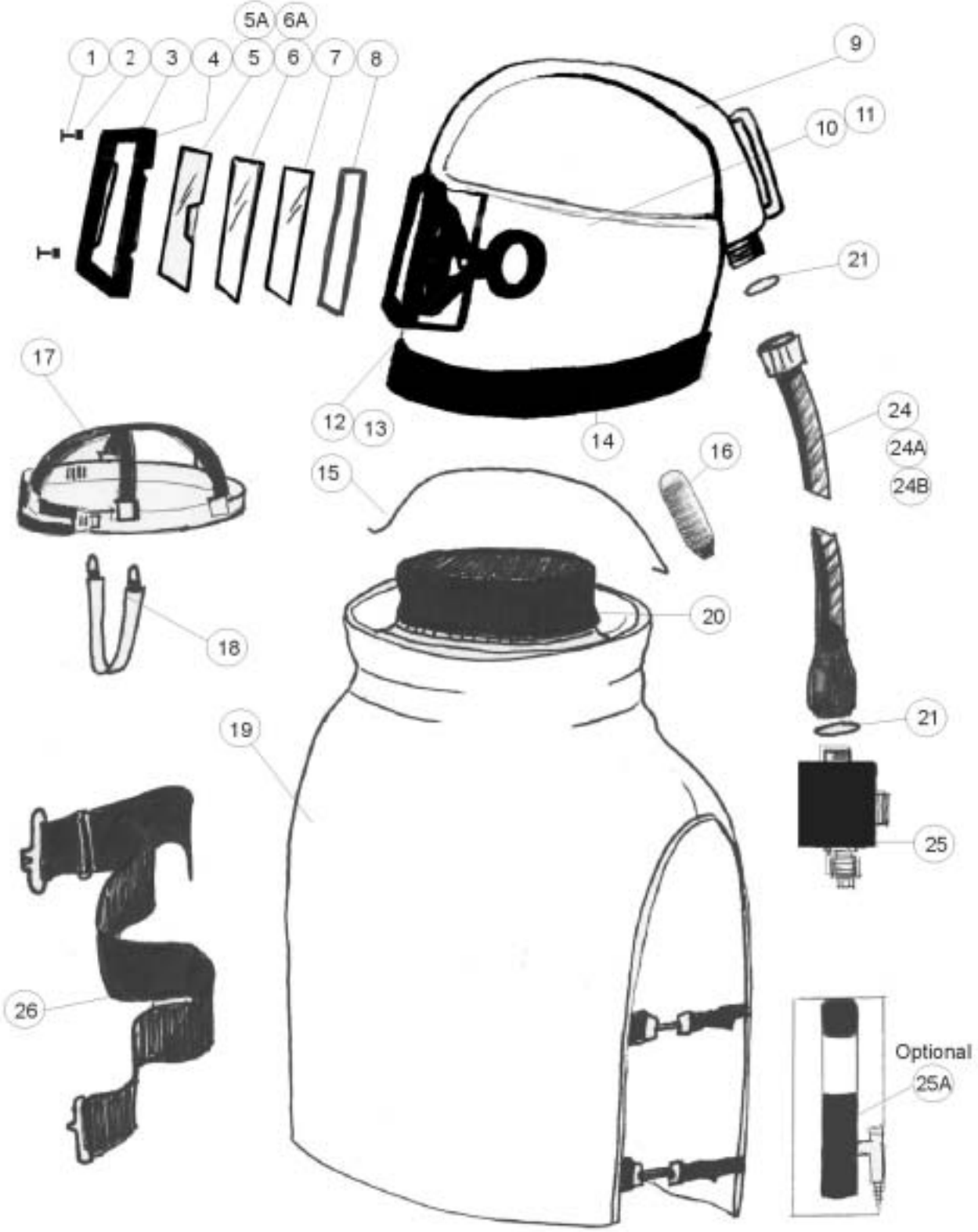
8.1 For overnight storage the helmet assembly should be hung by the handle at the rear of the helmet

8.2 For longer term storage, the assembly should firstly be cleaned and dried. The cape should then be tucked up into the helmet and stored in a plastic bag to prevent dust and moisture from entering during storage

PARTS IDENTIFICATION

APH- 100CE Air-fed helmet, complete with suspension assembly cape with muffler lining, breathing air hose assembly, standard, air control valve and belt
APH -100EG As above but fitted with glass window and anti-etch screen
APH - 100 CEC Air Fed helmet complete with suspension assembly cape with muffler lining, breathing hose assembly, climate control tube and belt
APH - 100 ECG As above but fitted with glass window and anti-etch screen

ITEM	PART NO.	DESCRIPTION
1	FASM560B	WINDOW FRAME SCREW
2	APH90041	WINDOW FRAME NUT
3	APH20976	WINDOW FRAME
4	CABSS8A	WINDOW SPONGE SEAL(1M)
5	APH21042	OUTER TEAR OFF WINDOWS
5A	APH10551	*ANTI-ETCH SCREEN
6	APH10550	INTERMEDIATE WINDOW
6A	APH90290	*INTERMEDIATE GLASS WINDOW
7	APH21044	INNER SAFETY WINDOW
8	APH99996	WINDOW RUBBER GASKET
9	APH20975	APOLLO 100 OUTER SHELL ONLY
10	APH90266	CHIN STRAP POST
11	APH90267	POST SCREW
12	APH90733	WINDOW FRAME RUBBER LATCH
13	APH90783	LATCH POST FOR ITEM 12
14	APH10534	HELMET ATTACHMENT STRAP
15	APH90268	AIR FLOW PLENUM
16	APH90270	SILENCER
17	APH8892	HELMET SUSPENSION ASSEMBLY
18	APH4460	CHIN STRAP
19	APH4435G	CAPE WITH MUFFLER LINING
19A	CBS2G(L,XL.,XXL)	*BLASTERS TUNIC
20	APH8740	MUFFLER LING ONLY
21	04370	GASKET(PK6) (FOR APH21550 AND APH4434 ONLY)
24	APH22811	BREATHING AIR HOSE ASSEMBLY
24A	APH22811A	*BREATHING AIR HOSE ASSEMBLY (670MM LONG)
24B	APH22811B	*BREATHING AIR HOSE ASSEMBLY (530MM LONG)
25	APH100024	AIR CONTROL VALVE ANSD WAISTBELT (PG. 12)
25A	APH4411	*CLIMATE CONTROL TUBE C/W BELT
*OPTIONAL		


5A
6A
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10
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21
17
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24A
24B
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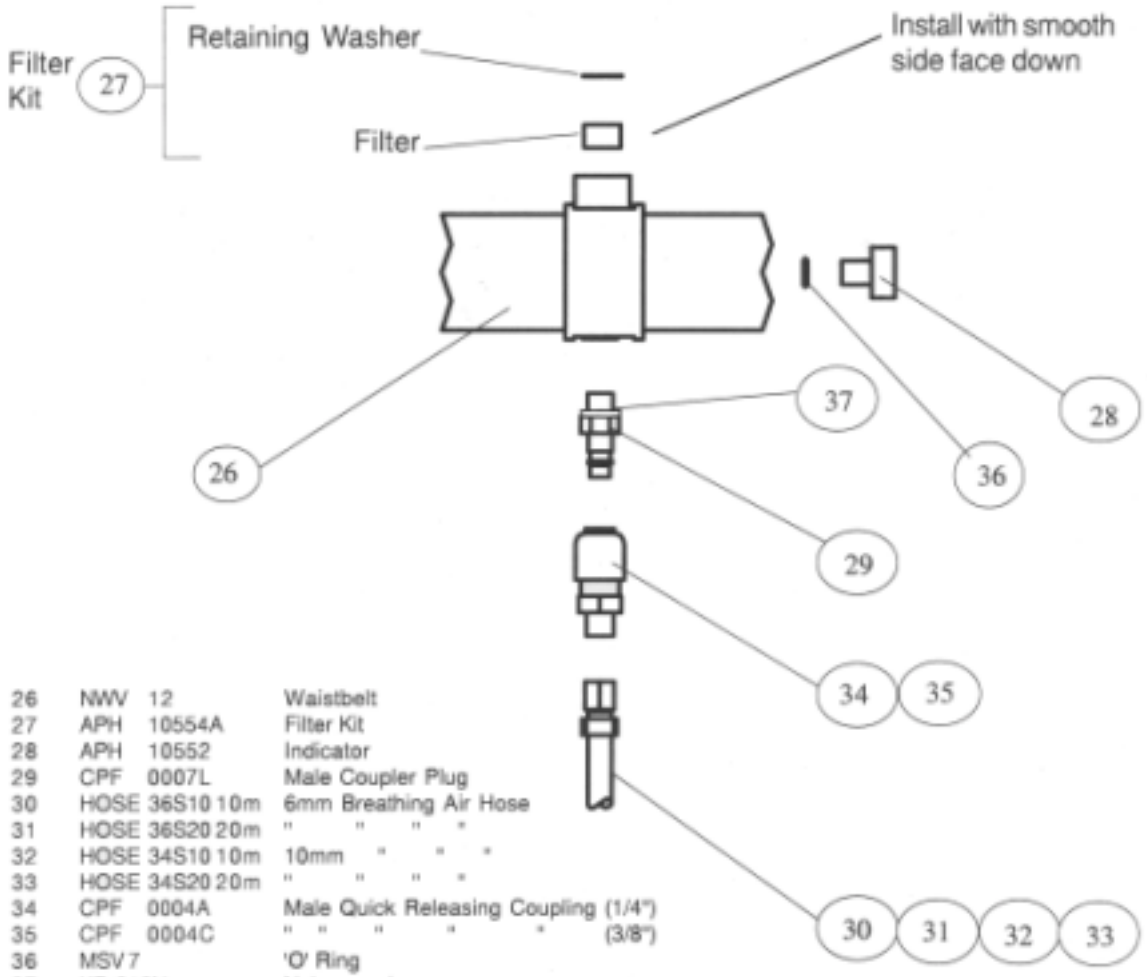
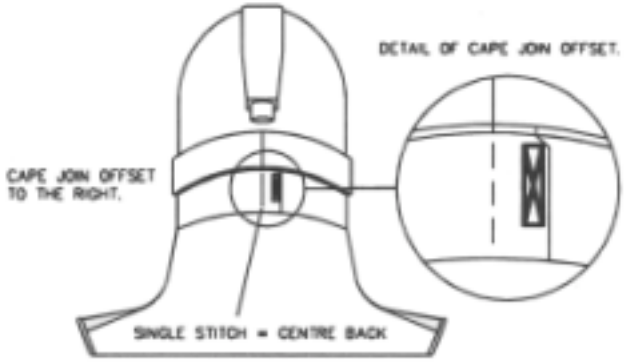
25
26
Optional
25A

Air Control Valve and Waistbelt

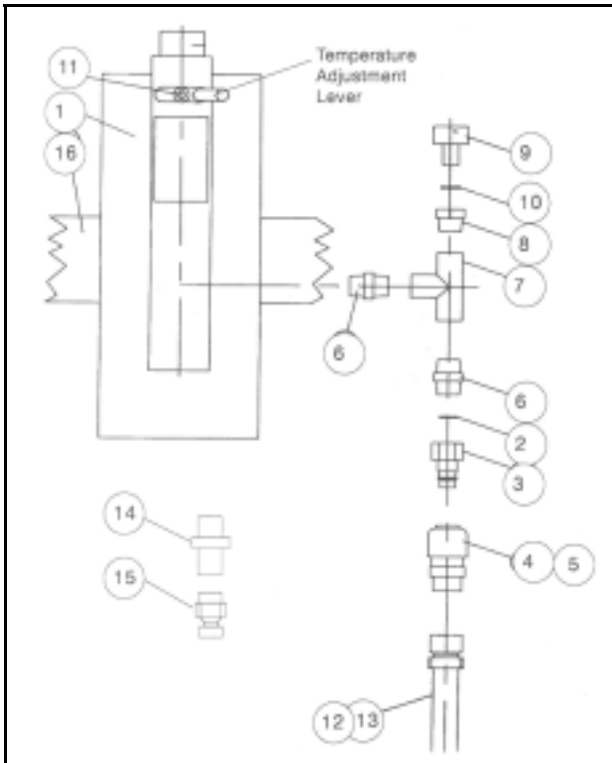


26	NWV	12	Waistbelt
27	APH	10554A	Filter Kit
28	APH	10552	Indicator
29	CPF	0007L	Male Coupler Plug
30	HOSE	36S10 10m	6mm Breathing Air Hose
31	HOSE	36S20 20m	" " " "
32	HOSE	34S10 10m	10mm " " "
33	HOSE	34S20 20m	" " " "
34	CPF	0004A	Male Quick Releasing Coupling (1/4")
35	CPF	0004C	" " " " " (3/8")
36	MSV 7		'O' Ring
37	KB 916N		Nylon washer

Fig.1



The Clemco Climate Control Tube – Type APH4411
Operating and Maintenance Instructions



Item	Part No	Description
16	NWV12	WAIST BELT
15	CPF0008	3/8 COUPLER PLUG
14	A8	3/8 ADAPTER NIPPLE
13	HOSE 34S 20	10MM OF BREATHING AIR SUPPLY (X20M)
12	HOSE 34S 10	10MM OF BREATHING AIR SUPPLY (X10M)
11	FASM635A	SCREW
10	MSV7	'O' RING
9	APH10556	INDIACATOR GAUGE
8	APH10559	ADAPTOR BUSH
7	RCAMV10	FEMALE TEE
6	NWV23	_ ADAPTOR NIPPLE
5	CPF004C	QUICK DISCONNECT COUPLING FOR 10MM HOSE
4	CPF004A	QUICK DISCONNECT COUPLING FOR 6MM HOSE
3	APH8849	QUICK DISCONNECT NIPPLE
2	APH8448	FILTER SCREEN
1	APH 4378	SHIELD

Length of air supply hose	Internal dia of hose	Supply pressure (bar)	Air Flow (l/min)
20m	6mm	3.4	170
60m	10mm	5.2	170

Warning: The intrinsic noise level generated by the relatively high air speed through the Climate Control Tube may exceed 80dB(A). Therefore ear defenders (ED1) or ear plugs (EP1) MUST BE WORN

1.0 INTRODUCTION

1.1 The Clemco climate control tube has been specifically designed for blast cleaning operative protection and comfort and satisfies the requirement of EN271 when used with a Clemco approved blasting helmet
The above approval applies only when the respirator system is used complete without modification, change or substitution

1.2 The unit supplies the user with either warm or cool breathing air. The temperature adjustment lever on the unit allows the user to adjust the temperature of air to the blasting helmet to suit the individual requirements. (Approx. 10°C to 30°C)

2.0 AIR SUPPLY

2.1 The Climate control tube must be supplied with adequate volume of respirable breathing air to ensure minimum supply of 170ltrs/min into the helmet. Under normal conditions the lengths of breathing air supply hose must not exceed 20m (6mm i.d.) or 60m (10mm i.d.) see table 2. In extreme temperature conditions the maximum range of air supply temperature adjustment can only be achieved using 10mm i.d breathing air supply hose

2.2 The air compressor should be equipped with a high temperature or carbon monoxide (C0) warning device or both. An overloaded compressor or one in poor mechanical condition may produce carbon monoxide (CO) and objectionable odours.

2.3 When using portable compressors, precautions must also be taken to prevent exhaust gases from entering the air intake. It is advisable to have the exhaust gases ducted downwind to a safe non combustible area

2.4 A breathing air filter should be installed between the air fed helmet. This should remove objectionable odours, pipe scale, condensed moisture, oil mist, oil vapours and any other particulate matter

2.5 Checks should be carried out prior to use and at suitable intervals to ensure that the volume and quality of breathing air meets legislated Health & Safety requirements

Warning: To comply with health and safety requirements the breathing air must be tested frequently for the presence of contaminants i.e. Carbon Monoxide (Co^2) Hydrocarbons, etc. Kits are available for this purpose

3.0 OPERATING INSTRUCTIONS

These operating instructions should be used in conjunction with htose issued with the approved air fed blasting helmet

Warning: The maximum recommended inlet air pressure for the unit is 110 p.s.i. Under no circumstances must it be connected to an air supply greater than 110 p.s.i. (75 bar)

3.1 Turn OFF the air supply to the system then remove existing air control valve and replace with the climate control tube

3.2 Attach the quick disconnect coupling of the air supply hose to the Climate control tube as shown

3.3 Move the temperature adjustment lever to warm (min flow)

3.4 Turn ON the air supply and regulate the air pressure until:
a) the air flow meter (when fitted) reads 170 ltr/min
or b) the indicator gauge (9) reads mid scale

3.5 Don suitable ear protection

3.6 After placing the helmet over the head secure the waist belt over the cape and around the waist.

3.7 To adjust the air temperature move the adjustment lever at the top of the unit in the appropriate direction. Allow at least one minute for the temperature change to occur, the readjust if required

3.8 Frequent monitoring of airflow may be carried out by consulting the pressure indicator (9) which should read clear of the red sector

4.0 MAINTENANCE

4.1 The climate control tube is a complex assembly and should not be disassembled any further than as instructed below

4.2 Disconnect the air supply

4.3 Unscrew the quick disconnected nipple (3) from the units air inlet

4.4 Remove the filter screen (2) using a small screwdriver and check lists cleanliness

4.5 Clean the filter screen if necessary by blowing clean with compressed air

4.6 Reassemble the unit

4.7 The shield which protects the operator's hip from any frosting which may form on the unit during operation should be replaced when worn

4.8 Replace the indicator gauge (9) and 'O' ring (10) if damaged or worn

5.0 FAULT ANALYSIS

5.1 The climate control tube has no moving internal parts and requires minimal maintenance. Should inadequate air flow through the tube or a poor performance be experienced check::-

5.1.1 The indicator gauge (9) reads within the green sector

5.1.2 The filter screen (2) is free of obstructions (See section 3)

NB The air discharge temperature is affected by the temperature and volume of the air supplied to the climate control tube

Maintenance /Service Record

Date	Details	Signature