

**15 MINUTE
PROTECTIVE BREATHING EQUIPMENT (PBE)
AVOX SYSTEMS® P/N 802300-14
(CONTAINS CHEMICAL OXYGEN GENERATOR)
INSTRUCTIONS FOR PROPER INSPECTION, STORAGE AND USE**

- WARNING -

IMPROPER USE OF THE AVOX SYSTEMS® PBE MAY RESULT IN PERSONAL INJURY OR DEATH. IMPROPER USE INCLUDES, BUT IS NOT LIMITED TO, USE WITHOUT ADEQUATE TRAINING, DISREGARD OF THE WARNINGS AND INSTRUCTIONS CONTAINED HEREIN, AND FAILURE TO INSPECT AND MAINTAIN THIS RESPIRATOR.

THE AVOX SYSTEMS® PBE IS INTENDED TO BE USED ONLY FOR AVIATION APPLICATIONS. IT IS TO BE USED ONLY BY, OR UNDER THE SUPERVISION OF, A PILOT OR CREW MEMBER TRAINED AND QUALIFIED IN ITS USE.

THE AVOX SYSTEMS® PBE CONTAINS A CHEMICAL OXYGEN GENERATOR. THE GENERATOR PRODUCES OXYGEN AND HEAT WHEN ACTIVATED. SURFACE TEMPERATURE OF THE GENERATOR MAY REACH 400°F OR HIGHER. INADVERTENT ACTIVATION MAY RESULT IN FIRE. STORE THE UNIT AWAY FROM HEAT AND FLAME.

- SPECIAL SHIPPING INSTRUCTIONS APPLY -

GOVERNMENT APPROVAL IS REQUIRED FOR SHIPMENT IN OR INTO THE UNITED STATES. READ LIMITATIONS ON SHIPMENT, ON PAGE 6 OF THIS INSTRUCTION, BEFORE ATTEMPTING TO SHIP THIS UNIT. OTHER NATIONS MAY HAVE SIMILAR RESTRICTIONS.

A. GENERAL DESCRIPTION

1. The PBE is intended to provide breathing protection, in aviation applications up to 40,000 feet in altitude, for a pilot or crew members trained in its use, with a minimum 15 minutes duration. The device is vacuum-sealed in a transparent bag and contained within a plastic container/case, which can be stored in a stowage rack. The vacuum bag prevents exposure to atmospheres which could cause loss of efficiency. The device is ready to use unless the vacuum bag has lost vacuum or the color of the moisture indicator has changed to pink, then the device is unfit for service and is not to be used.
2. The device includes a double layer hood, which encloses the entire head. When properly worn, the device can accommodate beards, long hair and glasses. An integral life support unit is attached to the hood and located at the back of the head. A head harness is attached within the hood to properly support the device on the head.
3. Theory of operation: Low-pressure oxygen (O₂) is produced by a chemical oxygen generator. Oxygen flows from the generator into a venturi nozzle, which pulls hood gas through the carbon dioxide (CO₂) scrubber. This scrubbed flow and added oxygen are vented into the hood to mix with hood gas. Once oxygen flow is started it cannot be stopped. Oxygen will be produced for a minimum of 15 minutes. Note: The PBE generates oxygen in use. Do not allow an operating PBE to come in direct contact with flame as oxygen vigorously accelerates combustion.

4. SPECIFICATION DATA

- a. Oxygen Duration..... 15 minutes regardless of work rate
- b. Oxygen Output 90 liters
- c. CO₂ Level in Hood 4% maximum during activity
- d. Re-circulation Rate..... 50 lpm
- e. O₂ Generator Pressure30 psi
- f. Hood Material Inner hood material is Teflon¹-coated fiberglass fabric.
Outer hood material is Kynol².
- g. Service Life 10 years in protected storage from manufacture date stamped on moisture indicator inside transparent vacuum bag
- h. Certifications..... P/N 802300-14 (NSN # 4240-01-217-0046) meets the requirements of FAA TSO-C116, TSO-C99 and FAA Action Notice A8150.2 of 9/1/87
- i. Weight 3.75 lbs. (1.70 kg.) as worn, 5.15 lbs. (2.34 kg.) with storage case

B. SPECIFIC USE LIMITATIONS

- 1. If the wearer's neck circumference is less than 12.2 inches, they may not receive full protection from this unit.
- 2. This device is not intended for use underwater.
- 3. Use of this respirator in environments that may expose the user to toxic or hazardous substances which can irritate or poison through the skin such as hydrogen cyanide, or use in environments that may expose the user to physical hazards such as heat and cold require the use of protective clothing in addition to the respirator.
- 4. Do not use a PBE beyond 10 years from the date of manufacture. The date of manufacture is stamped, in black, on the moisture indicator visible through the window in the side of the case. For reference, the "remove from service" date is stamped on the case label.
- 5. Do not use the PBE if the color of the moisture indicator has changed to pink. NOTE: the color of the moisture indicator can change and the unit can remain in service, but not if the indicator is pink. See the **DISPOSAL** section for details.
- 6. Device is designed for life support and smoke protection and use during fire emergencies aboard aircraft up to 40,000 feet.
- 7. The device is not repairable and can not be overhauled or "zero-timed". If used or out of date (older than 10 years from the date of manufacture) the unit is to be replaced. If the integrity of the unit is questionable the unit is to be replaced. The rigid plastic container is replaceable, see **INSPECTION** section for details.

- WARNING -

DO NOT ATTEMPT TO DISASSEMBLE OR REPAIR THIS DEVICE. THE DEVICE CONTAINS A CHEMICAL OXYGEN GENERATOR AND A CHEMICAL SCRUBBER. IF IT HAS NOT BEEN EXPENDED THE GENERATOR CONTAINS A LIVE IGNITION TRAIN AND SODIUM CHLORATE, A STRONG OXIDIZER. INADVERTENT ACTIVATION OF THE GENERATOR MAY RESULT IN FIRE (SEE WARNING ON FIRST PAGE OF THIS INSTRUCTION). THE SCRUBBER CONTAINS GRANULAR LITHIUM HYDROXIDE (LiOH), A CORROSIVE SOLID, WHICH CAN IRRITATE THE EYES AND RESPIRATORY TRACT. SEE MATERIAL SAFETY SHEET (MSDS) FOR AVOX SYSTEMS® PBE P/N 802300 (SERIES), AVAILABLE FROM AVOX SYSTEMS, FOR ADDITIONAL INFORMATION.

- 8. It is recommended that the device be stored at normal room temperature conditions with short term exposure limited to within the range of -65°F to +165°F. The device is intended to operate at temperatures between -20°F to +140°F and at a relative humidity of up to 95%.

¹ Teflon is a registered trademark of E.I. duPont de Nemours & company, Inc., Wilmington, DE.
² Kynol is a registered trademark of American Kynol, Inc., New York, NY.

C. INSPECTION

1. Periodically inspect the unit for the following conditions, which may indicate a damaged or expended unit, tampering or loss of operation characteristics.
 - a. Inspect the moisture indicator, which is visible through the inspection window in the case. If the color of the moisture indicator has changed to pink, the unit must be replaced. NOTE: the color of the moisture indicator can change and the unit can remain in service, but not if the indicator is pink.
 - b. Inspect the "remove from service" date on the outside label of the rigid plastic case. The moisture indicator has the date of manufacture stamped on it. Compare the date of manufacture to the "remove from service" date and confirm the "remove from service" date is 10 years beyond the date of manufacture on the moisture indicator. Correct the "remove from service" date if required. If the "remove from service" date has passed, the unit is expired and must be replaced.
 - c. Inspect the rigid outer plastic case for physical damage such as excessive wear, cracks, holes, etc., which may indicate damage to the device contained within. If the rigid plastic case is not damaged, open the case and inspect the inner device for physical damage and the integrity of the vacuum bag. Do not remove the unit from the plastic case. If there is no physical damage to the device within the case and the vacuum bag is undamaged and tight to the inner device, the device is acceptable for use. Carefully close the case without damaging/pinching the vacuum bag and return the device to service.
 - d. If the vacuum bag is not tight to the inner device, this indicates that the vacuum has been lost and that moisture contamination may follow. A unit, which has lost its vacuum, must be replaced whether or not the moisture indicator has changed color. If the inner device shows signs of physical damage, such as crushing of parts, replace the unit.
 - e. If the rigid outer plastic case is damaged, carefully remove the inner device to inspect it for physical damage and integrity of the vacuum bag, as above. If the inner device is damaged or the vacuum is lost, the unit must be replaced and not used.
 - f. If the inner device is not damaged, a replacement rigid plastic case is available as AVOX Systems® P/N 803753-02. The inner device must be carefully placed into the new outer case in order to avoid damaging/pinching the vacuum bag. The moisture indicator is to be at window side of case, with the hood visor facing up so that it is visible when the case is opened. The manufacture date is to be visible through the window when the case is closed. Using permanent ink, mark the "remove from service" date (month/year) on the replacement case label. It must correspond to a date 10 years beyond the date of manufacture. See "b" above. The label on the damaged case may also contain a part number (PNR), cage/manufacturer number (MFR) and serial number (SER) with corresponding bar codes; if present, legibly copy "MFR XXXXX" and "SER YYYYYYYYYYYYYY" to a similar location on the label of the new case.

- CAUTION -

IF THE UNIT IS REMOVED FROM ITS CASE AND THE UNIT IS NOT USED, CARE MUST BE TAKEN DURING REPLACEMENT OF THE UNIT TO AVOID DAMAGING THE SEALED VACUUM BAG.

- g. To dispose of a unit removed from service, see **DISPOSAL** section of this instruction.

D. USE OF THE DEVICE

1. TRAINING

- a. This unit is to be used by trained personnel only. It is important that adequate instruction and training be given to all potential users to assure proper use in an emergency. This training is the responsibility of the operator, employer, pilot, or the crew, which will use or supervise the use of the PBE. Non-functional hood units and other materials to assist with this training are available from AVOX Systems.

E. DONNING

1. INSPECT THE MOISTURE INDICATOR

- a. Inspect the moisture indicator in the inspection window.
- b. If the color has changed to pink do not use, obtain another unit.

2. REMOVE THE DEVICE FROM ITS CONTAINER/CASE

- a. A single latch, labeled "LIFT", is provided at the top edge of the container. Lift the latch to open the container.
- b. Remove the device in the vacuum bag from the container.
- c. Do not use if the transparent bag has been previously opened, obtain another unit.

3. OPENING THE VACUUM BAG

- a. Hold unit firmly against the waist with the hand while gripping the edge of the vacuum bag at the notch. Grasp the red tear strip side of the notch with the other hand. Pull the red tear strip side of the notch to tear the vacuum bag at the notch and rip open.
- b. Remove the device and discard the bag and cardboard wrap.

4. INITIATING OXYGEN FLOW

- a. Grasp the device and pull the ring marked, "PULL TO ACTUATE", parallel with the housing surface. Actuation has been accomplished when the ring and attached pin pull free. Removal of the pin allows a spring-loaded plunger to strike a primer cap on the oxygen generator, initiating gas flow, which will be heard by the user. The pin cannot be reinserted, so that an expended device can be identified by lack of the pin and ring.
- b. If, after pulling the ring and pin free of the unit, the flow of oxygen is not heard, do not use. Obtain another unit.





- WARNING -

THIS UNIT IS TO BE USED BY TRAINED PERSONNEL ONLY. SEE USE OF THE DEVICE, SECTION "D", OF THIS INSTRUCTION.

5. DONNING THE DEVICE

- a. Prior to donning remove objects, other than eyeglasses, from face and head, such as large earrings, facial jewelry, hair combs or other objects which might catch when pulling hood over head.
- b. Stroke long hair back away from face and top of head before donning to avoid blocking vision during use and to allow the head band to firmly engage the head after donning.
- c. Don the unit by holding the device upside down by the open end of the hood, with the life support pack away from the user and the visor facing the user.
- d. Bend forward at the waist and grasp the hole in the neck seal with thumbs and forefingers; insert chin into the hole and pull the hood across the face and over the eyeglasses and head so that the head is within the hood and the neck seal is around the neck. Remove all hair and clothing between the neck and the seal. Using fingers, be certain the neck seal makes firm contact completely around the neck. Protection may be influenced by the user's neck circumference and proper fit of the neck seal. See the **SPECIFIC USE LIMITATIONS** section of this instruction. Care must be taken to be certain that the neck seal makes firm, continuous contact completely around the neck.
- e. While standing upright, grab the hood fabric at the bottom of the hood and pull the hood down until the headband firmly engages the head. Adjust the neck seal to lay above or below the Adams Apple for comfort.
- f. Pull the bottom of the hood down fully against the chest and shoulders to cover the neck seal. Note: The bottom of the hood is intended to protect the neck seal. Care must be exercised to prevent flame, embers, or objects, which may damage or ignite the neck seal from entering under the hood.

6. ABBREVIATED OPERATING INSTRUCTIONS, BELOW, ARE ON THE DEVICE LABEL

(1) REMOVE THE UNIT FROM THE CASE.			
(2) TEAR OFF THE RED PULL STRIP AND REMOVE THE UNIT FROM THE BAG. 	(3) PULL OUT THE ACTUATION RING. DO NOT USE THE PBE UNLESS YOU HEAR THE GAS FLOW. 	(4) BEND FORWARD. GRASP THE HOLE IN THE NECK SEAL WITH YOUR THUMBS, INSERT YOUR CHIN INTO THE HOLE AND PULL THE HOOD ACROSS YOUR FACE AND OVER YOUR HEAD. 	(5) PULL THE HOOD DOWN UNTIL THE HEADBAND FIRMLY ENGAGES YOUR FOREHEAD. REMOVE ALL HAIR AND CLOTHING FROM BETWEEN THE NECK AND THE SEAL. USING YOUR FINGERS, MAKE SURE THE NECK SEAL MAKES FIRM CONTACT COMPLETELY AROUND YOUR NECK. 
(6) NORMAL OPERATION CAUSES GAS FLOW NOISE INSIDE THE HOOD. WHEN THE NOISE STOPS, IMMEDIATELY MOVE TO A NON-HAZARDOUS AREA AND REMOVE THE HOOD!			

F. OPERATING FEATURES

1. It is normal to hear the sound of gas flow in the hood, indicating the oxygen generator is delivering oxygen to the hood. The PBE has a minimum duration of 15 minutes. Normal operation causes a gas flow noise inside the hood. When the noise stops, oxygen generation has stopped and the carbon dioxide scrubber is no longer working.
2. Heat is produced by both the oxygen generator and the CO₂ scrubber in normal operation. Therefore, heat build-up (to approximately 120°F) within the hood may occur. This condition may cause minor discomfort but is NORMAL and no cause for alarm.
3. For the same reason, external areas of housing, particularly in the area of the heat shield, may become hot to the touch.

- CAUTION -

EXERCISE CARE WHEN TOUCHING THE HOUSING DURING OR AFTER OPERATION. DO NOT INSERT FINGERS INTO OPENINGS BECAUSE HOT METAL PARTS MAY BE CONTACTED.

4. The hood is held in place by pulling the hood down until the headband firmly engages the head, see the **DONNING THE DEVICE** section of this instruction. If the hood is moved out of position during use, grasp the hood fabric at the bottom of the hood, shift the hood back to the proper position and pull the hood down until the headband firmly engages the head.

G. DOFFING

1. When you are sure you are away from the area requiring respiratory protection and in a respirable atmosphere, remove the unit.
2. Grasp the life support pack or the back upper edge of the hood and pull up over the head.
3. Due to possible oxygen saturation of the hair, do not smoke or become exposed to fire or open flame for several minutes after doffing. As long as the generator continues to produce oxygen, care should be exercised to keep the unit away from combustible materials or fire.
4. If generator is still flowing after doffing, allow the generator to completely expend (that is, until the sound of gas flow has stopped completely), then allow the unit to cool prior to disposal.

H. DISPOSAL

1. The oxygen generator inside the AVOX Systems® 802300-14 PBE unit must be expended before the unit is disposed of.
2. To expend the oxygen generator, unpack and deploy the unit as directed in the unit instructions. It is not necessary to don the unit. In an area free of grease, oil and any other combustible contaminants, pull the red pull pin as directed in the unit instruction and allow the oxygen generator to run, approximately 15-20 minutes. After allowing time to cool, the unit may be disposed of.
3. An expended PBE unit contains a small amount of soluble barium salt in the chemical oxygen generator and granular lithium hydroxide (LiOH) in the scrubber. Barium is listed as a hazardous material for disposal purposes by the U.S. Environmental Protection Agency (EPA) and lithium hydroxide is a caustic material. Dispose of expended PBE units in accordance with all Federal, State or other applicable laws and regulations. See Material Safety Data Sheet (MSDS) for AVOX Systems® PBE P/N 802300 (series), available from AVOX Systems, for additional information.

I. LIMITATIONS ON SHIPMENT

The AVOX Systems® PBE unit, 802300 (Series) breathing device, contains a chemical oxygen generator which has its means of initiation attached. The AVOX Systems® 802300 (Series) breathing device is considered a hazardous material for shipping purposes and has been classified by the US. Department of Transportation (DOT) in accordance with 49 CFR 173.56 as Oxygen Generator Chemical, UN 3356 with a U.N. classification code (Hazard Class and Division) of 5.1 under approval EX1997080041.

Shipment of an AVOX Systems® PBE, 802300 (Series) breathing device, in the United States and shipments into the United States must be made in strict accordance with the United States Code of Federal Regulations (CFR) 49. Other requirements may apply in other countries.

The AVOX Systems® PBE, 802300 (Series) breathing device, may only be offered for transportation in, or into, the United States in accordance with 49 CFR 173.168 Chemical Oxygen Generators, subpart (d)(1) when offered for transportation by truck, rail or vessel, or in accordance with subpart (d)(2) when offered for transportation by "Cargo-Only Aircraft." It is the responsibility of the person preparing the package for transportation in, or into, the United States to comply with all of the requirements of the U.S. DOT 49 CFR and to be certain that the technical and legal requirements in effect at the time of packaging and offering for transportation are complied with. Other requirements and/or approvals may apply in other countries. AVOX Systems® 802300 (Series) breathing devices, are packaged and shipped by AVOX Systems under approval EX1997080041.

It is the responsibility of the person reoffering the package under approval EX1997080041, to obtain a copy of the approval EX1997080041, to comply with all the requirements of 49 CFR 173.168, and to be certain that all the technical and legal requirements in effect at the time of reoffering for transportation are complied with. A copy of approval EX1997080041 may be obtained from AVOX Systems.

- IMPORTANT NOTICE -

THE SHIPMENT OF CHEMICAL OXYGEN GENERATORS, OR DEVICES CONTAINING CHEMICAL OXYGEN GENERATORS, BY PASSENGER CARRYING AIRCRAFT, EITHER AS GENERAL CARGO OR AS COMPANY OWNED MATERIAL (COMAT) IS STRICTLY FORBIDDEN BY ICAO, BY THE US. FAA AND BY MOST OTHER NATIONAL AUTHORITIES.

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