

INSTRUCTION MANUAL
FOR
OCENCO, INCORPORATED
EBA 6.5
60 MINUTE SELF-CONTAINED
SELF RESCUER
(SCSR)

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INTRODUCTION

This manual describes the specifications of the EBA 6.5 and explains the proper use of the unit. This manual also identifies key components and their functions. It demonstrates the proper procedures for donning and using the EBA 6.5 and the procedures to be followed in performing daily and 90-day inspections.

MSHA requires that all persons who may be dependent on the OCENCO EBA 6.5 for survival be thoroughly trained in the operation and use of the unit. This manual, approved by MSHA, has been designed to meet this requirement. Special care should be given to the information presented herein.

The OCENCO EBA 6.5 is designed to be stored or carried in a manner most convenient to the user:

- 1) Stored underground
- 2) Hand carried using the required black nylon handle straps
- 3) Shoulder or back worn using the optional black nylon shoulder strap
- 4) Carried in a bag or pouch

See attached photographs; Figures 1, and 2

GENERAL INFORMATION

The OCENCO EBA 6.5 has been approved under 42 CFR 84, MSHA/NIOSH Certification Number TC-13F-104, as a one hour closed circuit self-contained self-rescuer (SCSR). Extensive testing has shown that the OCENCO EBA 6.5 will provide a user with over 60 minutes of life saving oxygen in escape situations requiring heavy physical activity.

Similarly, the OCENCO EBA 6.5 has demonstrated the ability to provide a person with up to 8 hours of oxygen if he remains at rest and follows the procedures necessary for maximum conservation of oxygen as explained in the section titled Instructions for Use for User at Rest.

Because the EBA 6.5 is a life saving escape device, each person using the unit should:

- 1) Be thoroughly familiar with and trained in the procedures for donning, wearing, and inspecting the unit as explained in the Instructions for Use section on page 6 and the Inspection and Maintenance section on page 7.
- 2) Avoid physical abuse to the unit.
- 3) Keep the unit from exposure to temperatures exceeding 140°F. Extended exposure to temperatures over 160°F may lead to rupture of the protective frangible disc causing safe depressurizing of the oxygen bottle.
- 4) Follow all NIOSH and MSHA recommendations regarding the use of self-contained self-rescuers.

WARNING

The OCENCO EBA 6.5 was designed and approved solely as an exit or escape device. The unit is not intended or approved as an entry and rescue breathing apparatus. Furthermore, the unit was not designed or approved for fire fighting or underwater breathing.

SYSTEM DESCRIPTION & OPERATION

The OCENCO EBA 6.5 is a closed circuit self-contained self-rescue device designed to be wearable with an additional protected harness for shoulder support. The unit is housed in a rugged transparent polycarbonate case to permit rapid, easy visual inspection of all components and to give each user greater confidence and familiarity in using the system.

The OCENCO EBA 6.5 system consists of two simple sub-systems:

- 1) the compressed oxygen supply circuit, and
- 2) the closed breathing circuit.

The following descriptions refer to the included EBA 6.5 functional diagram shown on the next page.

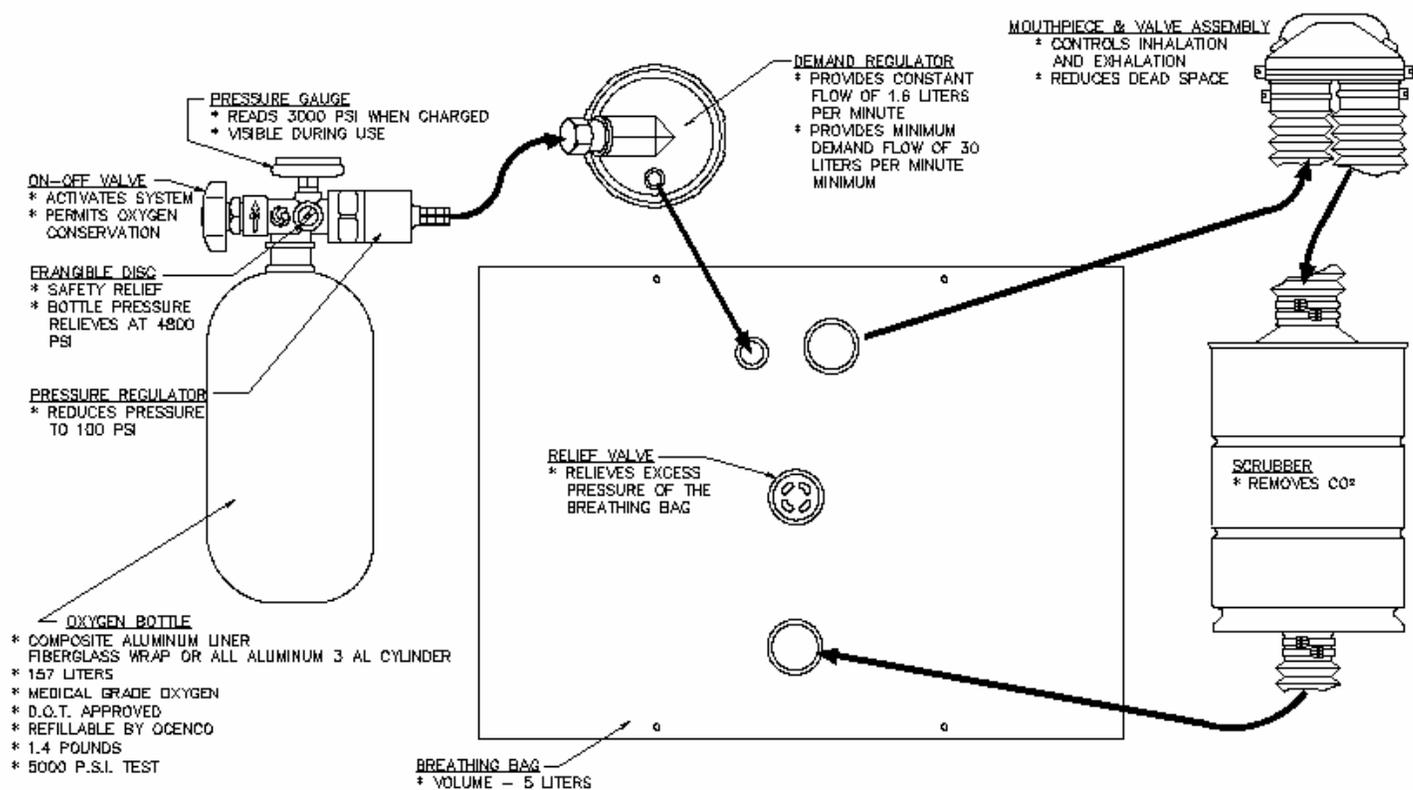
1) Compressed Oxygen Supply Circuit

Medical grade oxygen is stored in a DOT approved refillable oxygen bottle that has been pressurized between 2700 to 3000 psi and holds 157 liters of oxygen. The oxygen flow is controlled through a series of valves and is activated by turning the ON/OFF valve counterclockwise. A pressure gauge that is visible at all times and is accurate to $\pm 5\%$ F.S. will read between 2500 and 3200 psi when charged for service. The oxygen moves through the ON/OFF valve into a pressure reducing regulator that reduces the oxygen pressure to 100 psi. The oxygen then passes from the pressure-reducing regulator through a hose and into the demand regulator. The demand regulator provides a constant flow of 1.6 liters per minute with a minimum of 30 liters per minute upon demand. The oxygen then moves through an additional hose from the demand regulator to the breathing bag.

2) Closed Breathing Circuit

The breathing bag is the reservoir of breathable gas and is constructed of durable urethane coated nylon. Oxygen is inhaled from the breathing bag through an inhalation tube and mouthpiece. The expired breath moves through the mouthpiece and to the CO₂ scrubber through an exhalation tube. The CO₂ scrubber is constructed of steel with a lithium hydroxide bed to remove CO₂ from the expired breath. The scrubbed breath then re-enters the breathing bag through a tube connected to the bottom of the scrubber and is mixed with fresh oxygen. A relief valve is located in the center of the breathing bag to vent any excess pressure and to maintain the exhalation pressure of the breathing circuit within safe limits.

EBA 6.5 FUNCTIONAL DIAGRAM



INSTRUCTIONS FOR USE

See attached photographs 3 thru 5

(1) Pull latch release rod. (Figure 3)

(2) Lift and pull each latch ring to release bands. (Figure 4)

(3) Remove cover from base. Grab the two handle straps and pull case apart, discard cover and rubber seal. (Figure 5).

See attached photographs 6 and 7

(4) Open oxygen valve fully counterclockwise, in direction of arrow. (Figure 6)

(5) Place neck strap over head. (Figure 7)

See attached photographs 8 and 9

(6) Pull mouthpiece toward face. The mouthpiece plug will automatically be removed from the mouthpiece. Insert mouthpiece and breathe through mouth only. Use head strap for additional support of mouthpiece, if required. (Figure 8)

(7) Apply noseclips to nose. Do not attempt to inhale or exhale through your nose. (Figure 9)

(8) Purge bag with oxygen to eliminate nitrogen: exhale, hold breath and deflate bag by pressing on the bag. Inhale deeply through the mouthpiece, then breathe normally (oxygen will be supplied from the demand regulator).

See attached photographs 10 thru 12

(9) Adjust neck strap for comfort. (Figure 10)

(10) Wrap waist harness around waist, clip and adjust for fit by pulling on strap end. (Figure 11)

(11) Place goggles over eyes to prevent irritation from smoke or other irritants. (Figure 12)

(12) ESCAPE

Proper handling, maintenance, and other information as supplied in this manual are essential to the effective use of the EBA 6.5. The user should be familiar with Instructions for Use 1-12 before attempting to use the EBA 6.5.

INSTRUCTIONS FOR USE FOR USER AT REST

THE FIRST OBJECTIVE IS TO ESCAPE.

In the event escape from an oxygen deficient atmosphere cannot readily be achieved, the EBA 6.5 can operate for up to 8 hours when the user is at rest. Listed below are the steps required to extend the oxygen supply of the EBA 6.5 past one hour if the unit is to be used by a man at rest. Rest is defined as a man sitting with no activity.

- (1) Purge bag with oxygen to eliminate nitrogen: exhale, hold breath and deflate bag by pressing on the bag. Inhale deeply through the mouthpiece then breathe normally. Repeat this step two (2) more times.
- (2) When bag fills, close oxygen valve, clockwise.
- (3) When bag becomes low, open oxygen valve, counterclockwise.
- (4) Repeat steps 2 and 3 until no longer at rest.

INSPECTION AND MAINTENANCE

Inspection guidelines are based on the deployment of the device. If the EBA 6.5 is carried daily it is to be inspected daily. If the EBA 6.5 is stored according to an approved MSHA storage plan, it is to be inspected every 90 days.

If the EBA 6.5 is stored in a protective storage container on a vehicle the inspections outlined below are not necessary except for the 90-day inspection.

The EBA 6.5 is housed in a rugged transparent polycarbonate case. The case enables the user to inspect the unit easily and in a minimum amount of time. The daily inspection as well as the 90-day inspection should consist of the following:

- (1) Check the oxygen pressure gauge. The pressure gauge reading is normally 3000 psi at 70°F. Remove from service if below 2500 psi or above 3200 psi at 70°F. Refer to the Temperature vs. Pressure chart on page 13 for estimated pressure readings at other ambient temperatures. If the case is damaged and the gauge cannot be read, the unit must be removed from service.
- (2) Make sure that all the latch seals are not broken. Two seals are provided, one for each band. A third seal on the release rod is optional. If all three seals are opened, remove the unit from service. Some users wish to maintain all seals. For this purpose, OCENCO, Incorporated provides replacement seals with a green logo. To assure OCENCO, Incorporated that the SCSR has not been opened, one of the original black latch seals must be in place.
- (3) Inspect the apparatus for indications of abuse. If the view through the case is obstructed such that a proper examination cannot be performed (e.g. scuff marks, stickers, and paint) the unit must be removed from service. Indications of abuse are listed below. If any of these signs are present the unit must be removed from service.

- a. Case cracked, burned, or deformed
- b. "U" seal open or rolled
- c. Loose parts
 - o Bottle strap (stainless steel)
 - o Scrubber canister not in mounts
 - o Screws or inserts
 - o On/Off valve positioned toward base
- d. Bottle pad (red rubber) cut or displaced
- e. Pressure gauge bent or indicator needle broken
- f. Scrubber mounts bent
- g. Scrubber dented
- h. Dirt, debris, or moisture inside case
- i. Handle loops broken (the plastic loops that hold the handle straps)
- j. One or both of the two handle straps (black nylon straps) missing or broken

(4) Make sure that the yellow mouthpiece plug is in the mouthpiece. Remove the unit from service if the plug is removed.

If the EBA 6.5 fails any of the above inspections, it should be removed from service and returned to OCENCO, Incorporated or an authorized repair station. A summary of the inspection points is given on the next page.

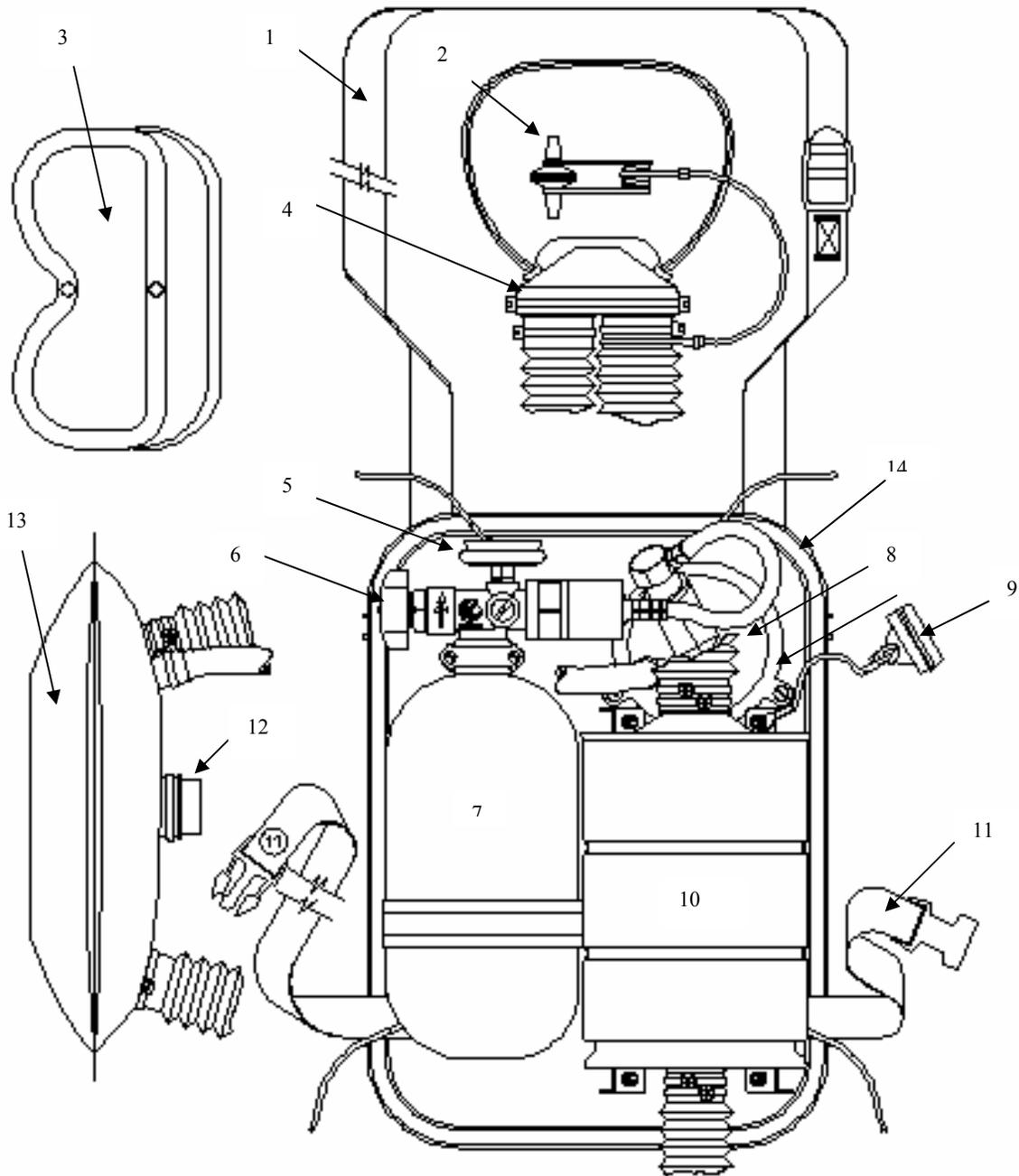
The production and maintenance of the EBA 6.5 must meet guidelines established by MSHA and NIOSH. Because of the responsibility placed on the manufacturer by NIOSH and MSHA, responsibility for the reliability of the EBA 6.5 passes to the owner or operator of this unit whenever maintenance is not performed by an authorized OCENCO service representative or agent, or when the unit has been used for purposes other than those outlined in this manual.

INSPECTION CHECKLIST

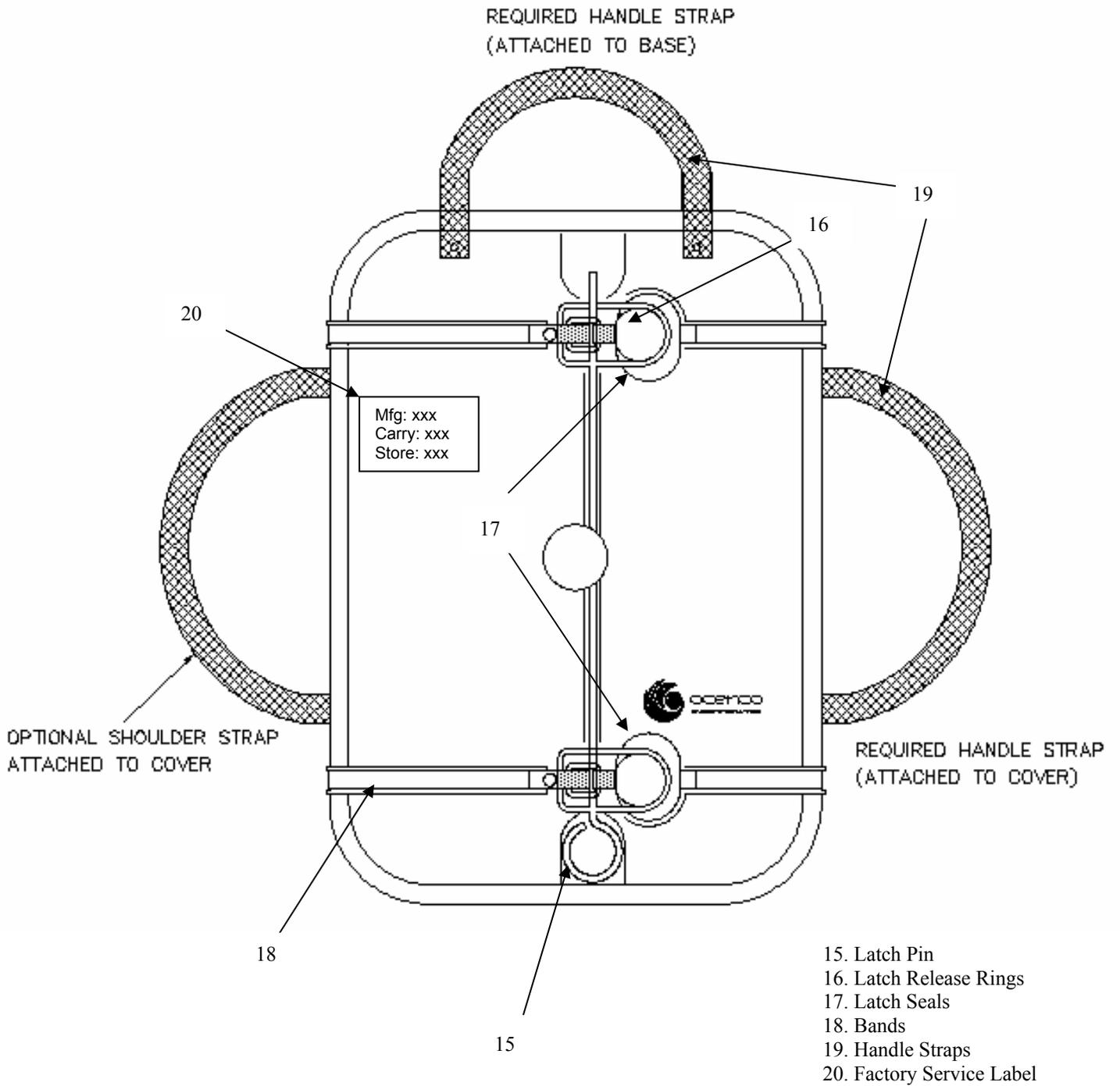
Remove the unit from service if any of the following conditions are evident:

1. View through clear case obstructed by scuffmarks, stickers, etc.
2. Gauge pressure below 2500 psi or above 3200 psi at 70°F
3. No factory installed latch seals attached
4. "U" seal open or rolled
5. Case cracked, burned, or deformed
6. Mouthpiece plug (yellow rubber) not in place
7. Loose Parts
 - o Bottle strap (stainless steel)
 - o Scrubber canister not in mounts
 - o Screws or inserts
 - o On/Off valve positioned toward base
8. Bottle pad (red rubber) cut or displaced
9. Pressure gauge bent or indicator needle broken
10. Scrubber mounts bent
11. Scrubber canister dented
12. Dirt, debris, or moisture in case
13. Handle loops broken (the plastic loops that hold the handle straps)
14. One or both of the two handle straps (black nylon straps) missing or broken.
15. Inspect the factory service date label on the base and remove unit if past the mandatory factory service date.

EBA 6.5 PARTS DIAGRAM



- | | | |
|-------------------|---------------------|-------------------|
| 1. Neck Harness | 6. On/Off Valve | 11. Waist Harness |
| 2. Nose Clip | 7. Oxygen Bottle | 12. Relief Valve |
| 3. Goggles | 8. Demand Regulator | 13. Breathing Bag |
| 4. Mouthpiece | 9. Mouthpiece Plug | 14. Seal |
| 5. Pressure Gauge | 10. Scrubber | |



SPECIFICATIONS

The EBA 6.5 has been designed to provide respiratory protection during escape from oxygen deficient or hazardous atmospheres. This device enables the user to breathe independently of the ambient atmosphere for a minimum period of 60 minutes.

Performance Data

Operating duration	60 minutes minimum (NIOSH rating)
Note: proper use of the device for "User at Rest"	8 hours maximum
Overall dimensions	8.6 x 11.9 x 4.6 (inches)
Weight (carry in operation)	6.4 (pounds)
Minimum operating temperature	10°F (Note 1)
Recommended storage temperature range	10°F to 140°F
Nominal cylinder pressure	2500 to 3200 psi

Service life

The EBA 6.5 is designed for a service life of fifteen years if properly inspected and if the conditions of use are observed.

A Mandatory Factory Service action shall occur ten years from the date of manufacture or factory service if the units have been stored, not worn and not carried, and five years from the date of manufacture or factory service if the units have been worn or carried. The end of service life for the EBA 6.5 is fifteen years from the date of manufacture regardless of the deployment method.

The Conditions of Use for the EBA 6.5 are:

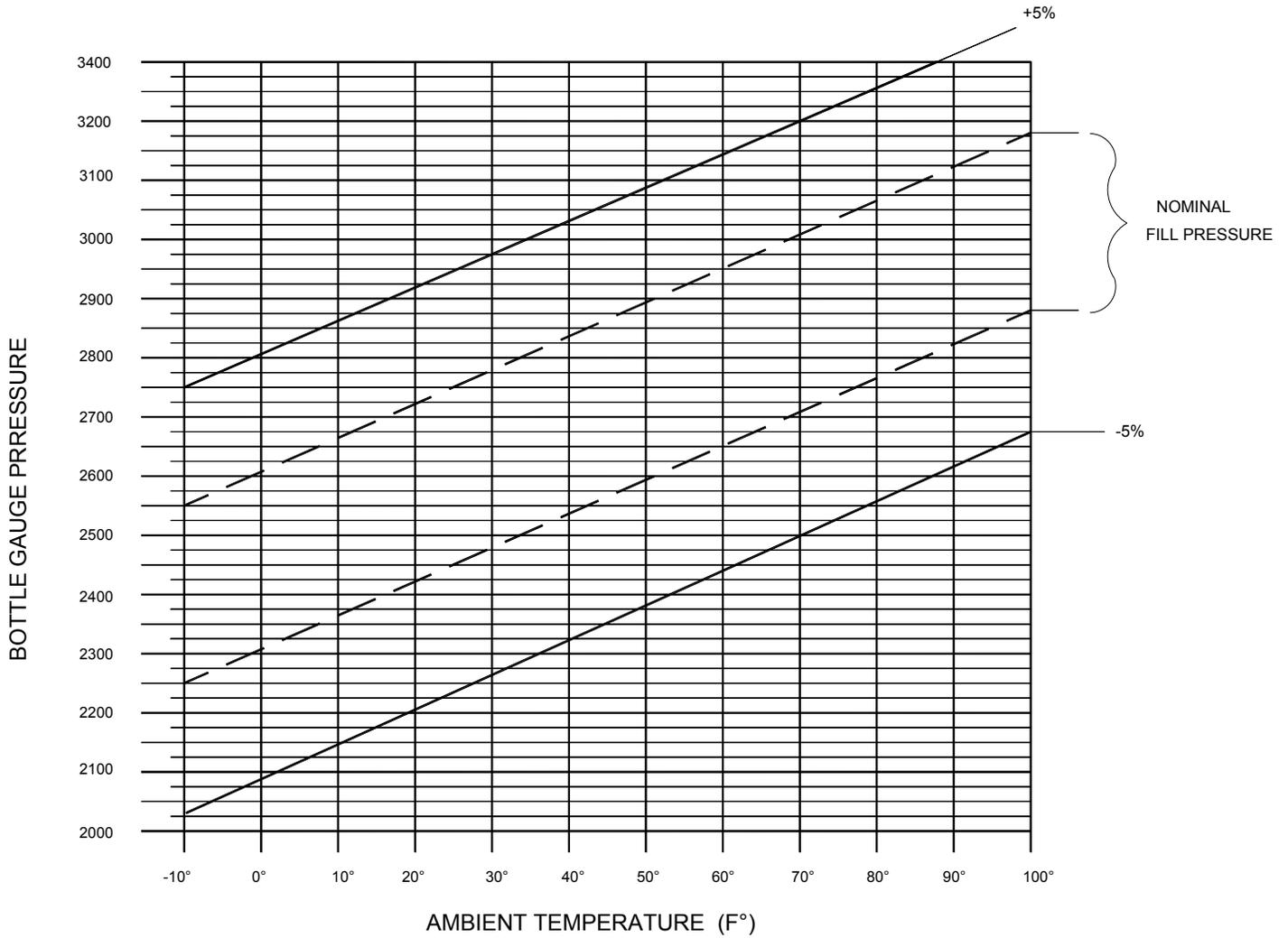
- A. Daily and 90-Day Inspections as defined in this manual.
- B. Caring for the EBA 6.5 as defined in this manual.
- C. Acceptable Storage Container: the EBA 6.5 should be stored in a fully enclosed container. The interior of the container should be lined with foam rubber or other shock absorbing material. The fit between the EBA 6.5 and the foam should be snug to prevent motion but still allow easy removal.

Scrubber life is limited to one escape event or one oxygen charge.

Note 1

If escape is necessary don the device regardless of temperature.

TEMPERATURE VS PRESSURE CHART



At no time should the gauge reading be below 2150 psi.



Figure 2: Shoulder Carry



Figure 5: Remove Cover From Base



Figure 6: Open Oxygen Valve



Figure 7: Place Neck Strap Over Head



Figure 8: Pull Mouthpiece



Figure 9: Apply Nose Clip



Figure 10: Adjust Neck Strap



Figure 11: Adjust Waist Strap



Figure 12: Place Goggles Over Eyes



EBA Approval Label

OPERATING INSTRUCTIONS

1. PULL LATCH RELEASE ROD.
2. PULL LATCH RINGS TO RELEASE BANDS.
3. REMOVE COVER.
4. OPEN OXYGEN VALVE FULLY COUNTERCLOCKWISE.
5. PLACE NECK STRAP OVER HEAD.
6. INSERT MOUTHPIECE AND BREATHE THROUGH MOUTH ONLY.
7. ATTACH NOSE CLIP.
8. BREATHE OUT, HOLD BREATH AND SQUEEZE BAG, THEN BREATHE NORMALLY.
9. ADJUST NECK STRAP FOR COMFORT.
10. CONNECT AND ADJUST WAIST STRAP.
11. PUT ON GOGGLES.
12. ESCAPE.

CAUTION: REFER TO INSTRUCTIONS ON BASE FOR OPERATION WHEN USER IS AT REST.

PERMISSIBLE ONE HOUR
SELF-CONTAINED COMPRESSED OXYGEN
BREATHING APPARATUS FOR ESCAPE ONLY



MINES SAFETY AND HEALTH ADMINISTRATION
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

APPROVAL NO. TC-13F-104
ISSUED TO
OCENCO, INCORPORATED
Pleasant Prairie, Wisconsin 53158

LIMITATIONS

APPROVED FOR RESPIRATORY PROTECTION DURING ESCAPE FROM OXYGEN DEFICIENT ATMOSPHERES, GASES AND VAPORS AT TEMPERATURES ABOVE 10° F.
APPROVED FOR USE ONLY WHEN THE CYLINDER IS CHARGED WITH COMPRESSED OXYGEN MEETING U.S.P. SPECIFICATIONS. CYLINDER SHALL MEET APPLICABLE D.O.T. SPECIFICATIONS.

CAUTION

IN MAKING REPAIRS AND REPAIRS, PARTS IDENTICAL WITH THOSE FURNISHED BY THE MANUFACTURER UNDER THE PERTINENT APPROVAL SHALL BE MAINTAINED. THIS RESPIRATOR SHALL BE SELECTED, FITTED, USED AND MAINTAINED IN ACCORDANCE WITH MINE SAFETY AND HEALTH ADMINISTRATION, AND OTHER APPLICABLE REGULATIONS.

MSHA-NIOSH APPROVAL
ISSUED TO
OCENCO, INCORPORATED
6-17-81

THE APPROVED ASSEMBLY CONSISTS OF THE FOLLOWING
OCENCO, INCORPORATED PART NUMBERS:
D14000 MODEL EBA 6.5



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INCORPORATED
10225 82nd AVENUE
Pleasant Prairie, Wisconsin 53158

C14037-1