

**TRI-STATE POST 6
BG-4 BENCH CONTEST
JUNE 4, 2013
WRITTEN EXAM**

Name _____ Company _____

Team Name _____ Working Order No. _____

1. The drainage valve opens at approximately ____ and is therefore out of the RZ reading range
A. 20 mbars
B. 15 mbars
C. 25 mbars

2. Check the supply of oxygen gas on the display unit at intervals of approximately _____
A. 20 minutes
B. 15 minutes
C. 60 minutes

3. All parts which come in contact with exhaled air must be thoroughly cleaned and _____ after use.
A. dried
B. rinsed
C. disinfected.

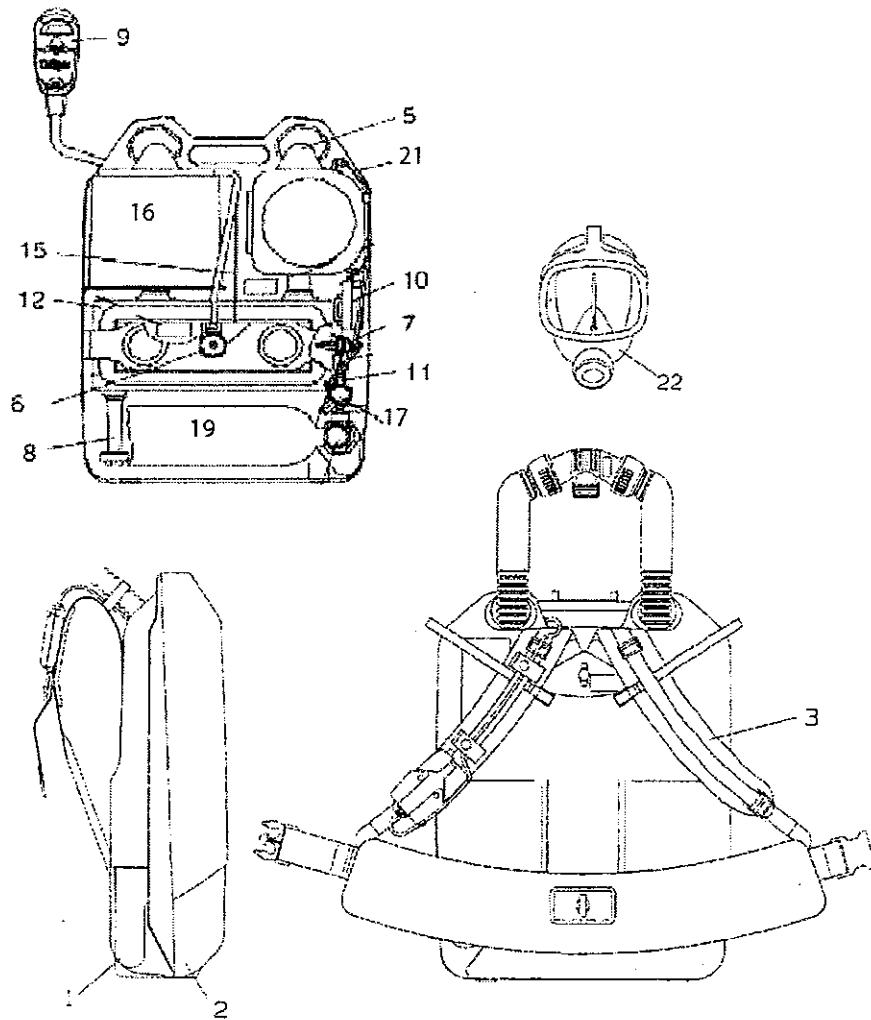
4. The breathing bag has a _____ volume.
A. 5.5 liter
B. 5.2 liter
C. 5.8 liter

5. Relief valve activation is _____ or (87psi).
A. 6 bar
B. 10 mbar
C. 5 bar

6. At the last low pressure warning approximately ____ ____ of the oxygen has been used up.
A. 75 %
B. 90 %
C. 95 %
7. Only oxygen (medical grade or better) with > ____ ____ purity is to be used to fill the BG-4 oxygen cylinders.
A. 95.9 %
B. 97.5 %
C. 99.5 %
8. The first low pressure warning occurs when the pressure drops to approximately ____ ____.
A. 750 psi.
B. 700 psi.
C. 145 psi.
9. During the positive pressure leak test, the pressure change within 1 minute must be lower than ____ ____.
A. 1 mbar
B. 10 mbar
C. .1 mbar
10. A positive pressure in the breathing circuit prevents ____ ____ air from entering the system.
A. contaminated
B. mine
C. ambient
11. The oxygen cylinder safety burst disc ruptures at ____ ____ (275 bar).
A. 3,750 psi
B. 4,000 psi
C. 3,200 psi
12. Medium pressure in the BG-4 is between ____ psi and 64 psi.
A. 58
B. 52
C. 56
13. The maximum temperature of the air used to dry parts should not go above 60 degrees C (____ ____ F).
A. 120 degrees
B. 160 degrees
C. 140 degrees

14. It is safe to use the BG-4 for up to ____ with a battery warning 1 Icon.
A. 8 hours
B. 4 hours
C. 6 hours
15. Rubber parts must be particularly protected from direct exposure to _____.
A. heat
B. radiation
C. chemicals
16. U. S. D.O.T. hydro test composite cylinders every ____ years
A. 5
B. 6
C. 3
17. The pressure reducer must be rebuilt / overhauled every _____.
A. 5 years
B. 3 years
C. 6 years
18. First stage reducer bypass output is > ____ / min.
A. 80 L
B. 60 L
C. 50 L
19. The minimum valve provides greater than ____ /min flow.
A. 80 L
B. 50 L
C. 60L
20. The BG-4 constant dosage must be 1.5 to ____ / min.
A. 1.7 L
B. 1.9 L
C. 1.8 L

BG-4



21. Identify Item No. 10

- A. Switch Box
- B. Sensor Box
- C. Distribution Box

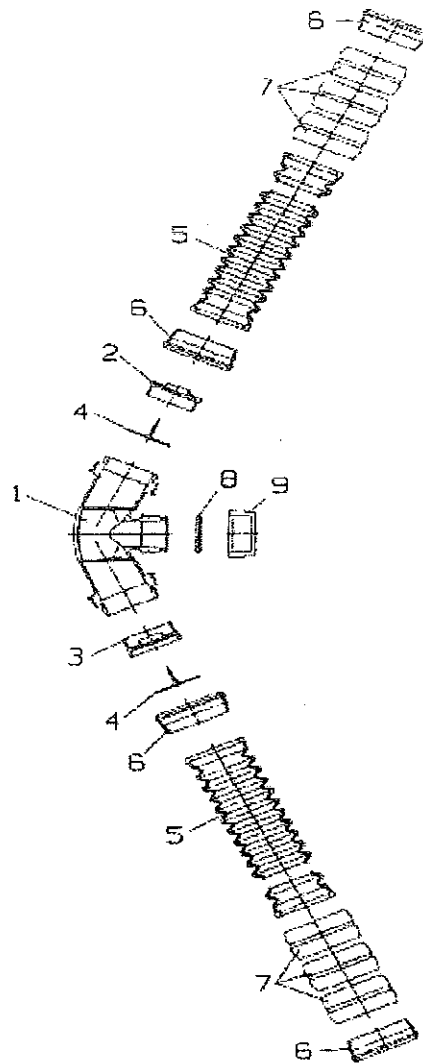
22. Identify Item No. 11

- A. Sensor Reducer Unit
- B. Pressure Unit
- C. Sensor Unit

23. Identify Item No. 21

- A. Distribution Hose
- B. Oxygen Supplement Hose
- C. Dosage Hose

Breathing Hose Assembly



24. Identify Item No. 2

- A. Exhalation Valve Seat
- B. Inhalation Valve Seat
- C. Exhalation Valve Housing

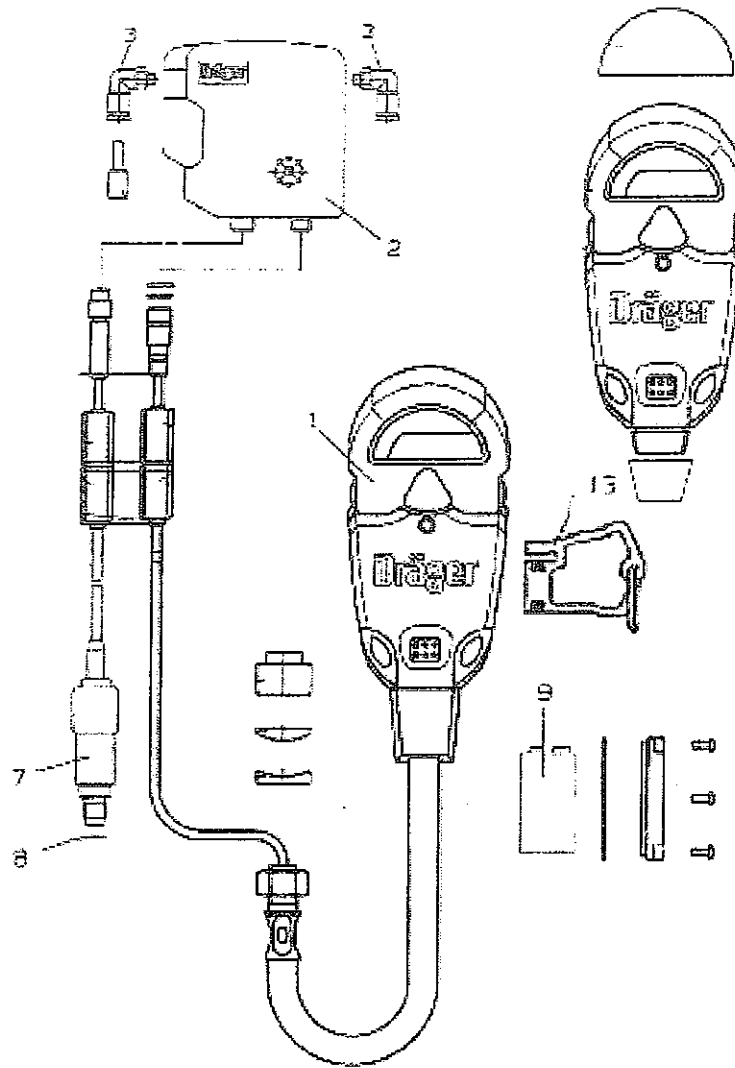
25. Identify Item No. 3

- A. Exhalation Valve Seat
- B. Inhalation Valve Seat
- C. Exhalation Valve Housing

26. Identify Item No. 8

- A. Facepiece Connector O'Ring
- B. Coupler Sealing Ring
- C. Toroidal Sealing Ring

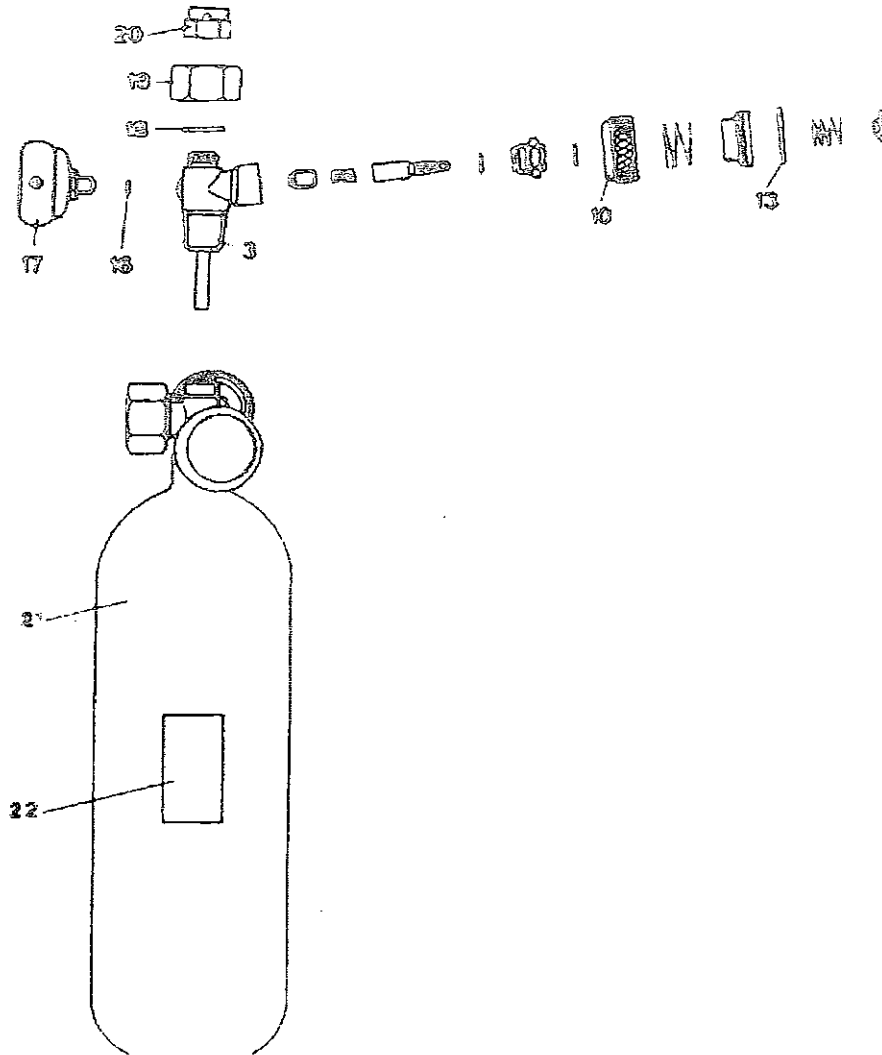
Sentinel



27. Identify Item No. 7

- A. Pressure Sending Unit
- B. Pressure Sensor
- C. Pressure Reducer Sensor

Oxygen Cylinder



30. Identify Item No. 20

- A. Bursting Disc
- B. Safety Disc
- C. Safety Cap

TRI-STATE POST 6
BG-4 BENCH CONTEST JUNE 4, 2013
ANSWERS

- | | | | |
|-----|--------------------------|-------|----------------|
| 1. | No. 88 | p. 17 | B. 15 mbars |
| 2. | No. 27 | p. 14 | B. 15 minutes |
| 3. | No. 55 | p. 16 | C. disinfected |
| 4. | No. 31 | p. 14 | A. 5.5 liters |
| 5. | No. 82 | p. 17 | A. 6 bar |
| 6. | No. 45 | p. 15 | C. 95 % |
| 7. | No. 73 | p. 17 | C. 99.5 % |
| 8. | No. 41 | p. 15 | B. 700 psi |
| 9. | No. 11 | p. 13 | A. 1 mbar |
| 10. | No. 14 | p. 13 | C. ambient |
| 11. | No. 83 | p. 17 | B. 4,000 psi |
| 12. | No. 49 | p. 15 | A. 58 |
| 13. | No. 61 | p. 16 | C. 140 degrees |
| 14. | No. 76 | p. 17 | B. 4 hours |
| 15. | No. 39 | p. 15 | B. radiation |
| 16. | No. 63 | p. 16 | A. 5 |
| 17. | No. 34 | p. 14 | C. 6 years |
| 18. | No. 24 | p. 14 | C. 50L |
| 19. | No. 30 | p. 14 | A. 80L |
| 20. | No. 18 | p. 14 | B. 1.9 L |
| 21. | A. Switch Box | p. 19 | |
| 22. | C. Sensor Unit | p. 19 | |
| 23. | A. Distribution Hose | p. 19 | |
| 24. | B. Inhalation Valve Seat | p. 22 | |
| 25. | A. Exhalation Valve Seat | p. 22 | |
| 26. | C. Toroidal Sealing Ring | p. 22 | |
| 27. | B. Pressure Sensor | p. 25 | |
| 28. | A. Valve Crater | p. 24 | |
| 29. | B. Clamp Fitting | p. 24 | |
| 30. | A. Bursting Disc | p. 28 | |

5-13-13

**TRI-STATE POST 6
BIOPAK 240-R BENCH CONTEST
JUNE 4, 2013
WRITTEN EXAM**

Name _____ Company _____

Team Name _____ Working Order No. _____

1. Constant use is defined as being in used at least _____
_____.
A. once a week
B. once a month
C. every 2 weeks

2. The CO2 Scrubber should be replaced after _____.
A. 4 hours
B. removing lid
C. 1 use

3. The Bio Pak 240 Revolution is approved when the oxygen cylinder is fully charged with compressed _____ or _____ grade oxygen at 3000psi.
A. hospital, pure
B. medical, aviation
C. hospital, divers

4. A low battery alarm is indicated by a Red, Green, Blue light sequence followed by a short alarm chirp any time the battery will not complete a _____ mission.
A. four-hour
B. mine rescue
C. underground recovery

5. Allow all components to remain wetted by the cleaning solution a minimum of _____.
A. 15 minutes
B. 5 minutes
C. 10 minutes

6. Bio Pak tidal volume is over _____.
A. 6 liters
B. 5 liters
C. 6.5 liters

7. Allow the oxygen cylinder to _____ after filling to determine the correct pressure.
- A. stabilize
 - B. settle
 - C. cool
8. The Bio Pak 240 Revolution is suitable for respiratory protection during entry into and escape from oxygen deficient atmospheres with a temperature range of _____ F (-15C) to 110 degree F (43C).
- A. 15 degree F
 - B. 5 degree F
 - C. 10 degree F
9. The RMS Module IS NOT _____ with the TRIM light pipe connector or the battery door removed.
- A. watertight
 - B. sealed
 - C. air tight
10. DOT require carbon fiber wrapped aluminum cylinders be tested by an approved facility on a 5-year cycle from the date _____.
- A. in service
 - B. of purchase
 - C. of manufacture
11. Freeze the ice canister for a minimum of 8 hours before use at a maximum temperature of _____ (-12C).
- A. 10 degrees F
 - B. 5 degrees F
 - C. 15 degrees F
12. In addition to normal Turn-Around Maintenance, the SCBA shall be _____ and high-pressure tested on a monthly basis if the SCBA is in constant use once a month or placed into long-term storage.
- A. properly assembled
 - B. visually inspected
 - C. thoroughly cleaned
13. Do not expose opened CO2 scrubber cartridges to ambient air for more than _____.
- A. 30 minutes
 - B. 15 minutes
 - C. 20 minutes

14. If the cylinder is removed for washing you Must Attach the Regulator Wash Cover provided in the test kit to seal off the regulator from _____ while washing the lower housing.
- A. **water**
 - B. **dirt**
 - C. **contamination**
15. A good facepiece seal is important to achieving _____ and proper SCBA duration.
- A. **full protection**
 - B. **sufficient oxygen**
 - C. **reduced leakage**
16. The hoses and facepiece adapter MUST be installed with the breathing gas directional arrows facing _____.
- A. **DOWN**
 - B. **UP**
 - C. **SIDEWAYS**
17. Do not change battery in _____.
- A. **hazardous area**
 - B. **explosive atmospheres**
 - C. **contaminated atmospheres**
18. To get the most accurate flow meter reading you must have a minimum of _____ (104 bar) in the cylinder.
- A. **2000 psi**
 - B. **1500 psi**
 - C. **1750 psi**
19. The RMS will automatically power down once the system pressure has dropped below _____.
- A. **50 psi**
 - B. **150 psi**
 - C. **25 psi**
20. The low oxygen alarm must activate between _____ - _____ psig and is indicated by a flashing red light and audible alarm.
- A. **650-750**
 - B. **650-700**
 - C. **600-650**

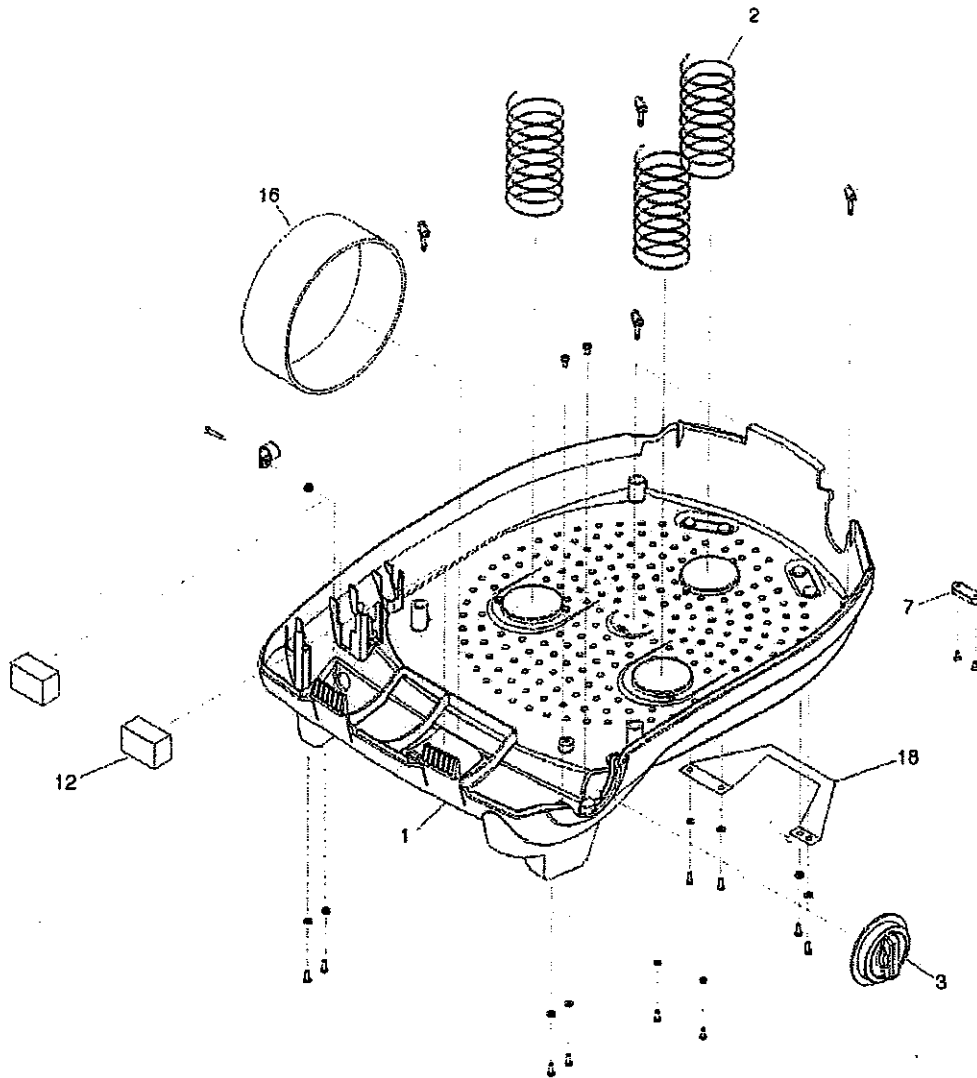
BioPak 240 Revolution Complete



21. Identify Item No. 4

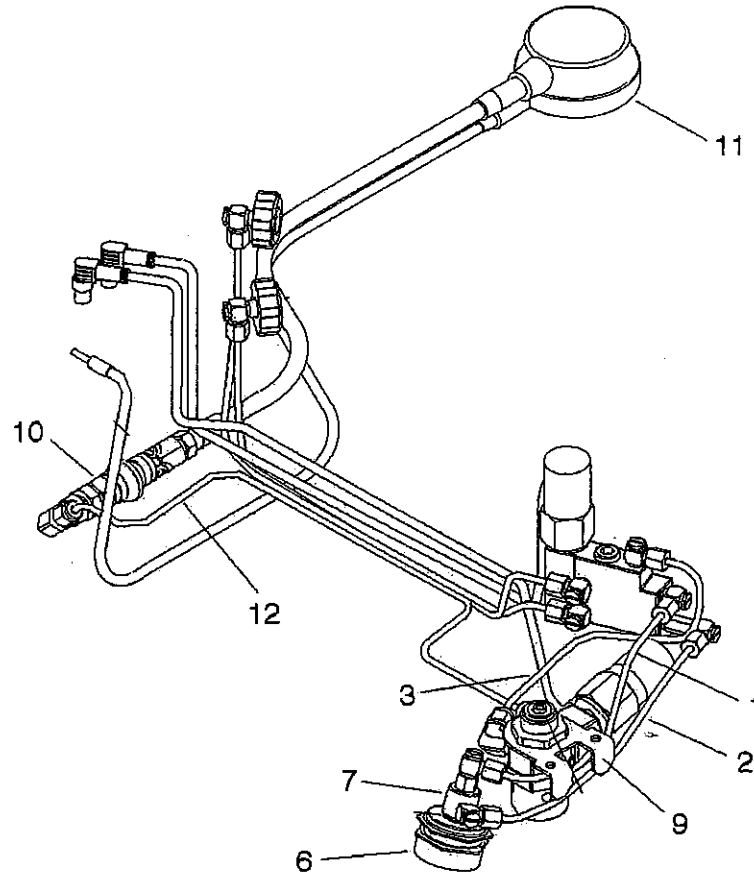
- A. Back Cover Assembly
- B. Back Housing Assembly
- C. Upper Housing Assembly

Lower Housing Assembly



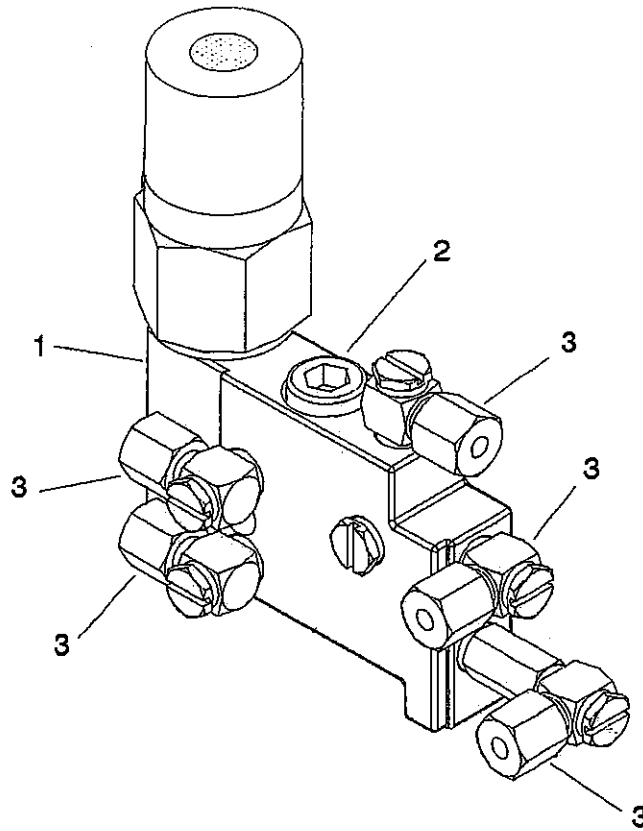
22. Identify Item No. 3
- A. External Oxygen Knob
 - B. Outer Oxygen Knob
 - C. External Cylinder Knob

Pneumatic Assembly



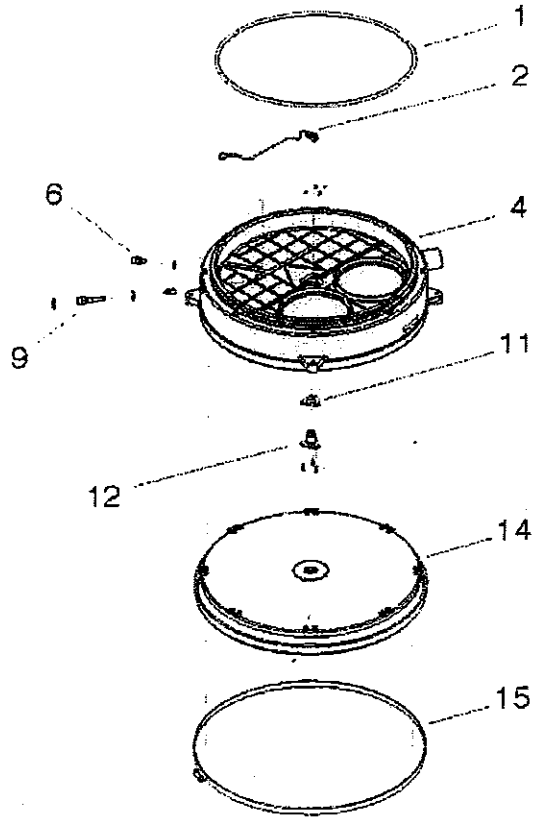
23. Identify Item No.11
- A. Remote Cylinder Gauge
 - B. External Gauge Assembly
 - C. Remote Gauge Assembly

Manifold Assembly



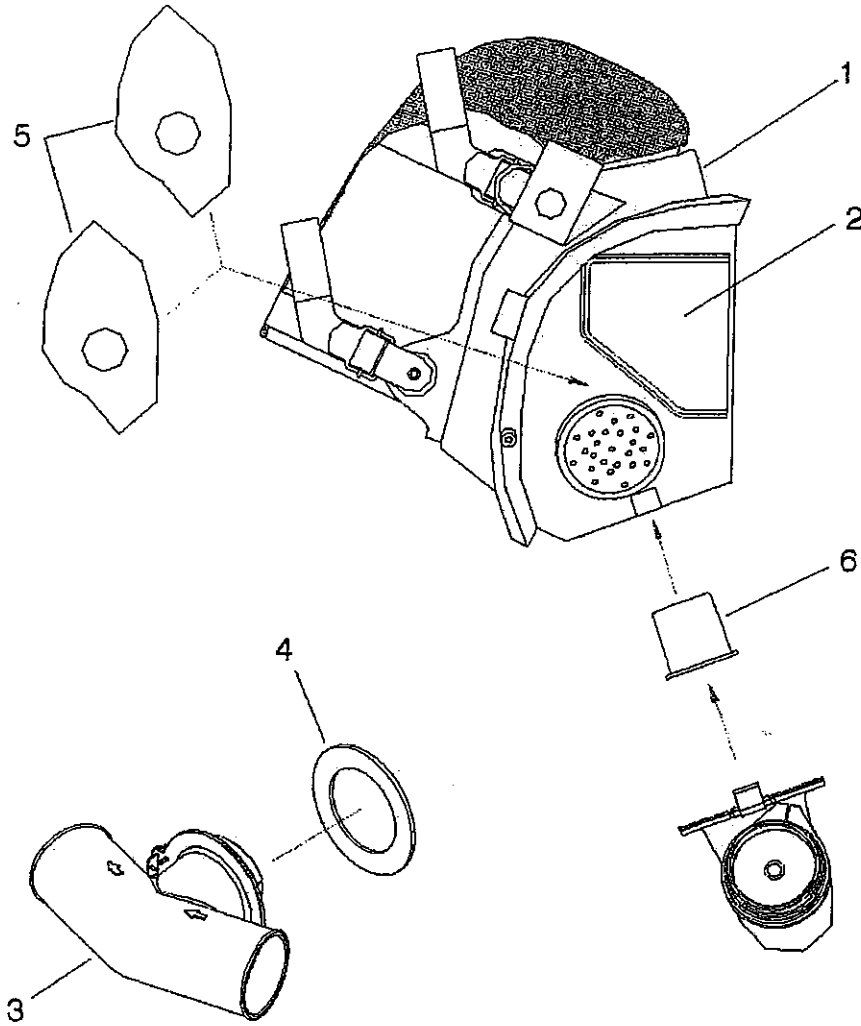
24. Identify Item No.2
- A. Constant Add Flow Adjustor Assembly
 - B. Constant Add Flow Restrictor Assembly
 - C. High Pressure Flow Restrictor Assembly

Center Section Assembly



25. Identify Item No.14
- A. External Diaphragm
 - B. Diaphragm Disc
 - C. Flexible Diaphragm

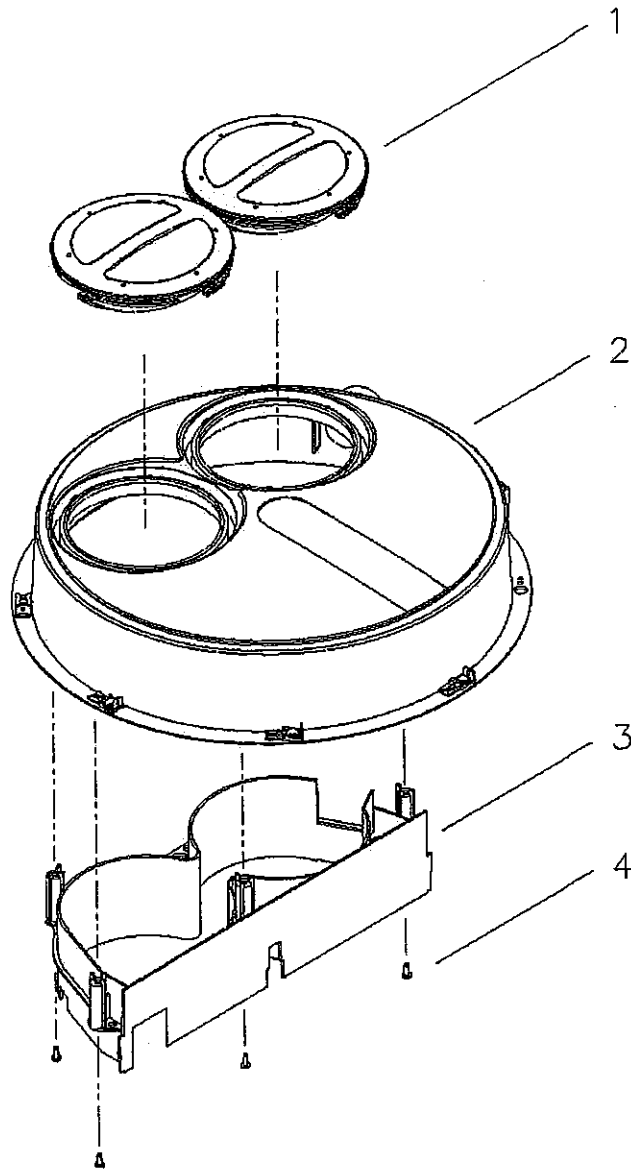
Facepiece Assembly



26. Identify Item No. 3

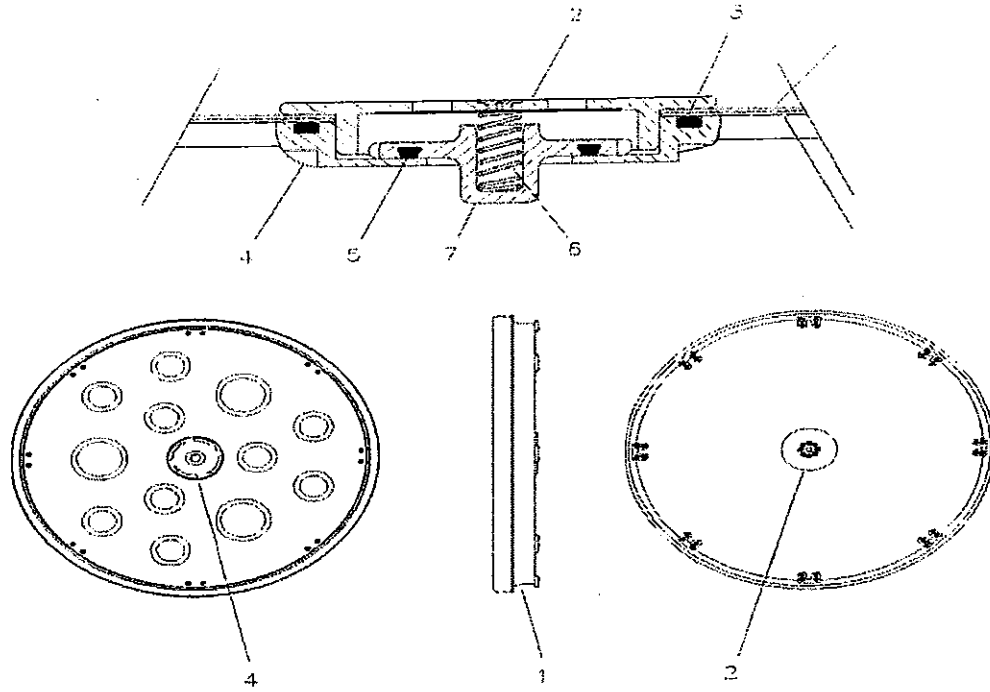
- A. Breathing Hose Adapter
- B. Facepiece Connector Assembly
- C. Facepiece Adaptor Assembly

Center Section Lid Assembly



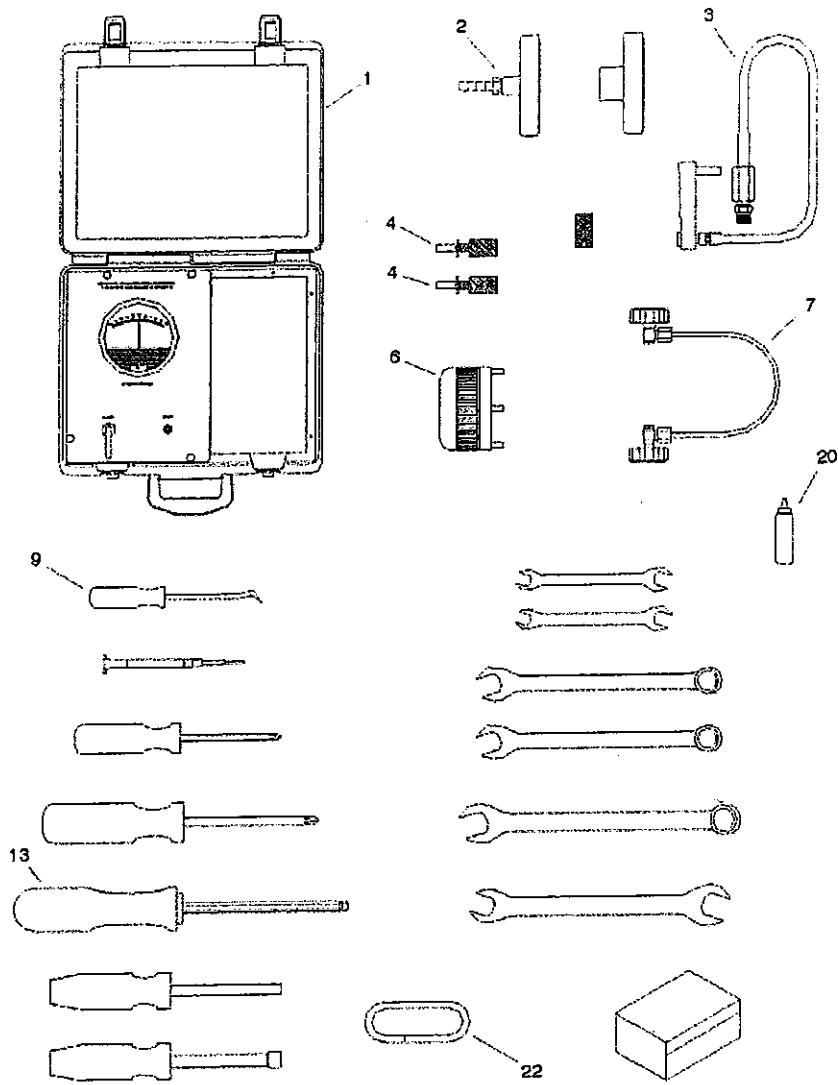
27. Identify Item No. 3
- A. Flow Restrictor
 - B. Flow Baffle
 - C. Flow Plate

Diaphragm Assembly



28. Identify Item No. 2
- A. Vent Release
 - B. Vent Valve
 - C. Vent Cap

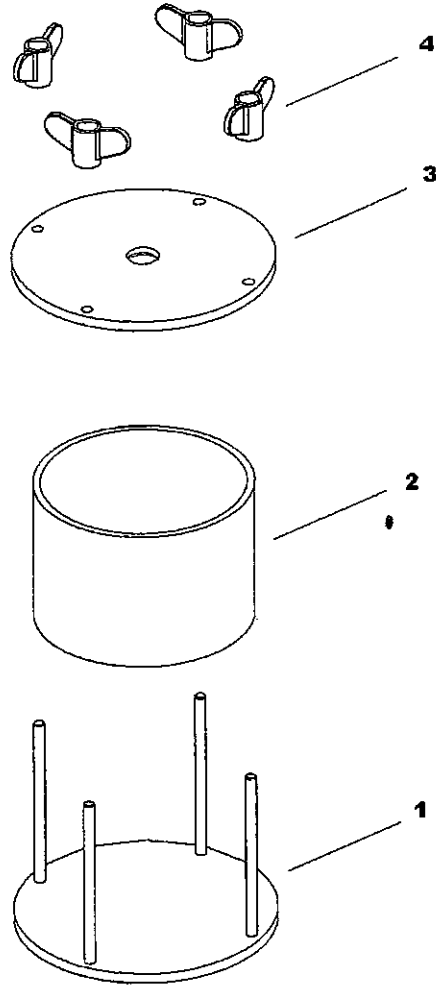
Tool Kit



29. Identify Item No. 4

- A. Test Key
- B. Test Spacers
- C. Tests Plugs

Ice Canister Freeze Form



30. Identify Item No. 2

- A. Freeze Tube
- B. Ice Tube
- C. Ice Canister

BIO-PAK 240-REVOLUTION
JUNE 4, 2013
WRITTEN TEST ANSWERS

- | | | | |
|-----|--------|--|-----------------------|
| 1. | Pg. 13 | No. 53 | B. once a month |
| 2. | Pg. 16 | No. 85 | C. 1 use |
| 3. | Pg. 10 | No. 12 | B. medical, aviation |
| 4. | Pg. 13 | No. 47 | A. four-hour |
| 5. | Pg. 12 | No. 31 | C. 10 minutes |
| 6. | Pg. 15 | No. 77 | A. 6 liters |
| 7. | Pg. 11 | No. 13 | C. cool |
| 8. | Pg. 10 | No. 11 | B. 5 degree |
| 9. | Pg. 11 | No. 27 | A. watertight |
| 10. | Pg. 11 | No. 16 | C. of manufacture |
| 11. | Pg. 12 | No. 34 | A. 10 degrees F |
| 12. | Pg. 13 | No. 52 | B. visually inspected |
| 13. | Pg. 12 | No. 39 | C. 20 minutes |
| 14. | Pg. 12 | No. 29 | C. contamination |
| 15. | Pg. 11 | No. 18 | A. full protection |
| 16. | Pg. 13 | No. 42 | B. UP |
| 17. | Pg. 15 | No. 82 | A. hazardous area |
| 18. | Pg. 13 | No. 43 | B. 1500 psi |
| 19. | Pg. 13 | No. 54 | C. 25 psi |
| 20. | Pg. 15 | No. 83 | A. 650-750 |
| 21. | Pg. 17 | C. Upper Housing Assembly | |
| 22. | Pg. 18 | A. External Oxygen Knob | |
| 23. | Pg. 19 | C. Remote Gauge Assembly | |
| 24. | Pg. 20 | B. Constant Add Flow Restrictor Assembly | |
| 25. | Pg. 21 | C. Flexible Diaphragm | |
| 26. | Pg. 28 | C. Facepiece Adapter Assembly | |
| 27. | Pg. 22 | B. Flow Baffle | |
| 28. | Pg. 23 | C. Vent Cap | |
| 29. | Pg. 29 | A. Test Key | |
| 30. | Pg. 25 | A. Freeze Tube | |