

## STATEMENTS OF FACT BENCH BG-4 CONTEST

1. A positive pressure leak could be caused by a leakage in or at device components.
2. The battery in the Sentinel should be replaced every 6 months.
3. Dow Corning 111 is to be used to lubricate o-rings.
4. The pressure relief valve is designed to open when the pressure within the breathing circuit is between +20 and +50 millimeters (+2 mbar and +5 mbar) of pressure measured on the water gage.
5. To prepare for testing adjust zero point of the RZ-25 tester.
6. Test adapter is used to connect the BG-4 apparatus to the RZ-25 tester.
7. A leaky exhalation or inhalation valve could be caused by a defective valve seat or valve disc.
8. During the exhalation valve test, if valve is operating properly, -10 mbar is indicated on the pressure gauge.
9. The EPDM breathing hoses use quarter turn connectors.
10. During testing of the inhalation valve, if valve is operating properly, +10 mbar is indicated on the pressure gauge.
11. During the positive pressure leak test, the pressure change within 1 minute must be lower than 1 mbar.
12. Only DRAGERSORB 400 is to be used to fill the refillable cartridge.
13. The factory filled cartridge is good for 4 years from the manufacture date.
14. A positive pressure in the breathing circuit prevents ambient air from entering the system.
15. The BG-4 is approved with 1 time factory packed or refillable style cartridge.
16. The Sentinel monitoring system comprises a sensor unit, switchbox, and Sentinel display.
17. A steel cylinder is full at 3135 psi when a + is stamped at hydro test.
18. The BG-4 constant dosage must be 1.5 to 1.9 L/min.

19. The drainage valve should not open at less than 10 mbar.
20. A fully filled steel oxygen cylinder holds 440 liters of medical oxygen.
21. The accuracy of the Sentinel pressure measurement is +or- 2% of the final value.
22. Never replace the battery in potentially explosive areas.
23. First stage reducer dosage output is 1.5 to 1.9 L/min.
24. First stage reducer bypass output is >50 L/min.
25. The weight of a fully charged BG-4 apparatus is 15kg (33 lbs)
26. The first stage reducer relief valve activation is 6 bar (87psi)
27. Check the supply of oxygen gas on the display unit at intervals of approximately 15 minutes.
28. During the constant dosage test, the breathing bag is inflated, the RZ-25 tester is set to red dosage, and the pressure relief tappet is capped.
29. During the constant dosage test, the needle of the RZ-25 tester should automatically settle between 1.5 and 1.9 LPM.
30. The minimum valve provides greater than 80 L/min flow.
31. The breathing bag has a 5.5 liter volume.
32. Insert speech diaphragm, install retainer ring and tighten with spanner wrench.
33. The belt and harness must be dried prior to storage, to prevent growth of mold and fungus.
34. The pressure reducer must be rebuilt/overhauled every 6 years.
35. Symbol X with error code indicates a failed self check.
36. The Sentinel converts pressure into digital signal.
37. The cylinder connector and cylinder valve must not be contaminated with oil or grease.
38. Three hexagon socket head screws are used in the battery cover of the Sentinel.

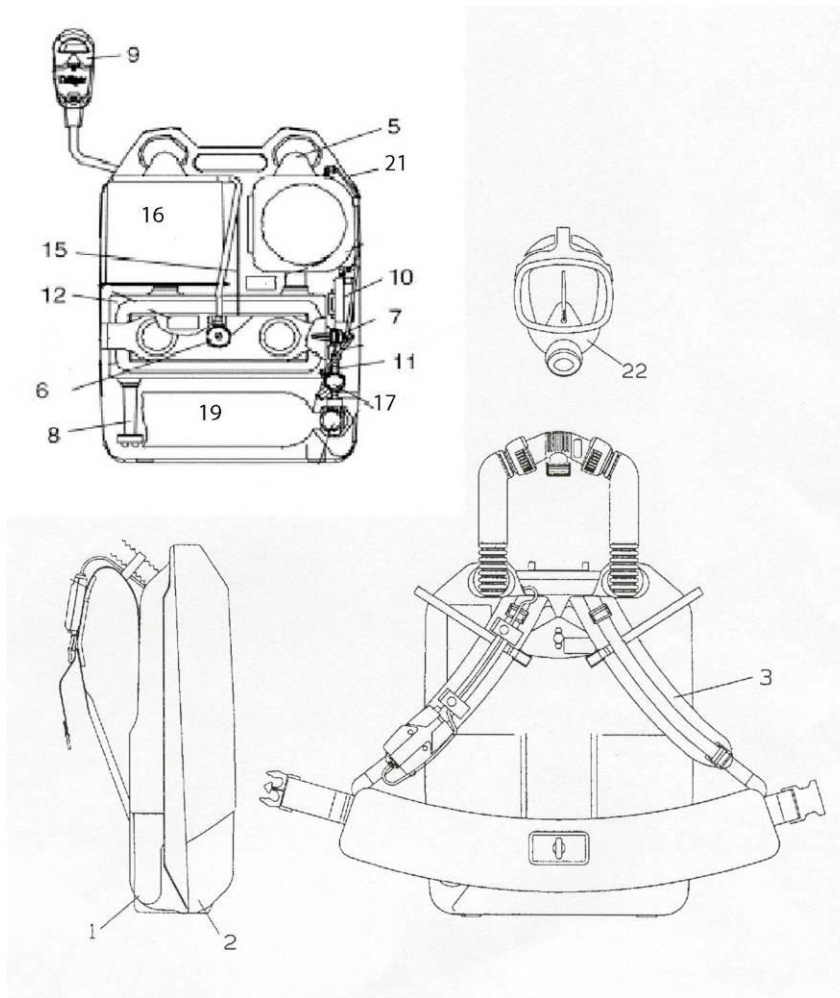
39. Rubber parts must be particularly protected from direct exposure to radiation.
40. Do not use any solvents, such as acetone, alcohol, benzene, white spirit, trichloroethylene, etc. for cleaning rubber and silicone parts.
41. The first low pressure warning occurs when the pressure drops to approximately 700 psi.
42. At the first low pressure warning approximately 75% of the oxygen has been used up.
43. The last low pressure warning occurs when pressure has dropped to approximately 145 psi.
44. During the low pressure warning test, the alarm should activate at approximately 700 PSI for a 4 hour apparatus.
45. At the last low pressure warning approximately 95% of the oxygen has been used up.
46. To start the main alarm, press the Yellow panic button in center of the Sentinel.
47. When the first low pressure warning occurs, the alarm sounds intermittently for approximately 30 seconds and the red LED flashes constantly.
48. When the last low pressure warning occurs, the alarm sounds intermittently without stopping and the red LED flashes constantly.
49. Medium pressure in the BG-4 is between 58 psi and 64 psi.
50. Medium pressure is delivered to the minimum valve.
51. Remove the Tally Key to activate the motion sensor.
52. The drainage valve opens at more than 10 mbar.
53. The BG-4 breathing circuit is designed with an air cooler that can be filled with ice to reduce the temperature of the inhaled breath.
54. The venting hole located in the air cooler lid must point upwards.
55. All parts which come in contact with the exhaled air must be thoroughly cleaned and disinfected after use.
56. Disinfect parts by immersing them in a disinfectant bath using Airkem 33.

57. Before washing the minimum valve, it is necessary to isolate the minimum valve with plug.
58. Attach minimum valve to breathing bag so that the pin of the minimum valve and the mark on the breathing bag line up.
59. All parts which have been disinfected should be rinsed thoroughly under running water.
60. CO<sub>2</sub> absorber is not approved for use after indicated expiration date.
61. The maximum temperature of the air used to dry parts should not go above 60 degree C (140 degree F).
62. Replace the high pressure O-ring located on the pressure reducer yearly for units which are in constant use.
63. U.S. D.O.T. hydro test composite cylinders every 5 years.
64. Replace the o-ring at the plug-in coupling at least once every year for units which are in constant use.
65. The inhalation valve should be replaced every 3 years for units which are in constant use.
66. The exhalation valve should be replaced every 3 years for units which are in constant use.
67. The o-ring under the speech diaphragm should be lubricated with Dow Corning 111.
68. The pressure reducer should be returned to the manufacturer or their agent for complete overhaul after at least 6 years usage.
69. A steel oxygen cylinder must be retested by a certified testing facility every 5 years.
70. The BG-4 is approved for use at temperatures above -5 degree C (23 degree F)
71. The breathing bag is made of polyurethane.
72. A defective pressure reducer should be returned to the manufacturer or their agent for service as needed.
73. Only oxygen (medical grade or better) with > 99.5% purity is to be used to fill the BG-4 oxygen cylinders.

74. The use of ice in the cooling system is only required at ambient temperature above 0 degree C (32 degree F).
75. Pressurized oxygen in contact with oil, grease, or other contamination can result in fire or explosion.
76. It is safe to use the BG 4 for up to 4 hours with a battery warning 1 Icon.
77. The battery must be replaced if battery warning 2 Icon is indicated.
78. A defective pressure reducer is the probable cause if the manual by-pass valve does not blow-off.
79. The green LED flashes to indicate that the Sentinel is operating normally.
80. When the Tally Key is removed, the motion sensor is activated.
81. Bypass output is > 50 L/min.
82. Relief valve activation is 6 bar or (87 psi).
83. The oxygen cylinder safety burst disc ruptures at 4,000 psi (275 bar).
84. Refillable cartridge concerns are over packing and under packing.
85. The EPDM and silicone masks allow 90% peripheral vision.
86. Polycarbonate or Plexiglas lenses can be used in the mask.
87. A minimum of 2600 psi is needed for a Sentinel unit to perform a proper high pressure leak test.
88. The drainage valve opens at approximately 15 mbar and is therefore out of the RZ reading range.
89. To prepare the ice pack:  
  
Fill the ice receptacle with water up to 2 inches from rim  
Freeze at least 16 hours @ -15 degree C (5 degree F)  
Fill to rim with water  
Freeze again for another 8 hours
90. Never use a leaking mask.
91. If the speech diaphragm is deformed or shows signs of damage, it must be replaced.
92. The BG-4 display lights up when the button is briefly pressed.

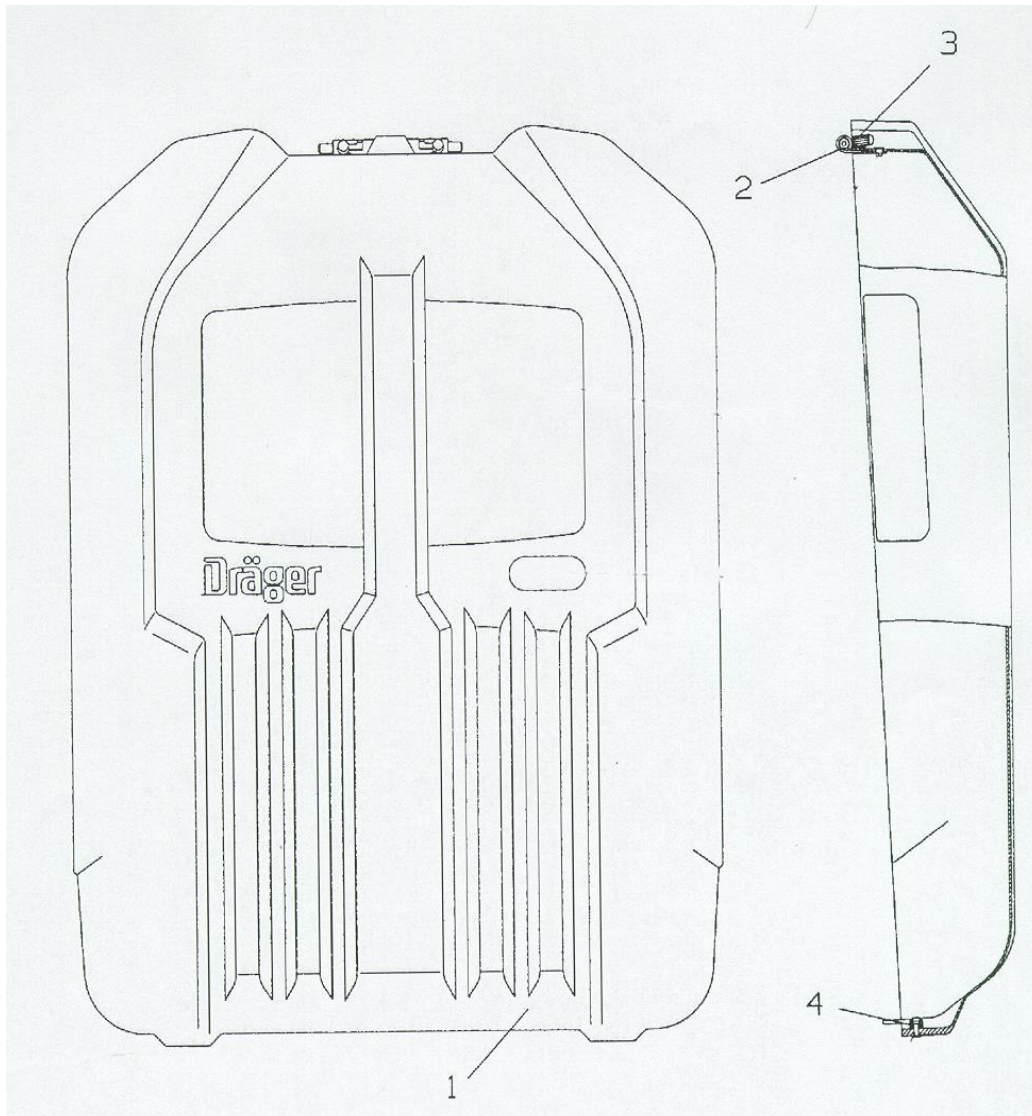
93. Press then release the right hand button to display temperature.
94. Do not re-use factory packed cartridges.
95. The breathing hoses are equipped with anti-crush rings.
96. The shelf life of the factory packed CO<sub>2</sub> absorber is reduced after installation in the BG4, provided that the breathing bag, breathing hose and relief valve are connected and the breathing circuit is sealed by means of sealing cap.
97. After a factory packed CO<sub>2</sub> absorber has been installed in an apparatus, the installation date must be marked on the housing.
98. When conducting component checks use a test pressure between +7 mbar and +10 mbar with a max pressure loss of 1 mbar/min.
99. Only the following batteries are approved for use in the Sentinel:
  - Rayovac
  - Eveready
  - Panasonic
  - Ultra life Lithium
100. The amount of time remaining until the residual pressure warning is displayed on the Sentinel display.

## BG-4



1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
1	Carrying Housing	12	Breathing Bag
2	Cover Shell , complete	15	Lever, Complete
3	Shoulder Pad Assembly	16	Regenerative Canister
5	Cooler	17	Pressure Reducer BG4
6	Relief valve, Complete	19	Oxygen Cylinder
7	Minimum Valve	21	Distribution Hose
8	Drain Valve	22	Panorama Nova Mask
9	Sentinel		
10	Switch Box		
11	Sensor Unit		

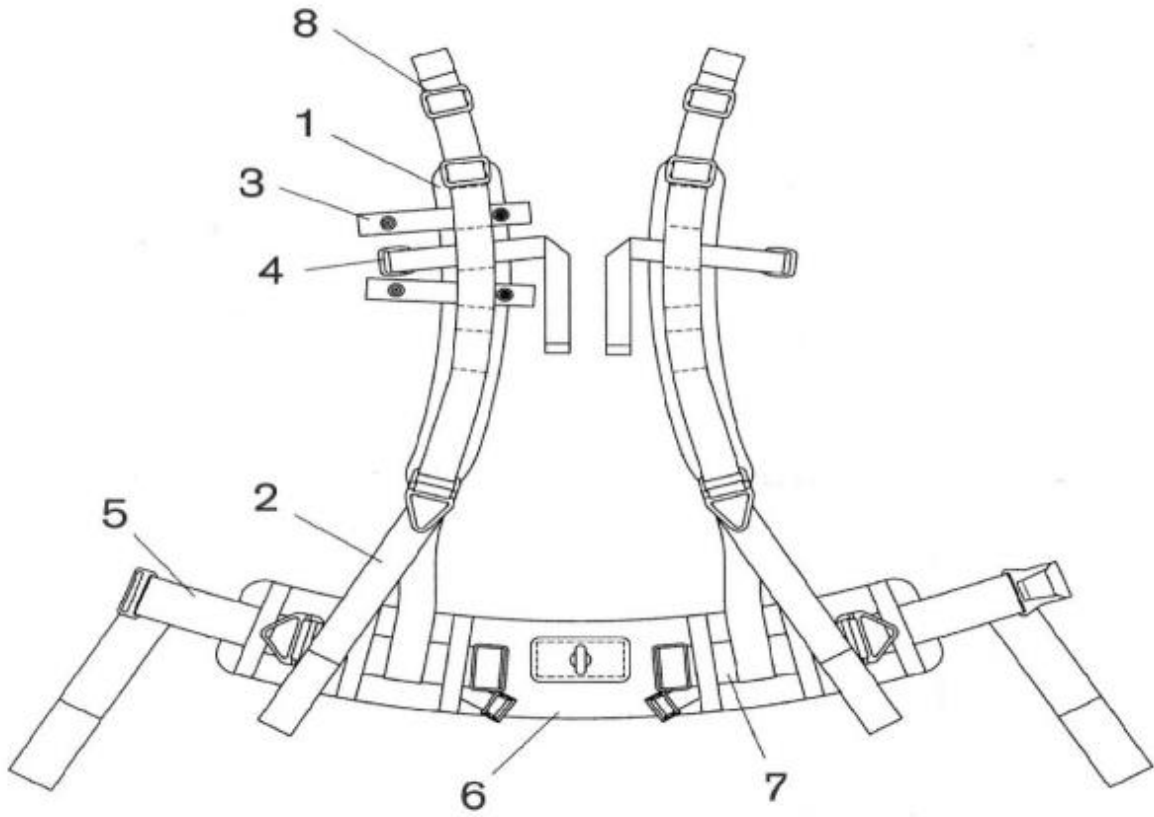
## Cover



1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
1	Cover Shell	3	Grip Cap
2	Hinge	4	Button

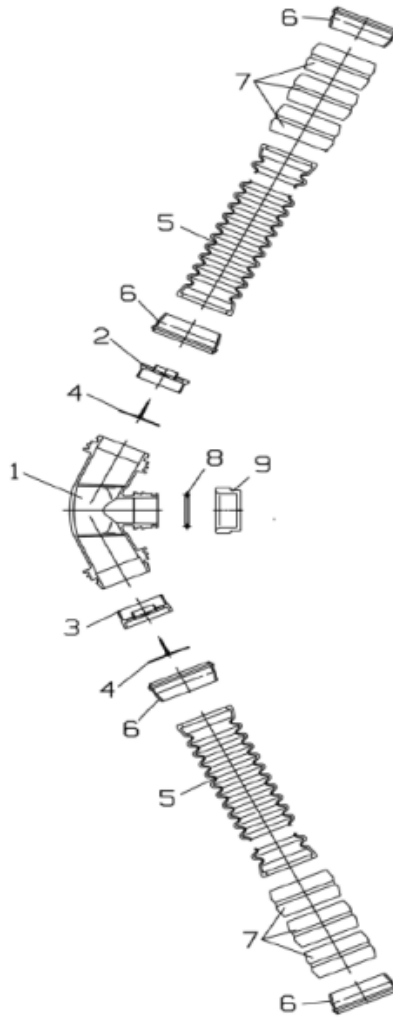


## Harness Assembly



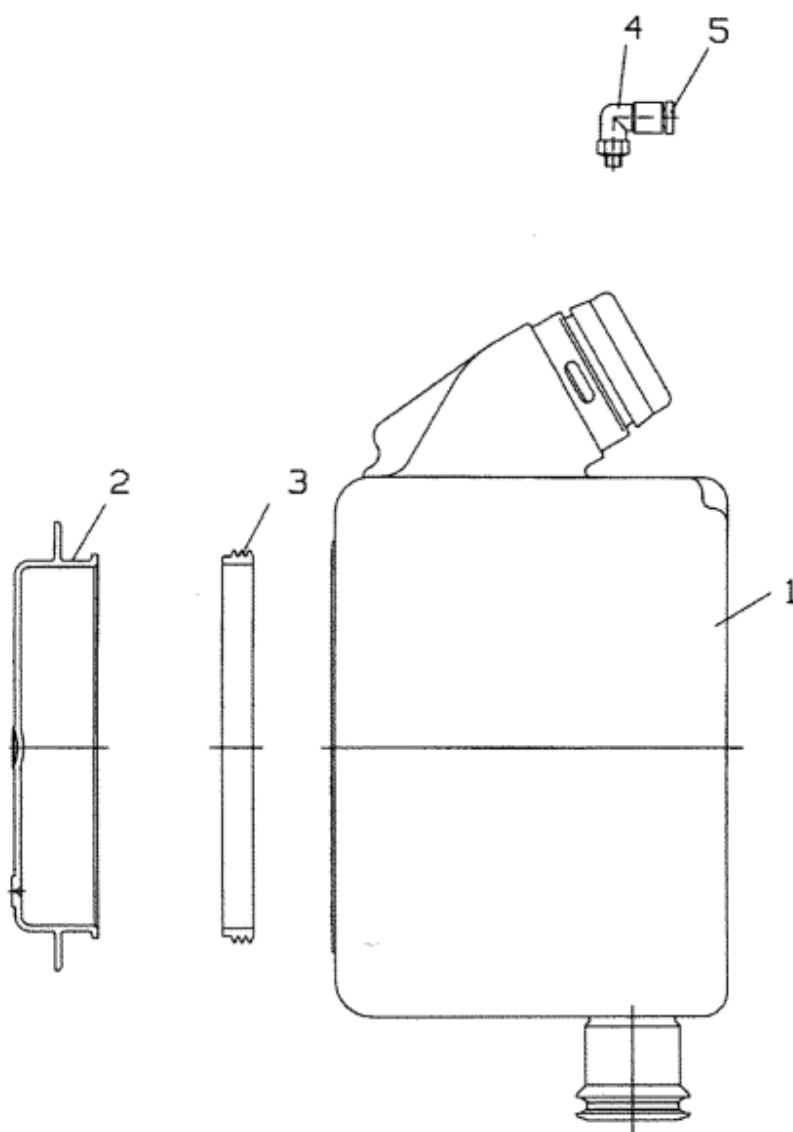
1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
1	Shoulder Pad Assembly	5	Adjusting Belt Assembly
2	Shoulder Adjusting Strap	6	Waistbelt
3	Hose Clip	7	Belt Assembly
4	Hose Strap Harness	8	Buckle

## Breathing Hose Assembly



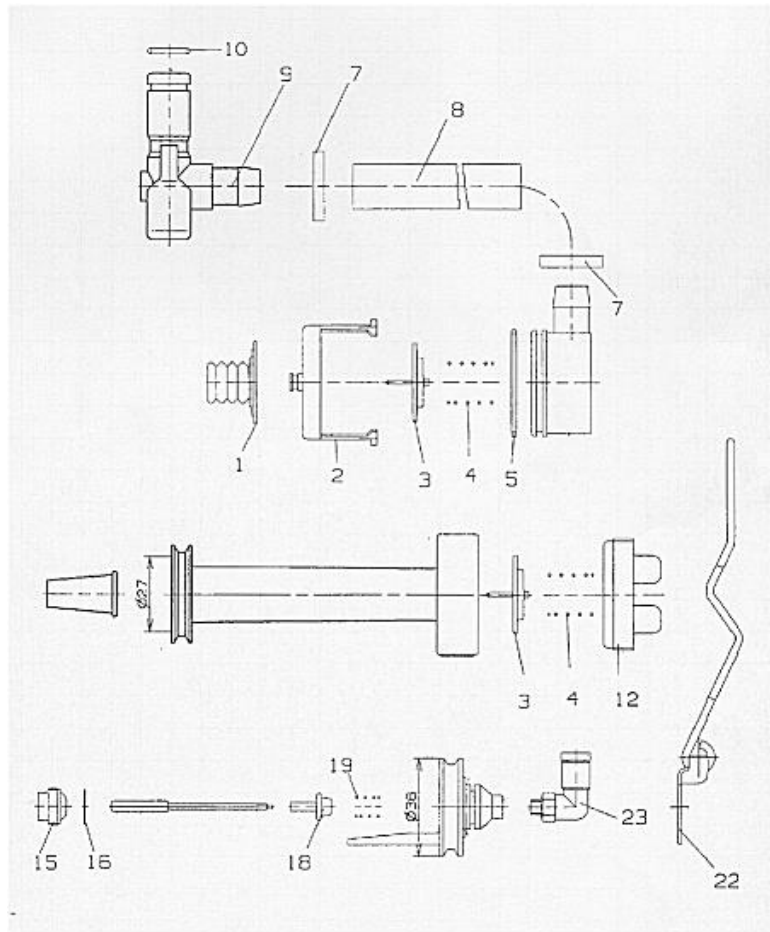
1 Cons. No.	2 Designation	1 Cons. No.	2 Designation
1	Coupling	6	Bayonet Ring
2	Inhalation Valve Seat	7	Hose Holder
3	Exhalation Valve Seat	8	Toroidal Sealing Ring
4	Valve Disc	9	Sealing Cap
5	Corrugated Hose		

## Cooling Canister



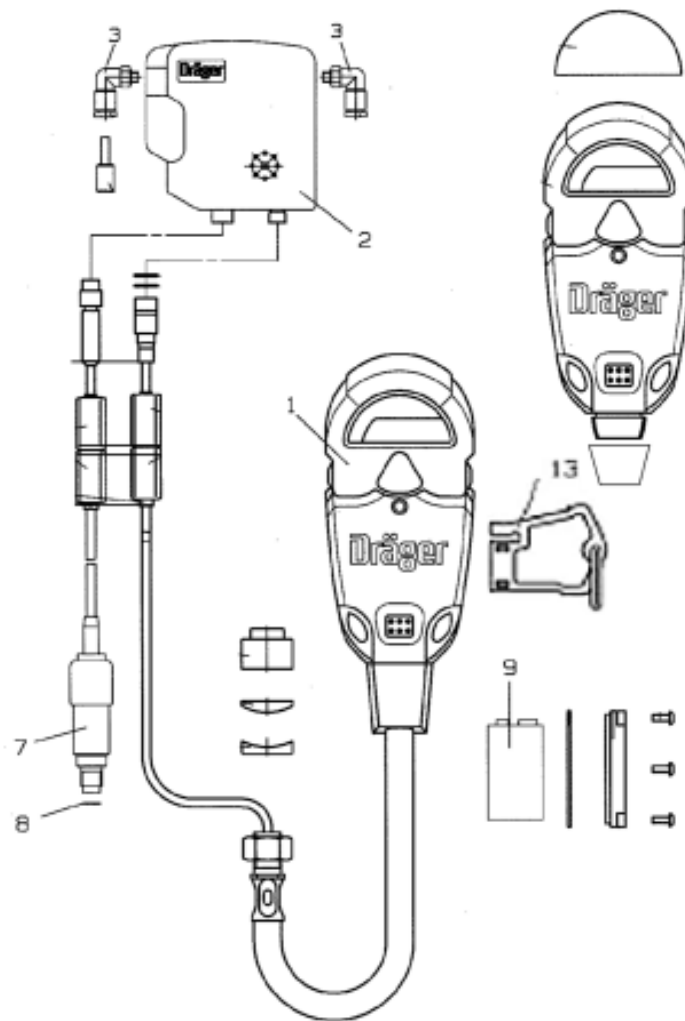
1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
1	Cooler	4	Angle Connector
2	Cover for Cooler	5	Reaction Ring
3	Gasket		

## Drain/Relief/Minimum Valve Assembly



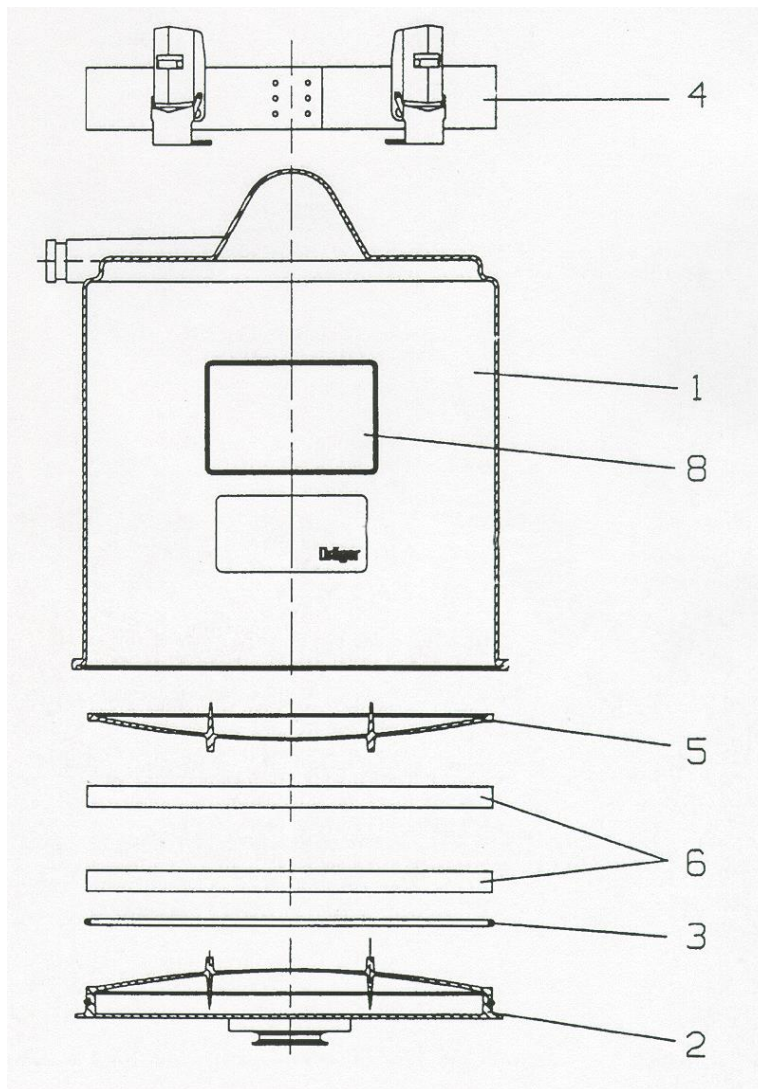
1 Cons. No.	2 Designation	1 Cons. No.	2 Designation
1	Valve Disc	12	Cap
2	Crater Case	15	Valve Crater
3	Valve Disc	16	Washer
4	Relief / Drain Valve Spring	18	Valve Plate
5	O-Ring	19	Spring
7	Clamp Fitting	22	Clamp, Minimum Valve
8	Hose	23	Angle Connector
9	Coupling		
10	O-Ring		

## Sentinel



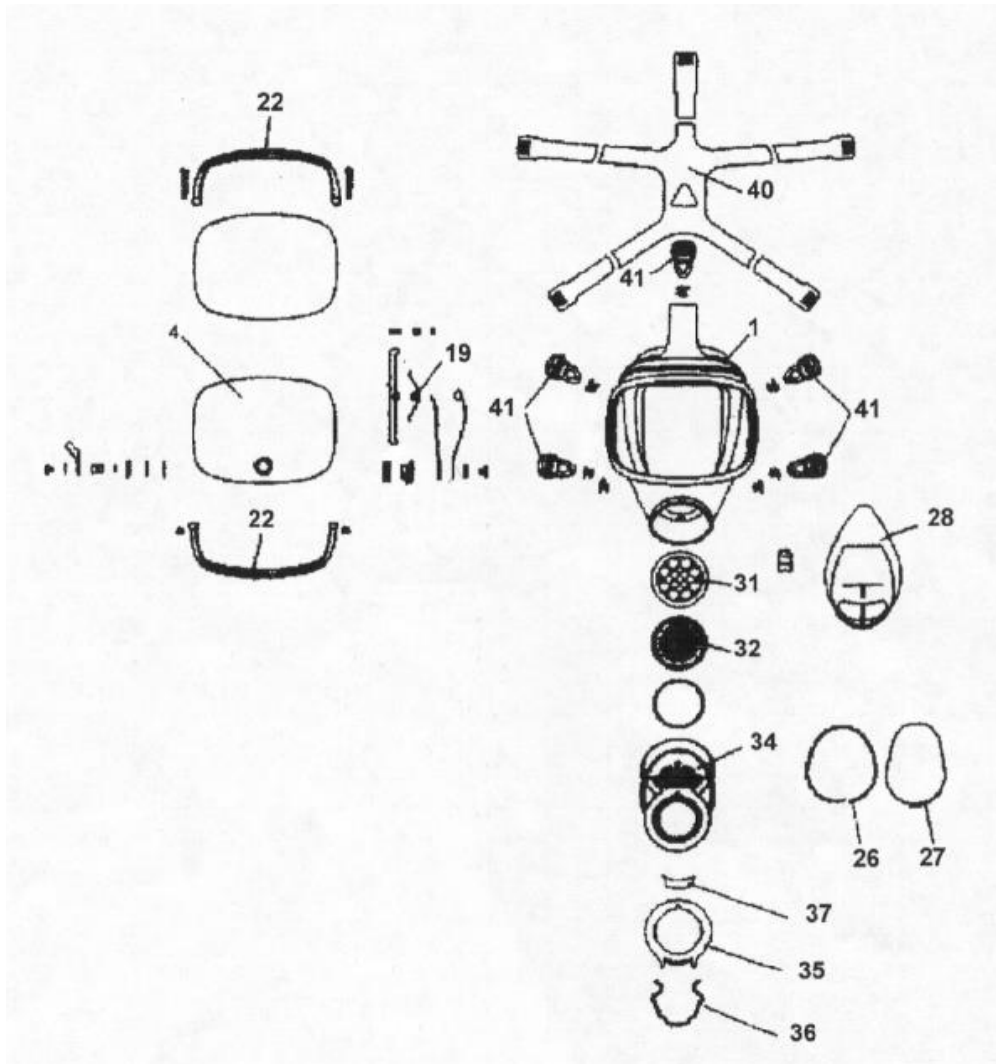
1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
1	Sentinel	8	Copper Ring
2	Switch Box	9	9 volt battery
3	Angle Connector	13	Tally Key
7	Pressure Sensor		

## Refillable Cartridge



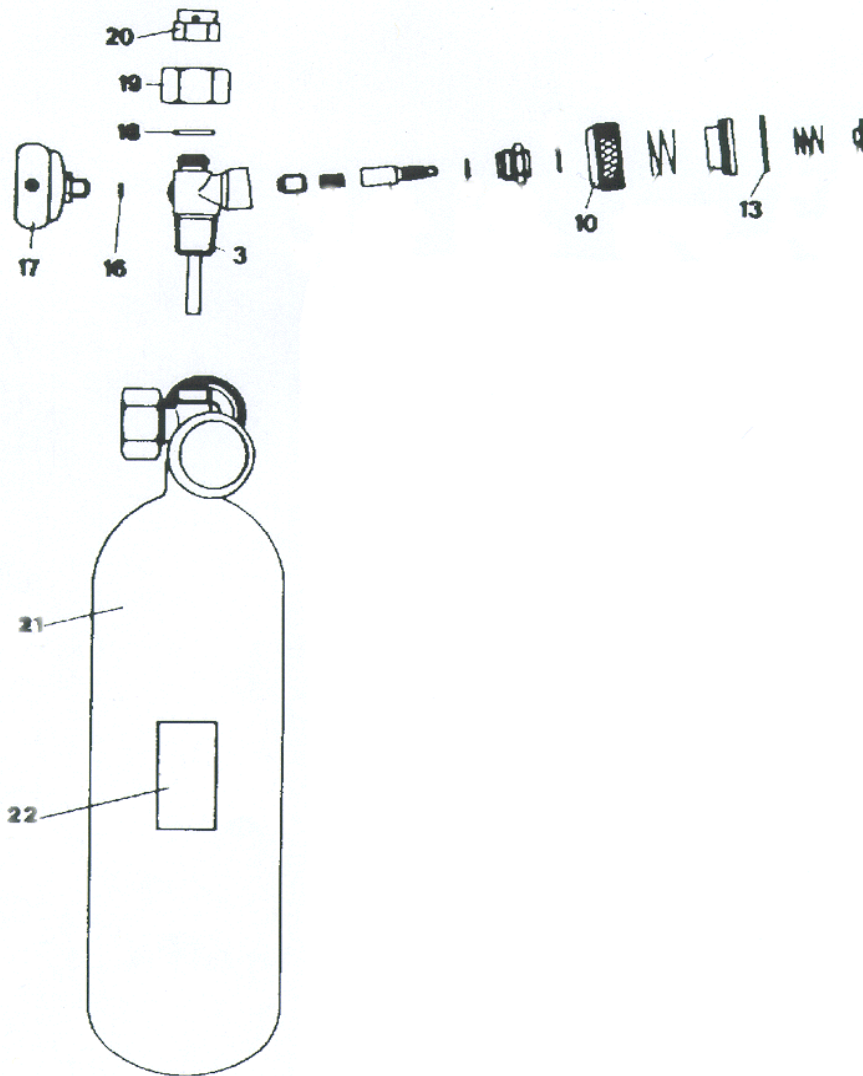
1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
1-8	Refillable Cartridge	5	Refillable Scrubber Screen
2	Lid	6	Filter Mats
3	Seal, Refillable Cartridge	8	NIOSH Approval Label
4	Strap with Tension Spring Hook		

### Panorama Nova EPDM Mask



1 Cons. No.	2 Designation	1 Cons. No.	2 Designation
1	Mask Body EPDM	32	Speech Diaphragm
4	Lens, Wiper, BG Mask	34	Connecting Piece
19	Tension Bar	35	Housing
22	Frame	36	Spring
26	Sliding Ring	37	Key
27	Clamp	40	Head Strap
28	Inner Mask, EPDM	41	Roller Buckle
31	Retainer		

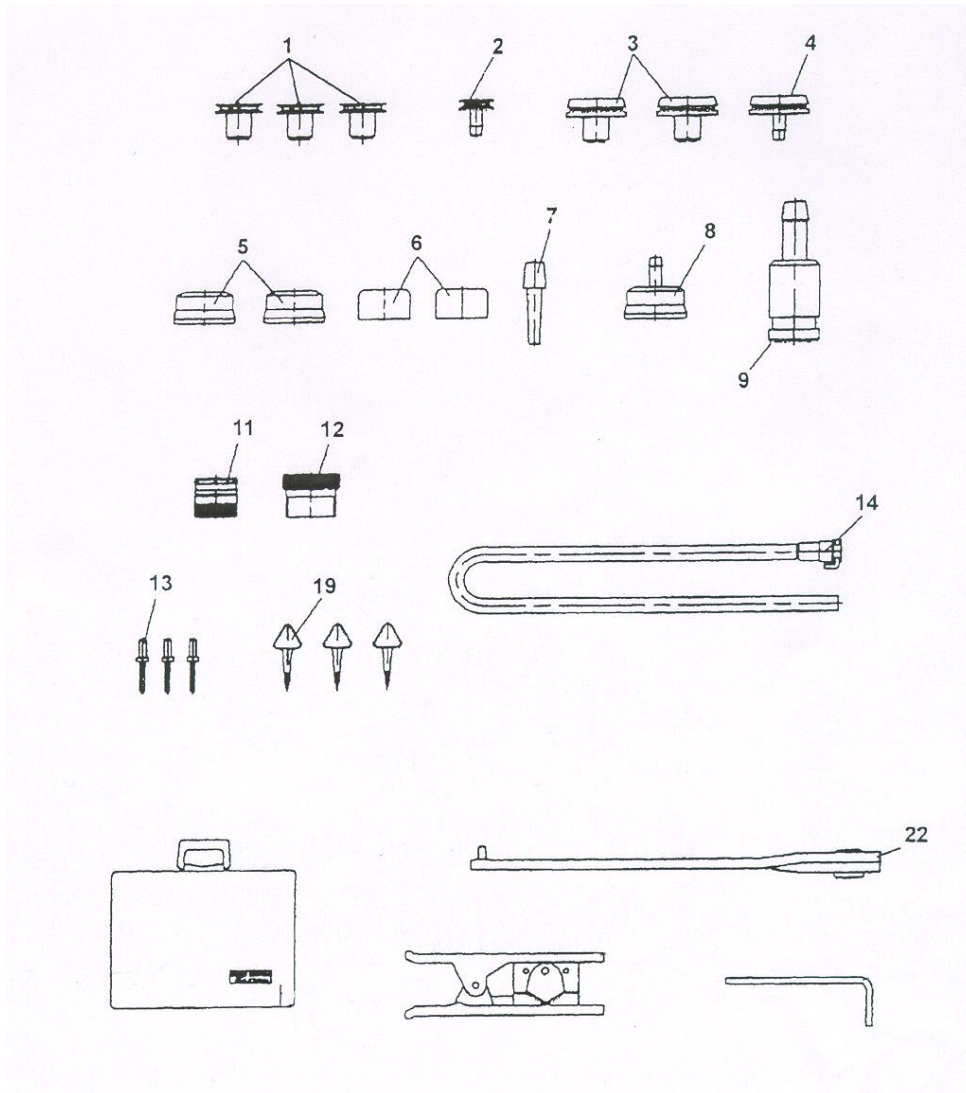
## Oxygen Cylinder



1	2	1	2
Cons. No.	Designation	Cons. No.	Designation
3	Valve Housing	18	Lock Washer
10	Hand-wheel	19	Lock Nut
13	Safety Ring	20	Bursting Disc
16	Sealing Ring	21	Oxygen Cylinder
17	Manometer	22	Label



## Test Kit



1 Cons. No.	2 Designation	1 Cons. No.	2 Designation
1	Plug For Breathing Bag	11	Sealing Plug for Mask
2	Nozzle For Breathing Bag	12	Test Adaptor
3	Sealing Plug (Corrugated Hose)	13	Sealing Plug for Plug In Conn.
4	Test Socket for Corrugated Hose	14	Test Hose/Metering Control
5	Sealing Cap for Corrugated Hose	19	Sealing Ring Lifters
6	Sealing Cap	22	Spanner
7	Testing Plug		
8	Test Cap for Corrugated Hose		
9	Test Connection for Control Valve		