



2026 WVU
BENCH BASH
Drager ProAir
CONTEST
DAY 2

STATEMENT TO BENCH CONTESTANT

The bench participant will be provided with two BG-4 apparatus (one disassembled, one assembled), an RZ-25, RZ-7000 tester, or Test-It 6100 tester, a stopwatch, defogging solution, leak detector fluid, test kit, and tool kit. Only the tools and fluid provided will be used for testing and assembly of the apparatus.

The work at the bench at the bench will consist of:

1. A visual examination of a disassembled BG-4 and the proper assembly and preparation for use in rescue work. This will include correcting any predetermined problem(s) so that the apparatus is in proper working order. Simulating defogging of the facepiece lens will be done as a part of the visual examination. This visual examination, correcting predetermined problem(s), and proper assembly can be done at any time allowed for the working of the problem.
2. Test the assembled BG-4 apparatus with a tester, and correct the predetermined problem(s) so that the apparatus is in proper working condition. Except for removing the sealing cap from the coupling on the breathing hoses, and removing the cover shell, the assembled BG-4 apparatus cannot be disassembled to look for problems, until the hoses are attached to the tester, and the apparatus fails a test. When testing is completed on the assembled BG-4 apparatus, the hoses shall be removed from the tester, connected to the facepiece, and the back cover installed. This shall be done before the clock is stopped.

When an unplanned deficiency is encountered in the apparatus, the participant will be notified by the judge(s) that the deficiency is not part of the problem. The judge will stop the clock and any time used to correct the deficiency will not be charged to the working time.

A maximum of 30 minutes will be allowed to complete the problem. The judge will tell you when 25 minutes has passed. At the completion of the problem, the judge(s) and the participant will note the working time of the problem with the official timekeeper. Work done after the clock is stopped will not be recognized.

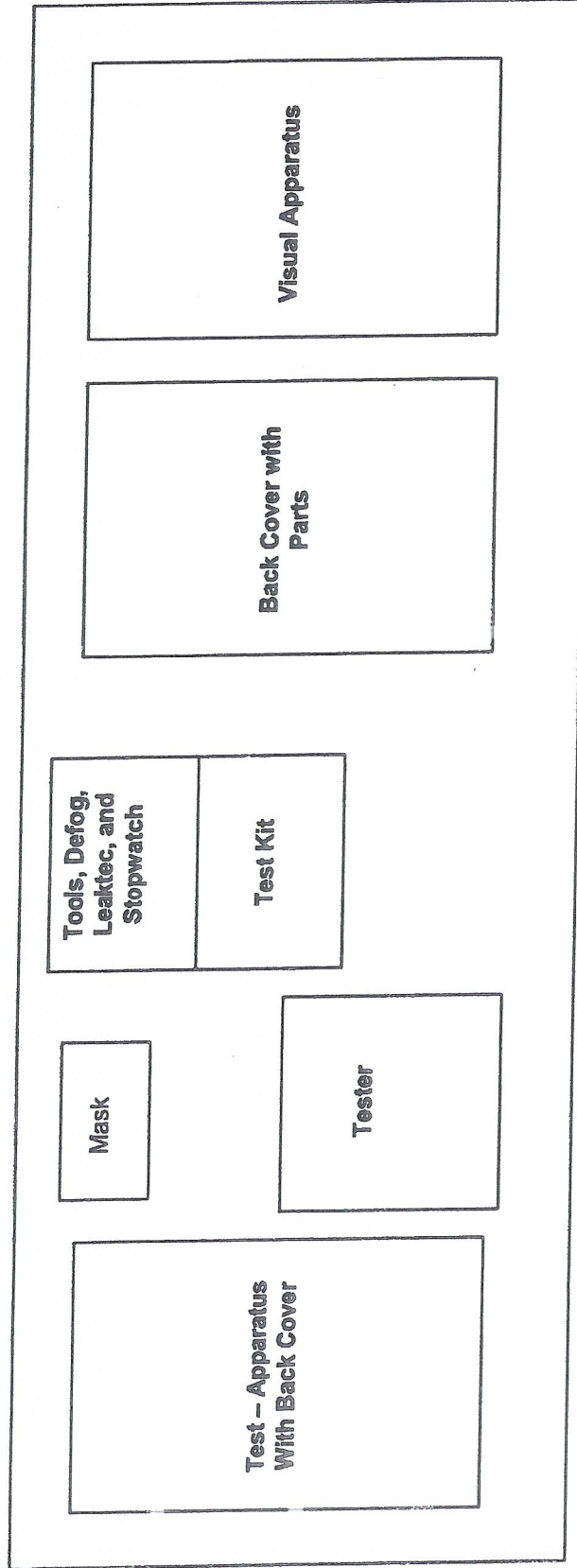
BG-4 VISUAL APPARATUS (BREAKDOWN)

**Back Cover Removed
Hoses – Disassembled
Connector Removed
Inhalation – Exhalation Valves Removed Cooler and Cooler Cap Removed
Relief Valve (Intact)
Lever Arm
Canister
Springs
Breathing Bag
O2 Bottle
Retainer Clip for Minimum Valve
Minimum Valve
Drain Valve (Intact)
Switchbox (Unlatched with Crossover line off and still attached to cables)**

BG-4 TOOL KIT

**7mm – Open End/Box End
8mm – 10mm Combination
10mm – Open End
12mm – 14mm Combination
17mm – 19mm Combination
10mm – 11mm Offset Box
Flat Screwdriver
Phillips Screwdriver
Spanner Wrench
2mm – Allen Wrench
15mm – Open End
Dow-Corning 111
TORX – T-20
Reaction Ring Tool**

Table Layout for BG-4 Contest 2020 Contest Year



BENCH DISCOUNTS

Contestant does not call out each test being conducted.

They should be discounted for failure to verbally identifying each test being conducted under A1 (2 point discount for each test)

Contestant does not find a bug on either the Test or Visual unit.

They should be discounted for failing to identify the bug under A2 (5 point discount) for failing to identify and under A3 (5 point discount) for failing to correct the bug. (Total 10 point discount) for every bug that is missed on either unit.

If the problem design only calls for the contestant to identify a bug and not correct it. In that case they should still be discounted under A2 and A3 for failing to identify and correct the bug (10 point discount).

Contestant does not perform any visual exam or test. (This means they did not do the visual exam or test at all).

They should be discounted for not performing a Visual Exam or Test under A5 (5 point discount) for failing to conduct a visual exam or test.

Contestant does not call out one of the connected or good connections required by the rules to be called out. (Any similar terminology should be accepted)

They should be discounted under A6 (1 point discount for each connection) for failure to tighten connections properly during assembly or testing. This discount is used if they did not call out any of the connected or good connections on your judge's checklist.

Contestant blows into a hose or uses body fluid in any way on the units during the problem or the contestant uses a tool or anything else that they brought with them (Multi- Tool, Keys, Pocket knife, etc.).

They should be discounted under A8 (2 point discount each infraction) for rules not covered on the discount sheet. It is covered in the rules that only the tools and fluid provided will be used during the problem.

Contestant fails to call out any of the required items on your judge's checklist when conducting any of the visual exams

They should be discounted under B2 thru B8 (2 point discount for each item not called out)

Contestant fails to zero the tester or mag gauge before testing.

They should be discounted under A7 (10 point discount).

Contestant runs out of time or for any other reason does not have the visual unit assembled properly including having the back cover and face mask installed. This includes leaving something unhooked, partially hooked, or something hanging out the side of the unit. The hoses on the visual unit do not need to be buckled in the straps at the end of the problem.

They should be discounted under B9 (5 point discount) visual apparatus not ready for use. This should only be discounted once no matter how much they left wrong with the visual unit. Do not dock them for this because they missed a bug and didn't correct the bug.

Contestant fails to do a proper test on any of the required tests to be conducted.

They should be discounted under C1 thru C8 (2 point discount each). This discount should only be used for a test not done properly. Example: Pumps the tester too hard and fast to actually see when the low pressure warning activates or doesn't state the opening pressure of the relief valve. Etc. C1 thru C8 should not be used for tests not done due to running out of time. Those tests not done due to running out of time should be docked under A5 as a 5 point dock.

Contestant runs out of time or for any other reason does not have the test unit assembled properly including having the unit disconnected from the tester, and the back cover and face mask installed. This includes leaving something unhooked, partially hooked, or something hanging out the side of the unit. This also includes leaving the test cap inside the unit. The hoses on the test unit do not need to be buckled in the straps at the end of the problem.

They should be discounted under C9 (5 point discount) Test apparatus not ready for use. This should only be discounted once no matter how much they left wrong with the Test unit.

Contestant Cuts and Runs.

They should be discounted under A4 (40 point discount) for failing to correct each problem for cutting and running.

They should be discounted under A2 (5 point discount) for not identifying the bug.

They should be discounted under A3 (5 point discount) for not correcting the bug.

They should be discounted under C1 thru 8 (2 point discount) for whatever test they couldn't pass due to the bug they couldn't find.

They should be discounted under C9 (5 point discount) for failure to have the test unit ready for use.

The initial 40 point discount for cutting and running can only be removed if the contestant returns and finds the bug and corrects the bug and then continues from that point and completes all the remaining tests in sequence from that point to completion.

2026 WVU Bench Bash

Day 2 Bug List

DAY 2 VISUALS

Locking Lever Damaged

Minimum Valve Screw Loose (F/O)

Bag Cooler Locking Ring Damaged

Screw Missing on Wiper Handle (F/O)

Waist Belt Upside Down (F/O)

DAY 2 TESTS BUGS

Absorber O-Ring Cut

Bag to Absorber Missing

Hole in Minimum Tube in Bag

Drain Valve Disc Missing

ProAir BENCH CONTESTANT _____ WORKING TIME _____ MIN. _____ SEC.

VISUAL APPARATUS CHECKS			TEST APPARATUS WRITTEN RECORD		
✓	Check if ok			Check if ok	
	FRAME/HARNESS ASSEMBLY		✓		
	BREATHING BAG			EXHALATION VALVE TEST 10 MBAR -	
	CYLINDER TEST			INHALATION VALVE TEST 10 MBAR +	
	REGENERATIVE CANISTER			DRAIN VALVE TEST 10-25 MBAR	
	SIMULATE ADDING DRAGERSORB			LEAK TEST with POSITIVE PRESSURE 1 MBAR IN 60 SEC.	
	RELIEF VALVE			RELIEF VALVE TEST	
	COOLER			State Opening Pressure 4 TO 8 MBAR	
	SIMULATE ADDING ICE PACKS			PRE-FLUSH UNIT Max. 10 SEC.	
	HOSES			HIGH PRESSURE LEAK TEST OPEN CYL. ICON	
	COUPLING			BYPASS VALVE TEST	
	FACE PIECE TEST				
	SIMULATE DEFOGGING MASK			MINIMUM VALVE TEST	
				State Opening Pressure 0.5 TO 3.0 MBAR	
	CONNECTIONS CONNECTED OR GOOD				
	Cap on Drain Valve			ALTERNATE RELIEF VALVE TEST 4 TO 8 MBAR	
	Drain Valve to Breathing Bag			LOW PRESSURE WARNING TEST	
	Cylinder Connection			State Warning Reading APPROX. 650 PSI	
	Regenerative Canister Connections			BATTERY TEST AT LEAST 2 BARS	
	Relief Valve to Regenerative Canister			READY FOR USE	
	Cooler to Breathing Bag			DATE	
	Distribution Hose			SERIAL NUMBER	
	Bypass Hose Connection			SIGNATURE	
	Sensor Hose Connection			CYLINDER READING	
	Breathing Hoses				
	Hose Adapter on RZ 7000, RZ-25 or Test-It 6100				
				ZERO TESTER PRIOR TO TESTING	
	<u>VISUAL APPARATUS BUGS</u>			<u>TEST APPARATUS BUGS</u>	
VI	C	LOCKING LEVER DAMAGED	VI	C	ABSORBER O-RING CUT
		MINIMUM VALVE SCREW LOOSE (F/O)			BAG TO ABSORBER MISSING
		BAG COOLER LOCKING RING DAMAGED			HOLE IN MINIMUM VALVE TUBE ON BAG
		SCREW MISSING ON WIPER HANDLE (F/O)			DRAIN VALVE DISCE MISSING
		WAIST BELT UPSIDE DOWN			

2026 WVU Bench Bash
Drager PRO-Air – Day 2 Written

Name _____ Working Number _____

1. The battery must be replaced if a _____ battery warning is indicated.
 - a. Bad
 - b. Negative
 - c. Red
2. A _____ bypass is the probable cause if the manual by-pass valve does not blow-off.
 - a. Leaky
 - b. Damaged
 - c. Defective
3. The _____ LED pulses to indicate that the Connect ECU is operating normally.
 - a. Red
 - b. Blue
 - c. Green
4. Bypass output is > _____ L/min.
 - a. 60
 - b. 70
 - c. 80
5. Relief valve activation is ____-____ bar or (58-116 psi).
 - a. 2-5
 - b. 3-6
 - c. 4-8
6. The oxygen cylinder burst disc _____ at 4,450 psi (307 bar).
 - a. Busts
 - b. Bursts
 - c. Ruptures

7. Refillable _____ concerns are over packing and under packing.
- a. Cannister
 - b. Cartridge
 - c. Absorber
8. The FPS 7000 masks allow _____% peripheral vision.
- a. 90
 - b. 95
 - c. 100
9. Polycarbonate or Plexiglas lenses can be used in the _____.
- a. Mask
 - b. Facepiece
 - c. Frame
10. A minimum of _____ psi is needed for a Connect ECU to perform a proper high pressure leak test.
- a. 2100
 - b. 2175
 - c. 2250
11. Pg 24: Part Number 1
- a. Exhalation Disc
 - b. Valve Control
 - c. Valve Disc
12. Pg 24: Part Number 3
- a. Coupling
 - b. Coupler
 - c. Connector Piece
13. Pg 24: Part Number 4
- a. Toroidal Sealing Ring
 - b. Sealing Ring
 - c. O-Ring

14. Pg 24: Part Number 6

- a. Corrugated Hose
- b. Breathing Connection
- c. Breathing Hose

15. Pg 24: Part Number 8

- a. Ring
- b. Adapter Ring
- c. Split Ring

16. Pg 25: Part Number 3

- a. Washer
- b. Retainer
- c. Retaining Washer

17. Pg 25: Part Number 4

- a. Snap-Clip
- b. Clip
- c. Snap-Fit

18. Pg 25: Part Number 5

- a. Attachment Pin
- b. Needle Clip
- c. Cylinder Pin

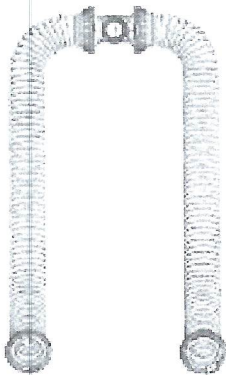
19. Pg 25: Part Number 7

- a. Absorber Frame
- b. Connector Piece
- c. Cannister Frame

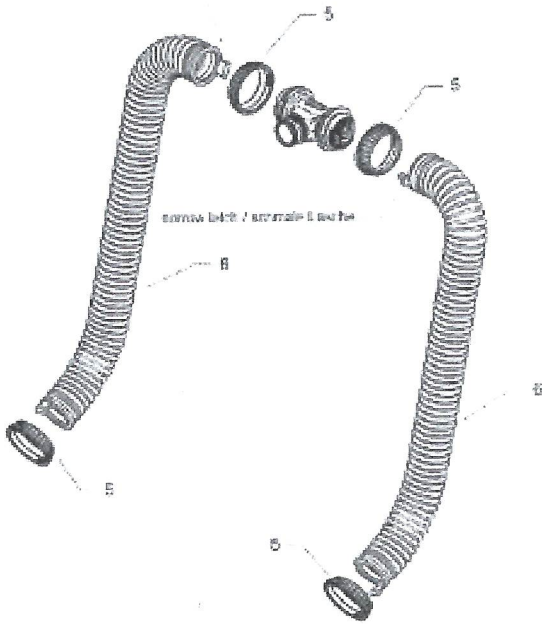
20. Pg 25: Part Number 8

- a. Stack Bracket
- b. Housing
- c. Frame

Breathing Connection

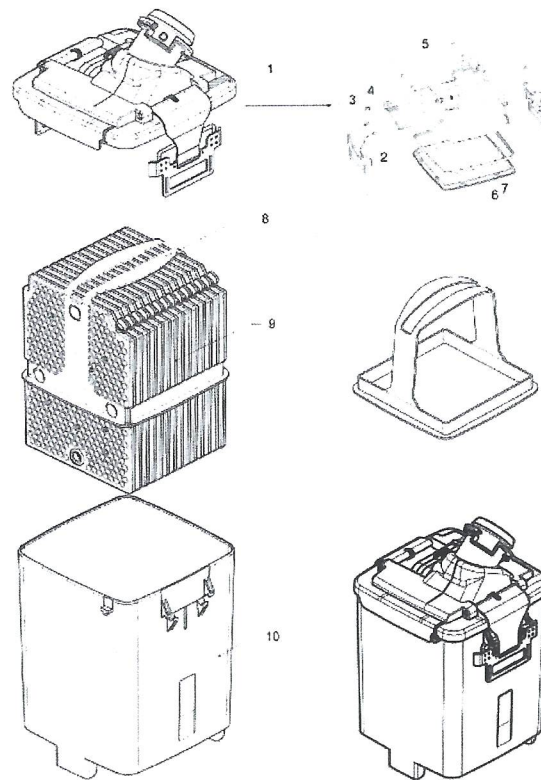


wide latch / break Latches



1 Cons. No.	2 Designation	1 Cons. No.	2 Designation
1	<u> </u>	5	Bayonet Ring
2	Directional Valve Housing	6	<u> </u>
3	<u> </u>	7	Sealing Cap
4	<u> </u>	8	<u> </u>

Breathing air Cooler, PCM, Compl.



1 Cons. No.	2 Designation	1 Cons. No.	2 Designation
1	PCM Cooler Lid, Compl.	10	PCM Cooler Case
2	Lock, Compl.		
3	_____		
4	_____		
5	_____		
6	Sealing		
7	_____		
8	_____		
9	PCM Container, Filled		