

INITIAL STARTUP PROCEDURES

1. Unpack gPRO[®], check for any obvious damage.
2. Remove spare parts bag, check contents against spare parts list.
3. Connect green O₂ LINE (supplied with gPRO₂[™] unit) (See “Figure A”) to a pressurized O₂ source regulator (cylinder or O₂ generator), with O₂ source pressure set to 80-90 PSI.

Oxygen (O₂)
Hose

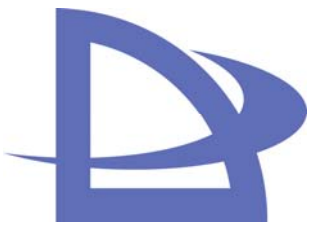


Figure A

4. Turn on O₂ supply.
5. Check all connections for leaks with Snoop (included in spare parts kit)
6. Connect 1.5” water supply hose from water supply tank (tank MUST be at atmospheric pressure with a maximum inlet pressure of 5 PSI or 12’ of head) to pump inlet with screw gear clamp (See “Figure B”). DO NOT open water supply line yet.



Figure B



7. Connect 1" discharge line to brass FLOW CONTROL VALVE (see "Figure C"). Verify that FLOW CONTROL VALVE fully is closed – fully CW – then open valve CCW 1/8 to 1/4 turn.

Flow Control Valve



Figure C

8. Open up water supply line to gPRO2[™] unit. There may be a hissing sound from O₂ escaping from the VENT VALVE (See "Figure D") until system is full.

Vent Valve

O₂ Header

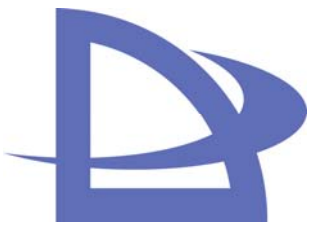


Figure D

9. Make sure CONTROL PANEL power switch is OFF (See "Figure E"), plug in power cord to 120 V plug.



Figure E



10. Turn ON control panel power switch. Water will fill infusion devices—you can see water fill inside the clear cases—and water will be pumped out the discharge line. Once the system is fully operating, within a few minutes of start up, no gas should be visible in the discharge line.

11. Check black poly tubing connections with Snoop on O₂ header including # 5 to 8 inclusive (See “Figure D”)—both quick connect fittings and threaded fittings). If there is a leak in black poly tubing connection, turn pump off, then remove from quick connect fitting (push tubing inwards toward fitting, depress and hold outer ring, then pull out tubing from fitting) and check that the end of the tubing is cut squarely. If not, re-cut end of tubing squarely, re-connect, (by pushing tubing completely into fitting until it stops) and check again for leaks. If leak is from fitting nut thread, tighten carefully (DO NOT OVERTIGHTEN). If leak persists, replace fitting, and recheck for leaks.

12. Verify that NITROGEN PURGE VALVES are operating correctly (See “Figure F”). For each valve:

Nitrogen Purge Valve and adjustment



Figure F

a. Normal operation consists of a continuous stream of small bubbles at intervals of approx. 3 bubbles per second max. (See “Figure G”).

Bubbles



Figure G



b. Abnormal operation consists of more than 3 bubbles per second, or no bubbles at all.

If adjustment is required, use the small screwdriver included in the spare parts list, and turn the top mounted adjustment screw (See "Figure F") CW to reduce purge flow, CCW to increase nitrogen purge flow. A little leeway is OK, but try to match the condition illustrated in Fig. G.

c. If a blank module has been installed in a device no bubbles will be evident, and this is normal operation.

If insufficient nitrogen bubbles are being purged, the O₂ transfer will be reduced and eventually stopped.

Too much nitrogen purge will result in O₂ waste.

13. Use the FLOW CONTROL (Figure C) to achieve the desired performance. The higher the flow rate, the lower the operating pressure, and the lower the DO concentration. Dissolved oxygen concentration can be monitored if desired by inserting a piece of black poly tubing (supplied in spare parts bag) in the SAMPLE VALVE, open SAMPLE VALVE (See Fig. H), and allow the water flow to pass across the probe face of a Dissolved Oxygen meter that is capable of measuring above 20 parts per million (ppm).



Figure H

If a higher or lower DO concentration is required, adjust the flow control valve and monitor as above.



ALARM INDICATORS

There are two alarm indicator lights on the control panel.

-The yellow light illuminates if the oxygen supply to the system is lower than 65 psi. This condition will cause the gPRO[®] unit to automatically turn off, protecting itself from damage. When the oxygen supply pressure is restored to 85 to 90 psi, the gPRO[®] will automatically re-start and continue to operate normally.

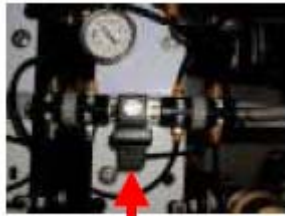
-The red light illuminates if water flow through system has been interrupted, and protects the pump from overheating. Restore water supply and switch main power on and off to restore normal operation.

PURGE CONTROL

The purge control timer is used to automatically maintain proper performance of the gPRO[®] unit, and the timer settings should be as follows:

ON = 0.5 seconds

OFF= 45 minutes



Purge Control



SHUT DOWN PROCEDURES

1. Turn CONTROL PANEL power switch OFF.
2. Close isolation valves on water supply line and water discharge line. It is not necessary to close the FLOW CONTROL VALVE on gPRO[®] unit as this will require resetting running performance levels.
3. If unit is being closed down for an extended period, drain the system as follows:
 - a. Open sampling port valve.
 - b. Open drain plug on bottom of pump suction
 - c. Remove module cases and dump out water.



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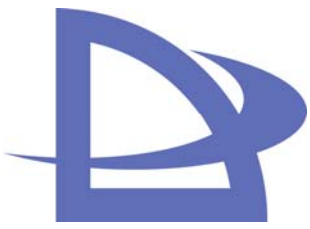
Performance Chart

(optimum operating range for this pump)

Pump Output (3/4 hp)	Discharge Pressure (psi)	35	40	45	50	55	60	65	
		US GPM	16	14.4	12.6	10.6	8.3	5	1.8
		LPM	60.6	54.5	47.7	40.1	31.4	19	6.8
gPRO output									
2 Modules	Kg/O ₂ /Day	1.74	1.89	2.01	2.08	2.06	2.8	1.1	
4 Modules	Kg/O ₂ /Day	3.17	3.41	4.2	4.22	4.01	3.1	1.4	

*assume that 0 ppm Dissolved oxygen in feed water @ 20 deg.Celcius

*conversion factors: 1 kg o₂ per day approx. 0.5 slpm



Accessory List for gPRO units

1. Case wrench
2. 2 gas transfer modules
3. 3 blank modules
4. small screwdriver
5. 6' of ¼" tubing
6. Tubing diagram
7. O&M manual
8. Liability and warranty disclosure
9. "Snoop" leak detector