

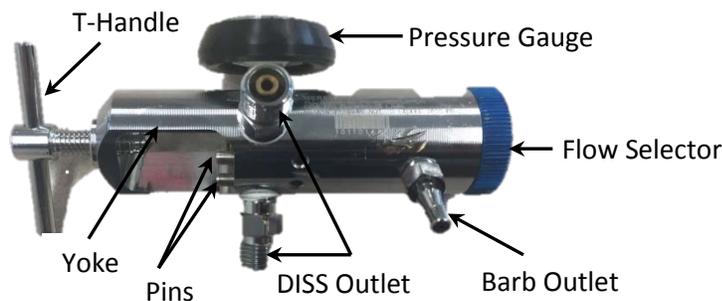


# Demand (Elder) Valve and Oxygen 1<sup>st</sup> Stage Maintenance Policy

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## Oxygen 1<sup>st</sup> Stage and Oxygen Hose

Currently, there is no scheduled maintenance for the 1<sup>st</sup> stage regulator (Fig. 1) or green Low Pressure (LP) oxygen hose (Fig. 2). If the hose is: cracked or degraded, the 1<sup>st</sup> stage is leaking, the pins are bent or broken, or there are questions/concerns regarding the function of the 1<sup>st</sup> stage or hose, please contact NOAA Diving Medicine ([dmo@noaa.gov](mailto:dmo@noaa.gov)) and Nick Jeremiah ([nick.jeremiah@noaa.gov](mailto:nick.jeremiah@noaa.gov)). A new 1<sup>st</sup> stage regulator and hose will be provided if needed. Do NOT attempt to adjust the pressure gauge, barb outlet, or Diameter Index Safety System (DISS) outlet fittings as the metal may shear if overtightened.



**Fig. 1.** First stage regulator



**Fig. 2.** LP oxygen hose

## Demand Valve Cleaning

Do not attempt to clean the demand valve. All cleaning procedures must be performed in a hydrocarbon residue free area because of the danger of spontaneous combustion when the residues are exposed to oxygen. Please send the demand valve to NDC if it becomes soiled or was used on a diving casualty. NOAA Diving Medicine will provide a replacement demand valve.

## Demand Valve Testing

The demand valve should be tested periodically to ensure proper performance. Testing must be performed every three months. Currently, there are two types of demand valves in the field. A Life Support Products (LSP) demand valve (Fig. 3) and a Diver Alert Network (DAN) Manually Triggered Ventilator (MTV) 100 demand valve (Fig. 4).



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Fig. 3. LSP demand valve



Fig. 4. DAN MTV 100 demand valve

### Initial Test

1. Connect the 1<sup>st</sup> stage O<sub>2</sub> regulator, green LP hose, and demand valve to an oxygen supply with a cylinder valve and O<sub>2</sub> Pin-Index Ports.
2. Slowly open the oxygen supply valve. Oxygen should flow from the demand valve momentarily, but stop completely (no audible leaks) in approximately 1 second.
3. Depress the manual control button. A high flow of oxygen should result, and the valve should not whistle. Release the button. The flow should cease immediately.
4. If the demand valve continues to flow oxygen or has an audible leak, it is in need of repair and should NOT be used.

### Positive Pressure Test

A Test Lung Assembly is available by request (Fig. 5).

1. After performing the Initial Test, inspect the Test Lung Assembly to ensure it is in operational condition. The test lung must be free of cracks, holes, and tears. The rubber stoppers must be seated securely inside the PVC. The pressure gauge needle must be pointing to 0 (zero) mmHg and not freely moving.
2. Insert the outlet of the demand valve into the PVC tee fitting on the Test Lung Assembly.
3. Slowly depress the manual control button. The gauge reading should be  $44 \pm 4$  mmHg. If the pressure reaches 60 mmHg, release the manual control button immediately to avoid rupturing the test lung. If using the DAN MTV 100, the valve should automatically stop delivering oxygen when the maximum pressure is reached. If this does not occur, contact NOAA Diving Medicine for a replacement valve.
4. Release the manual control button. The test lung should deflate immediately. If it does not deflate, ensure the two bleed holes on the demand valve body (see Fig. 5) are open by depressing the manual control button and verifying that there is a flow of oxygen out of both holes. Also check the exhalation valve for misalignment or for foreign matter.



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5. If the demand valve tests out of limits (<40 mmHg or > 48 mmHg), do NOT use. Contact NOAA Diving Medicine for a replacement valve.

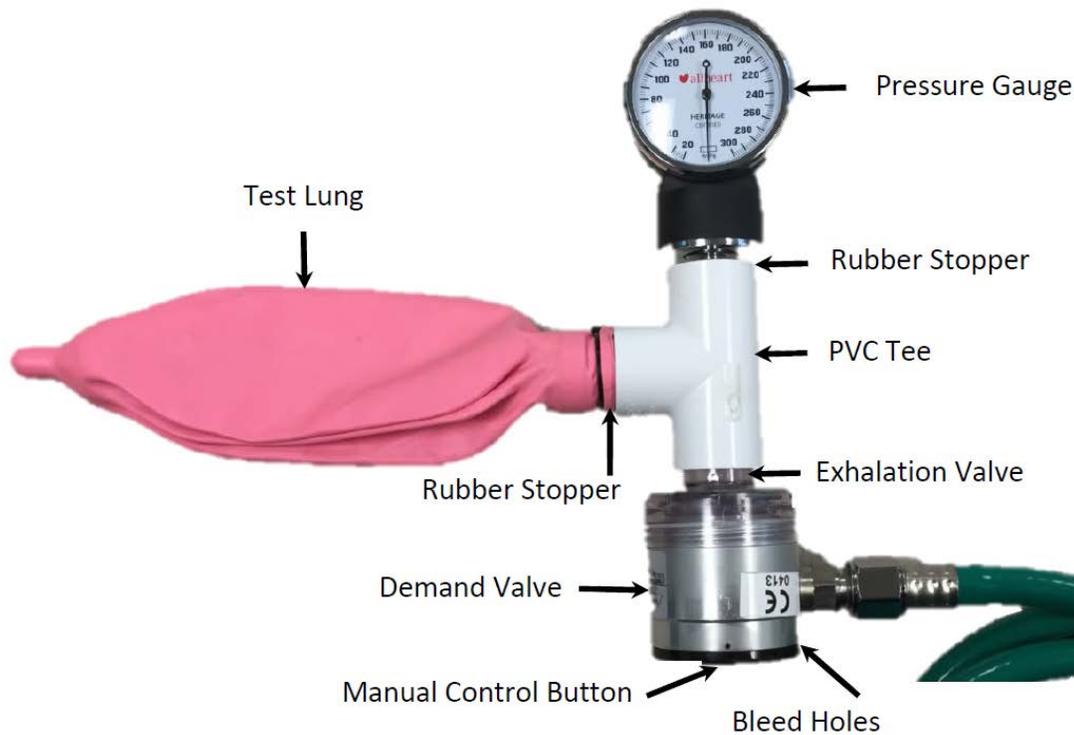


Fig. 5. Test lung assembly

### Recommended Service Period

The demand valve, LSP and DAN, should be serviced every 2 years if the periodic testing as outlined above is performed and logged. If periodic testing is not performed, the demand valve should be serviced every year. For service, please contact NOAA Diving Medicine.

