

## **Absolute Pressures for monoplace and multiplace chambers.**

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**INTRODUCTION/ BACKGROUND:** Hyperbaric Oxygen (HBO<sub>2</sub>) is a drug delivered by a device therefore dosing should be accurate. The dose is a combination of oxygen percent, chamber pressure and duration of exposure. Worldwide, hyperbaric pressure is expressed with differing units: Bar, Torr, Kilo- Pascal (kPa), atmospheres absolute (atm abs), pounds per square inch gauge (psig), pounds per square inch absolute (psia), feet of sea water (FSW), Meters of sea water (MSW), and others. We present the use of an absolute value of psia in combination with a gauge value of psig to insure accuracy of the chamber pressure.

**MATERIALS and METHODS:** Our hyperbaric department has been using absolute in combination with gauge pressure measures since 1987. Currently, we use Cecom Electronics, DPG1000B100PSIA-5, (psia) digital gauges using a bulkhead fitting on the monoplace chambers and Setra C204 psia transmitters on the multiplace chamber. The monoplace controls and gauges are used to obtain psig and the Cecom gauges are used to verify absolute chamber pressure in psia. The multiplace controls are programmed for gauge values in psig and the Setra transmitters are used to verify the absolute chamber pressure in psia.

**RESULTS:** The zero reference for absolute pressure is outer space and equals the local barometric pressure plus the gauge pressure. Using psia is an effective method to provide accurate dosing of pressure. In addition to the absolute pressure, the gauge pressure in the chamber must be known for chamber occupants breathing air or a mixed gas in order to determine a safe decompression profile.

**SUMMARY / CONCLUSIONS:** Accurate pressure measurements are important for precise HBO<sub>2</sub> dosing. We are not aware of any clinical hyperbaric chambers manufactured using absolute pressure units. We recommend using gauge and absolute values in conjunction when providing HBO<sub>2</sub>.