### SUBJECT: Installation of the 60 Micron Particulate Filter for Magellan

Issue Date: 10/11/2019



### **MEMO:** Installing the 60 Micron Particulate Filter

Chapter 14 of the current 2018 edition of the NFPA-99 code, addresses the following code requirement for hyperbaric facilities.

**14.2.1.3.3** The supply piping for all air, oxygen, or other breathing mixtures from certified commercially supplied cylinders and portable containers shall be provided with a particulate filter of 66 microns or finer.

This code requirement applies to the high pressure (HP) cylinder medgas system installed at your monoplace HBO facility to support the Magellan ventilator for the HOBIT trial. FYI, the inlet supply of the Magellan ventilator currently has a particulate filter, however, to clearly satisfy this code requirement, we are supplying each site with a 60 micron particulate filter (Fig. 1) that is to be installed on the outlet port of the Witt Oxygen Blender (Fig. 2). These micron filters are manufactured by Swagelok Company and each filter has been oxygen cleaned per Swagelok spec SC-11 oxygen cleaning process.

#### Please carefully read and follow all of the following installation instructions.

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Please refer to the referenced photos (pg. 6-10) and follow these installation steps in series. We recommend that you read through the entire instructions before proceeding with each installation step.

- 1. Ensure all gas cylinders have been fully turned off.
- Ensure that the gas piping, hoses, Magellan Ventilator and Witt Blender have each been "bled-down" so that there is <u>no residual gas pressure</u> remaining in any component of the Magellan ventilator system.
  - a. Verify a zero gauge reading on both <u>Line</u> and <u>HP</u> gauges (Fig. 3) on both of the air and oxygen regulators. Verify that the pressure adjusting knob (Fig. 4) has been turned completely off to the <u>counterclockwise</u> position.
  - b. Verify a zero reading on the small black adjustable regulator of the Witt Blender (Fig. 5). Verify that the adjusting knob (Fig. 5) has been turned completely off to the <u>counterclockwise</u> position.
  - c. After steps <u>a. & b.</u>, release any residual gas pressure in the Magellan, by opening the Magellan inlet supply valve (Fig. 6) and also opening the gas sample valve (Fig. 6). There should be no gas flow heard or noted.
  - d. When you have verified that there is no residual pressure in the ventilator, close both valves, i.e., the Magellan supply valve and the gas sample valve.

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- Slowly remove the chrome female DISS nut (connected to the green oxygen hose) from the Witt Oxygen Blender outlet port (Fig. 7). <u>Note</u>: Unscrew only the chrome nut on the hose, <u>not the brass outlet hex fitting</u> (Fig. 2 & 7) on the Witt Blender. This brass fitting always stays in place on the Witt Blender.
  - ATTENTION: <u>Please use two wrenches</u> for removing this chrome female
    O2 DISS nut (Fig. 7). Place one wrench on the <u>chrome plated hose female</u>
    <u>DISS nut</u> (Fig. 7) and the other on the outlet <u>brass hex outlet fitting</u> (Fig. 7)
    of the Witt Oxygen Blender. While holding the brass hex fitting in place
    with one wrench, slowly turn and unscrew the chrome female DISS nut on
    the green oxygen hose with the other wrench.
  - b. Caution: If you hear any gas flow as you loosen the connection, stop and re-tighten the O2 DISS nut and re-do the above steps to ensure all residual gas has been removed from the manifold system.

<u>NOTE</u>: Some HBO HOBIT sites may have the "Hand-tight" Female O2 DISS nuts (Fig. 8) which are normally removed by hand. Follow a similar procedure as in step (b.) above, using a wrench on the brass hex fitting and your hand to loosen the "Hand-tight" female nut.

FYI, we prefer the "Wrench-tight" Female O2 DISS connections (Fig. 9) so no one can easily remove these fittings by hand.

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- 4. The 60 micron filter that has been supplied to you will have the correct male and female O2 DISS connections (Fig. 1)
- 5. Connect the chrome female O2 DISS nut (Fig. 1) to the chrome male O2 DISS fitting on the Witt Blender outlet port (Fig. 2). These fittings should screw together easily. Be careful not to cross-thread the fittings as you screw the female and male connections together.
- 6. Use <u>two wrenches</u> again to complete the tightening of the male and female connections.
- Re-connect the chrome female O2 DISS connection (on the green hose) to the chrome male O2 DISS fitting on the newly installed 60 micron fitting (Fig. 9 & 10).
- 8. These should also screw together easily. Use two wrenches again to complete the tightening.
- 9. Ensure your Magellan ventilator gas supply valve is OFF and the gas sample line is OFF.
- 10. Slowly turn on both air and oxygen HP gas cylinders and adjust the pressure regulator up to 50 psi and adjust the black Witt regulator to approximately 35 psi.

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11. If you hear any leaks coming from any of the connections, stop and recheck the previous steps.

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12. If there are no leaks at 50 psi, turn on the complete Magellan system to the normal operating pressures and verify that all gauges are reading properly and that the Magellan ventilator is operating properly.

#### TESTING

The installation of this 60 micron filter should have no operational effect on the Magellan ventilator. However, please test the system by connecting a test lung to the ventilator and compressing the chamber to a pressure of 2.5 ATA. Adjust the VT during compression and decompression to ensure there are no functional problems during these pressure changes.

#### Please contact me with any concerns or questions.

Thank you,

Bill Gossett

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### **Reference Photos**

Fig. 1

Fig. 2

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Fig. 3



Fig. 4

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Fig. 5







Magellan Inlet Supply Valve

Gas Sample Valve For O2 Analyzer

Fig. 6



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### **Reference Photos**



Fig. 7



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Fig. 9



Fig. 10

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