SPEC-Oxygen Cleaning Procedure

Equilibar, LLC

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Not for Production Use

1.) **Bulk Removal:** Completely disassemble all pieces into their component parts. Using clean cotton rags and metallic picks as required, removal all bulk contaminants, grease, burrs, machining whiskers, machine oil, etc. Inspect under magnification and lighting to insure bulk contaminants are effectively removed.

2.) **First Ultra-Sonic:** The ultrasonic cleaner must itself first be cleaned using a mixture of 4 parts distilled water to 1 part Simple Green Krystal cleaner. Once cleaned fill the ultra-sonic cleaner with one gallon of distilled water and one quarter gallon of Simple Green Krystal cleaner. Allow this to heat to a temperature between 115 and 125 F. Note: A new batch of water/cleaner must be prepared either daily or every 10 regulator bodies, whichever occurs first.

Place all component parts (regulator body, cap, diaphragm, o-rings) into the ultrasonic and activate for 15 to 20 minutes. Do not go longer or shorter.

3.) **First Water Rinse:** After removal from the ultra-sonic each part is individually hand rinsed in distilled, de-mineralized, or de-ionized water as available. From this point on all parts must be considered as and handled as clean parts. No new or replacement parts may be cycled in. Any additional parts required must start at step #1. All parts must be placed on new sheets of dust free paper on work surfaces. Any parts left for more than ½ hour must be covered. Any parts not completed within 48 hours must be recycled to step #1.

4.) **First Wash:** In a mixture of 4 parts distilled water to 1 part Simple Green Krystal cleaner heated to 115 to 125 F, hand wash each component part. Use the brushes to reach crevices. Each part should have each surface (interior and exterior) receive direct brushing action. Do not allow the cleaning solution to dry on the part or else it must be recycled back to step #1. You may wash up to 10 regulators in each batch of cleaning solution or retain it for up to 48 hours.

5.) **Second Water Rinse:** After removal from the first hand wash each part is individually hand rinsed in distilled, de-mineralized, or de-ionized water as available. Rinse until all traces of cleaning solution are removed.

6.) **Second Hand Wash:** In a mixture of 4 parts distilled water to 1 part Simple Green Krystal cleaner heated to 115 to 125 F, hand wash each component part. This mixture must be separate and distinct from the cleaning solution used for the first hand wash. Use the brushes to reach crevices. Each part should have each surface (interior and exterior) receive direct brushing action. Do not allow the cleaning solution to dry on the part or else it must be recycled back to step #1. . You may wash up to 10 regulators in each batch of cleaning solution or retain it for up to 48 hours.

7.) **Third and Final Water Rinse:** After removal from the second hand wash each part is individually hand rinsed in distilled, de-mineralized, or de-ionized water as available. Rinse until all traces of cleaning solution are removed. Then rinse each part again as if it had just been removed from the second hand wash to effect a double rinse.

8.) **Nitrogen Dry:** Gently blow dry each part dry with bottled nitrogen. Do not use compressed air as it contains oils. Do not use rags, towels, or anything else for drying.

9.) **Assembly:** Assemble using the oxygen clean tool set. Do not use Silver Thread lubricant on the bolts, even though they are not a wetted part. Instead, lightly lubricate the bolts with DuPont Krytox grease to prevent galling.

10 **Testing:** Test only with bottled nitrogen, cleaned fittings, and PTFE thread tape for sealant. Do not use Snoop, pipe dope, oil, grease, or any other chemical during the testing process. Leak detection should be with distilled, de-mineralized, or de-ionized water as available. A small amount of DuPont Krytox must be applied over the PTFE thread tape on test fittings or else the stainless steel will gall to itself.

11 **Packaging:** Immediately upon completion of testing each assembly must be placed into a protective bag. Before final shipping a second protective bag should be placed over the first. Insure that the cleaned part is labeled as “Oxygen Clean”