Oxygen Service Preparation (In-house Version)

1 Purpose

1.1 The purpose of this document is to define the procedures which must be followed for valves that are to be used in oxygen enriched environments.

2 Scope

2.1 This document covers all AVCO valves which have been specified by the customer for use in oxygen enriched environments.

2.2 Only products which are expressly requested by the customer on the relevant purchase order are to be included in this procedure.

3 Responsibility

3.1 It is the responsibility of the Sales or Orders departments to ensure the Warehouse Manager is aware the valve is to be prepared for Oxygen service. This can be achieved via the in-house procedures followed for the valve ordering process.

3.2 It is the responsibility of the Warehouse Manager or their designated assembler to ensure the procedures specified herein are followed without exception.

3.3 The QA Manager shall ensure the Warehouse Manager is made aware of this procedure and that they have relevant training to carry out the duties specified herein.

4 Initial Assembly

4.1 Prepare a clean working area. This area can be within the general warehouse assembly area, but preferably away from any open doors where the potential for wind borne contamination can take place.

4.2 Pick all required valve components as specified on the relevant work order.

4.3 Use compressed air to remove any loose particles from each component.

4.4 Using a clean, dry cloth, wipe down all the components internally and externally to remove any other major contaminants such as dust and grease left behind from para 4.3.

4.5 Fully assemble the valve per the relevant assembly instructions for the specific valve series.

5 Testing

5.1 The valve shall be tested per relevant test procedures for the valve type and PO requirements.

5.2 If the valve has been hydro-tested, use compressed air to flush away any excess water from the exterior

and interior surfaces. The valve shall be partially open during this operation to ensure any trapped water in the body cavity can be removed.

6 Disassembly & Pre-Cleaning

6.1 It shall be determined if disassembly can take place in the clean room or a clean area within the warehouse. This is generally based upon valve size.

6.2 If disassembly is deemed appropriate in a clean area; the workbench shall be wiped down with a dry lint free cloth along with any tools used for disassembly purposes. The clean area shall be away from any operations or environments that may cause excessive contamination after cleaning. A suitably clean container shall be used to transport the individual components to the clean room.

6.3 If disassembly is deemed appropriate in the clean room; all work surfaces and tools shall be wiped down with a dry lint free cloth.

6.4 The valve shall be fully disassembled. It is always preferable that disassembly takes place in the clean room.

6.5 Each component shall be wiped down with a dry lint free clean cloth to remove any excess water and contaminants as they are removed and placed in a suitably clean container or on a protected surface. It should be noted that the original body seals must be discarded and replaced with new ones.

7 Precision Cleaning

7.1 Precision cleaning shall take place in the clean room which shall be verified to be suitably dust free in the key working areas.

7.2 The valve technician shall wear powder free latex gloves throughout the cleaning process.

7.3 Cleaning and drying cloths shall meet class 100 lint free wipes as a minimum.

7.4 The cleaning solution shall be suitably diluted simple green. Dilutions shall be per manufacturer recommendations.

7.5 Lint free swabs can be used for hard to reach surfaces and crevices.

7.6 Each component shall be cleaned with simple green solution using wipes and/or swabs to remove any grease, fingerprints, lubricants etc. from all surfaces. Do not allow the simple green solution to fully dry on the component where possible.

7.7 Each component shall be rinsed to remove simple green residue using distilled water.

7.8 Each component shall be dried using wipes and/or swabs.

7.9 Once fully cleaned and dried, each component shall be placed on a lint free clothed surface away from the cleaning area to prevent cross contamination from the cleaning process of other components.

8 Component Inspection

8.1 The valve technician shall ensure any gloves used for cleaning have been discarded and a new set worn.

8.2 Each component shall be inspected per ASTM G93 Type I qualitative test 1 - direct visual inspection (white light).

8.3 The presence of contaminants such as oil, greases, moisture, lint fibers, and other foreign matter shall be cause for recleaning per para 7.

8.4 Reassembly

8.5 Prior to reassembly, the valve technician shall ensure all tools have been wiped clean, especially those used for disassembly.

8.6 The valve shall be reassembled per the relevant assembly instructions/IOM manual based upon valve type and series.

9 Bagging

9.1 Once fully assembled and torqued, the valve shall be bagged using 4-mil polythene bags dependent upon the general guidelines for size and configuration as follows:

9.2 Manual and bare stem valves 2” and under - These valves shall have appropriate end protectors taped in place and be completely enclosed in a single bag sealed with clean room identification tape.

9.3 Manual and bare stem valves above 2” - These valves shall have appropriate end protectors taped in place. Each end shall then be enclosed with a bag and sealed with clean room identification tape around the valve end accordingly.

9.4 Actuated valves 2” and under - These valves shall have appropriate end protectors taped in place with the valve enclosed in a single bag up to the mount pad interface and sealed with clean room identification tape.

9.5 Actuated valves above 2” - These valves shall have appropriate end protectors taped in place. Each end shall then be enclosed with a bag and sealed with clean room identification tape around the valve end accordingly.

9.6 Valves 2” and under with extension bonnets - These valves shall have appropriate end protectors taped in place with the valve enclosed in a single bag and sealed around the extension with clean room identification tape.

9.7 Valves above 2” with extension bonnets - These valves shall have appropriate end protectors taped in place. Each end shall then be enclosed with a bag and sealed with clean room identification tape around the valve end accordingly.

9.8 The purpose of bagging is to ensure no contaminants can get into the valve bore. Hence it is NOT necessary for the entire valve to be bagged.

9.9 Manual valves may be shipped without the handles installed if requested by the customer to prevent damage to the bagging.

10 Identification/Conformance

10.1 Each completed cleaned and bagged valve shall have an O2 clean label attached showing conformance to this procedure.

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