COBHAM

All references to Cobham in name and logo are superseded by the Eaton name and logo as of March 15th 2022.

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SERVICE INFORMATION LETTER (SIL)

Repair and Overhaul Safety Recommendations
For Components Used in
High Pressure Oxygen Systems

Oxygen Safety Recommendations

OXYGEN – ATA CHAPTER 35 **CAGE CODE: 04577**

This Service Information Letter (SIL) was released by Carleton Technologies Inc. to provide oxygen safety information that should be referred to when repairing oxygen components used in high pressure oxygen systems.

The repair and overhaul recommendations listed in this SIL are provided by Carleton Technologies Inc. in an effort to assist owners and operators who fly aircraft with Carleton oxygen components.

It is the responsibility of the owner, operator and repair personnel to ensure that all safety aspects have been properly covered.

A. SUBJECT

The purpose of this SIL is to provide a recommended set of guidelines for safely repairing oxygen components. This SIL will focus on the strongly recommended practice of completely cleaning all oxygen components prior to all repairs and re-installation on aircraft. The intent of this SIL is to provide enough information so that it can be used with the appropriate Component Maintenance Manual (CMM) to provide more detail if required.

Hazards are always present when using oxygen and oxygen component cleanliness is critical as contamination may cause improper operation or ignition or both.

Many metals will burn violently in an oxygen enriched environment when ignited. Contaminates such as lubricants, pieces of PTFE tape, oils, grease, corrosion, dirt and dust can all increase the possibility of ignition in oxygen systems.

Visual cleanliness is not a sufficient criterion when dealing with oxygen components due to the hazards associated with contamination invisible to the naked eye. Components may collect contamination during storage, shipment or while installed on the aircraft. Therefore all contamination, seen or unseen must be removed prior to re-installation and system re-charge.

Additionally, this SIL provides information about proper repair and overhaul procedures found in the CMM. Refer to Section C of this SIL to determine the appropriate CMM for affected top assembly part numbers.

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B. APPLICABILITY

This SIL is applicable to all aircraft where Carleton oxygen components are installed. Refer to the table below to review component application information.

Carleton P/N	Description	Model Eligibility
1-6-05-19	Regulator	747-100
1-6-05-20	Regulator	747-100, -200, -300, -400, -SP, -SR,-100B, -100B SUD, -50D, -200B, -200C, -200F, -400D, -400F
15830AB	Regulator	DC-9-31, -32, -32F, -33F, -34,-34F,-41,-51,-81,-82,-83,-87, MD-90-93, MD-88
15830L	Diluter Demand Regulator	737-100-200
15830M	Diluter Demand Regulator	737-200
15830P	Diluter Demand Regulator	737-200, 747-100, -200, -300
2239-0001-1	Valve	MD-11, DC-10-10,-10F,-15,-30,-30F,-40, MD-10-10F, -30F
2239-0001-3	Valve	767-200, -300, MD-10-10F, -30F
2239-0001-3	Valve	MD-11, DC-10-10,-10F,-15,-30,-30F,-40
2239-0001-5	Valve	MD-11
2279-001-1	Valve	747-200, -300, -SP, -100, -200B, -200C,-200F, -400, -400F
2279-002-1	Valve	727-200, 737-200, 747-100, -200
2279-003-1	Valve	727-200, 737-200
2279-003-11	Valve	737-200, -300. -400 757-200, 777-200, -300
2279-003-13	Valve	727-200, 757-200, -300, 737-200, -300, -500, -700, -800
2279-003-15	Valve	777-200, -300
2279-003-17	Valve	777-200, -300
2279-004-1	Valve	727-200
2279-005-1	Valve	727-200, 737-200
2279-006-1	Valve	737-200
B11174-1	Valve	737-200, -300, -400, -500, 757-200
B13500-1	Valve	737-200, -300
B14547-1	Valve	737-200
B19820-1	Bleed Valve	777-200, -300
B19820-3	Bleed Valve	777-200
B19925-1	Regulator	777-200, -300
B19925-3	Regulator	777-200LR
B42365-1	02 Cylinder and Hand Valve	747, -400, -400F, 767-200, -300, -300F, -400ER 737-600, -700,-800,-900

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C. REFERENCES

Repair and overhaul of all oxygen components must be done in accordance with the applicable ATA Component Maintenance Manual issued by Carleton Technologies Inc. Refer to the table below to identify which CMM to use for a particular top assembly part number.

Carleton P/N	Applicable ATA CMM	CMM Rev. No. / Rev. Date
1-6-05-19	35-11-05	Rev. 4 / April 15, 2002
1-6-05-20	35-20-01	Rev. 7 / January 24, 2008
15830AB	35-11-13	Rev. 1 / April 25, 1995
15830L	35-11-11	Rev. None / May 15, 1979
15830M	35-11-11	Rev. None / May 15, 1979
15830P	35-11-07	Rev. 3 / March 29, 1996
2239-0001-1	35-12-01	Rev. 7 / June 15, 2007
2239-0001-3	35-12-01	Rev. 7 / June 15, 2007
2239-0001-3	35-12-01	Rev. 7 / June 15, 2007
2239-0001-5	35-12-03	Rev. 1 / November 7, 2007
2279-001-1	35-09-01	Rev. 7 / June 27, 2002
2279-002-1	35-09-01	Rev. 7 / June 27, 2002
2279-003-1	35-09-01	Rev. 7 / June 27, 2002
2279-003-11	35-09-03	Rev. 7 / August 31, 2001
2279-003-13	35-09-03	Rev. 7 / August 31, 2001
2279-003-15	35-09-03	Rev. 7 / August 31, 2001
2279-003-17	35-09-03	Rev. 7 / August 31, 2001
2279-004-1	35-09-01	Rev. 7 / June 27, 2002
2279-005-1	35-09-01	Rev. 7 / June 27, 2002
2279-006-1	35-09-01	Rev. 7 / June 27, 2002
B11174-1	35-09-03	Rev. 7 / August 31, 2001
B13500-1	35-09-03	Rev. 7 / August 31, 2001
B14547-1	35-09-05	Rev. None / September 16, 1987
B19820-1	35-11-06	Rev. 5 / August 1, 2005
B19820-3	35-11-06	Rev. 5 / August 1, 2005
B19925-1	35-22-01	Rev. 2 / May 18, 2007
B19925-3	35-22-01	Rev. 2 / May 18, 2007
B42365-1	35-22-02	Rev. 7 / July 25, 2008

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D. RECOMMENDED ACTIONS

- **Repair and overhaul of oxygen components** – all components requiring repair, overhaul or testing shall be fully disassembled, thoroughly cleaned, reassembled and tested in accordance with the applicable CMM.

  Proper cleaning removes particles, films, greases, oils, loose scale, corrosion, dirt and dust which will prevent interference with component function and reduce contamination which could cause ignition**.** ***It can not be assumed that components removed from an aircraft meet required cleanliness requirements due to system level contamination, general usage and handling. In-situ cleaning or flow through cleaning is not effective and therefore not recommended under any circumstances.***

- **Parts replacement** – Use Carleton recommended overhaul kits per the CMM when available prior to re-assembly. If no kit is available, replace all parts per the CMM prior to re-assembly.

  Refer to the table below for a complete list of available overhaul kits to be used prior to reassembly of a Carleton oxygen component. Refer to the appropriate CMM for information about parts contained in the kit that may require replacement during overhaul or other maintenance operations.

Carleton P/N	Applicable ATA CMM	Kit Part Number
1-6-05-20	35-20-01	B18799-1
2239-0001-1	35-12-01	2239-9001-1
2239-0001-3	35-12-01	2239-9001-1
2239-0001-3	35-12-01	2239-9001-1
2239-0001-5	35-12-03	2239-9001-1
2279-001-1	35-09-01	2279-9001
2279-002-1	35-09-01	2279-9001
2279-003-1	35-09-01	2279-9002
2279-003-11	35-09-03	2279-9001
2279-003-13	35-09-03	2279-9002
2279-003-15	35-09-03	2279-9001
2279-003-17	35-09-03	2279-9001
2279-004-1	35-09-01	2279-9002
2279-005-1	35-09-01	2279-9002
2279-006-1	35-09-01	2279-9002
B11174-1	35-09-03	2279-9002
B13500-1	35-09-03	2279-9002
B19925-1	35-22-01	B18799-3
B42365-1	35-22-02	B43019-1

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Note: The information listed in Section D Recommended Actions applies to all Carleton components. Only P/N B42365-1 cylinder and valve assembly may be exempt from these actions if the cylinder is being removed from the aircraft for transfilling only.

The following precautions need to be taken for all cylinders being removed for refilling:

- **After removal from the aircraft, immediately plug the CGA 541 port with a green non-shredding oxygen clean cap.**
- **Just prior to refilling, remove the cap and examine the cylinder to determine the following:**
  - **Cylinder is identified for oxygen service.**
  - **Cylinder is free from defects per the CMM.**
  - **Cylinder has a valid hydrostatic test per the CMM.**
  - **The presence of residual gas.**
    - **If gas is present, verify it meets the requirements of Aviators Breathing Oxygen per MIL-PRF-27210.**
    - **If gas is absent or it does not meet MIL-PRF-27210, refer to Section E of this SIL.**
  - **Verification of cleanliness and the absence of fluoresce using a minimum 50 W ultra-violet black light. If fluoresce is present, refer to Section E of this SIL.**

E. INSTRUCTIONS

1. Prior to any repair, overhaul or test, use the appropriate CMM to disassemble and clean the oxygen component. The end result of proper cleaning shall have a non-volatile residue (NVR) level of 2.0 mg. or less per square foot.

2. After cleaning, all parts with open ports shall have the ports plugged with green non-shredding caps. After all of the openings are closed, the parts shall be sealed in a polyethylene bag or equivalent, dated and identified as being cleaned for oxygen service. These bagged parts are then stored in normal storage conditions or moved to the work area for re-assembly.

3. Use the appropriate CMM to re-assemble the cleaned parts in a work area having the following minimum classification and furnishings:

- A class 100,000 clean room per FED-STD-209 or equivalent.
- Equipment such as work benches, chairs and racks should be constructed and finished with materials that will not produce dust or particulate from chipping, flaking or corrosion.
- Personnel should wear clean smocks without exposed buttons or zippers.
- Tools that have been cleaned and dedicated for oxygen service only.
- No pencils or erasers.
- Availability of laminar flow booths for critical fits and metal to metal seats.

4. After component re-assembly, test per the appropriate CMM.

5. When the repair or overhaul is complete, package and seal the component in a polyethylene bag or equivalent, dated and identified as being cleaned and repaired for oxygen use.

6. Overhauls performed on Carleton apparatus shall be done by those facilities experienced in, or by personnel knowledgeable in high pressure aviation oxygen equipment. Contact Carleton Technologies for information regarding getting an oxygen component overhauled at Carleton's facilities to ensure safe operation. See Section G for information on how to contact Carleton Technologies, Inc.

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F. WARRANTY INFORMATION

Carleton warranty remedies are not applicable to the subject(s) covered in this SIL.

G. CONTACT CARLETON TECHNOLOGIES:

- To get a Carleton oxygen component overhauled, repaired or tested, contact Carleton at +1 (716) 662-0006. More information is also available at www.carltech.com or www.cobham.com.

- To purchase overhaul kits or other component parts, contact Carleton at +1 (716) 662-0006. More information is also available at www.carltech.com or www.cobham.com.

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