Compressed-Air In-Line-Filter Maintenance

1. SCOPE AND APPLICATION

    1.1. This method is based on filter replacement instructions included with the Finite Filter elements. It is used for replacing filters in compressed-air lines which lead from the service corridor between Rooms B246 and B205 and the Toxicity Laboratory.

2. SUMMARY OF METHOD

    2.1. Filters are visually checked annually or more frequently, if necessary. They are replaced as needed (the replacement interval has increased due to better filters on the main air compressor unit and the decreased use of compressed air within the culture laboratory). Replacement consists of shutting off the air-supply; releasing pressure from the filter-housing; removing the housing and filters; and, then replacing the filters followed by the housing. Filter assemblies are also checked annually for leaks. Any compressed-air plumbing problems are reported to building maintenance staff. A bucket is used to collect parts since the floor is grated (not solid) and any dropped parts could fall two floors to the basement level.

    2.2. Interferences

        2.2.1. Construction in the corridor. Laboratory compressed-air unit malfunction.

3. EQUIPMENT AND SUPPLIES

    3.1. Finite Filter™ Coalescing Element 6C15-060-20JA

    3.2. Finite Filter™ Coalescing Element AU15-060-07JA

    3.3. Allen wrench (¼")

    3.4. Key to room B226 (utility service corridor Key #7 Biology Key Locker)

    3.5. Step stool

    3.6. 2 – 12 qt. buckets

4. REAGENTS AND STANDARDS (NONE)

5. FILTER REPLACEMENT

    5.1. Assemble the equipment before beginning filter maintenance.

    5.2. Open the service corridor door, B226, and turn on the light.

    5.3. Locate the main air valve (~ 3" from the door and ~ 7.5 'above the floor) and turn off the air by pushing up on the lever.

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5.4. Open the stopcock (turn counterclockwise) located on the bottom of the adsorber-filter assembly to bleed air from the filter units. Close the stopcock when air is no longer heard or felt escaping from the assembly.

5.5. Place a bucket under the coalescing-filter assembly. Open the stopcock (turn counterclockwise) and allow any water and oil to drain into the bucket. Close the stopcock when liquid (if any) ceases to readily drain from the assembly. Discard water only down the sink (B246). Treat any oily water (detected by observation) in accordance with section 7.2.

Remove the filter-assembly housings

5.6. Use the ¼" Allen wrench to remove the six bolts from the coalescing filter housing. Place the bolts in a bucket. When removing the last bolt, hold the housing to prevent it from falling. Carefully lower the housing, making certain that the "O" ring inside the upper portion of the assembly doesn't fall.

5.7. Remove the adsorber-filter assembly housing by gripping the housing with both hands and turning the housing to the left as indicated by the arrow drawn on the housing. Carefully lower the housing, making certain that the "O" ring inside the upper portion of the assembly doesn't fall.

5.8. Inspect the filters. Unless the filters appear dirty, wet or frayed, the filters do not need replacing. If the filters are not being replaced, reassemble the filter units.

Remove and replace the filter elements

5.9. Remove the coalescing filter: Count and remember the number of threads below the wingnut on the filter support rod. Remove the wingnut (turn counterclockwise), spring, and washer from the filter support rod. Remove the end cap from the filter. Place the loose parts in the bucket.

5.10. Replace the coalescing filter: Remove a new filter from its box and the plastic bag. Place the end cap on either end of the filter (filter is open at both ends). With the end cap on the bottom (filter is vertical), slide the filter over and up the support rod. Place the washer, spring and wing nut (reverse order of removal) onto the support rod. Tighten the wing nut until the same number of threads is visible (see 4.9) beneath the wing nut. The filter should sit firmly against the upper part of the assembly without being crimped or crushed.

5.11. Remove the adsorber filter: Count and remember the number of threads below the wingnut on the filter support rod. Slide the filter down and off the support rod. Place loose parts in the bucket.

5.12. Replace the adsorber filter: Remove a new filter from its box and plastic bag. Slide the filter up and over the support rod (the adsorber filter is capped at each end and has a center hole for the support rod – either end can be up). Place the wing nut on the support rod and tighten until the same number of threads (see 4.11) is visible

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beneath the wing nut. The filter should sit firmly against the upper part of the assembly without being crimped or crushed.

Replace the filter-assembly housings

5.13. Coalescing filter-assembly housing: Ensure that the "O" ring is still in place on the housing. Slide the housing over the filter, align the bolt holes, start the bolts (6 total) by hand and then tighten alternating bolts with the Allen wrench until snug.

5.14. Adsorber filter-assembly housing: Fit the housing over the filter. Carefully align the threads (do not cross thread). Tighten the housing (turn to the right) until hand tight.

Check the filter assemblies for air leaks

5.15. After both units are reassembled, open the main air valve and listen and feel for air escaping either housing unit. Adjust tightness of bolts (coalescing unit) or housing (adsorber unit) to stop any leaks.

5.16. When no leaks are detected, secure the work area and return materials to their proper places.

6. DATA ARCHIVAL

6.1. Use a black, waterproof pen for all bench sheets and logbooks.

6.2. Record inspection and filter replacement in the *Instrument Maintenance Log*.

6.3. To correct raw data entries, place a single line through the incorrect or illegible entry, write the corrected entry near the error, date and initial the correction. Do not overwrite entries.

6.3.1. The corrected entry is written as near its appropriate space as possible or else in the comment box on the appropriate bench sheet.

6.3.2. If the correction requires an explanation, write a comment and reference the error. Initial and date the explanation. Do not attempt to put all information (correction and comments) into a small space.

6.3.3. Use sequential alphabetical annotation to identify errors and corresponding comments (use A for first error and use A for corresponding explanatory comment; use B for second error, etc.).

7. QUALITY CONTROL

7.1. Refer to Laboratory Quality Manual for corrective action and maintenance issues.

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8. SAFETY/HAZARDOUS WASTE MANAGEMENT

8.1. Proper laboratory protection, including lab hood or ventilation system, lab coat, gloves and safety glasses, is required when working with chemicals and unprocessed samples and maintenance.

8.2. Refer to Laboratory Quality Manual for sample disposal

8.3. Refer to the Laboratory Health and Safety Manual and Hazardous Waste Management

9. REFERENCES

9.1. Finite Filter Element replacement instructions.

9.2. Laboratory Quality Manual https://www.floridadep.net/resources/health-safety-manual

APPENDIX OF CHANGES

12/12/2007	Added Scope and Application; Summary of Method; and Appendix of Changes.
08/08/2013	Reformatted SOP.
01/29/2015	Formatted for 508 compliance.
07/09/2015	Updated links.
7/11/2016	Updated links.
9/15/2017	Updated links.
8/23/2018	Changed font to Calibri
8/28/2020	Updated data archival section
07/30/2021	Updated links.

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