



Technical Service Bulletin

Date: 11/04/2004

Product Description: Donaldson Endurance™ Air Filters (EAF)

Subject: Air Filter Change Recommendations

OBJECTIVE:

To communicate the proper Donaldson Endurance™ air filter change recommendations to AMSOIL dealers and their customers (ref. 1).

ISSUES:

In light of significant changes in the AMSOIL heavy duty filter line, questions have arisen pertaining to the proper recommendations of when to change an air filter designed for heavy duty use.

Proper air cleaner servicing will reduce the contaminants entering the engine and will save time and money by increasing engine and filter life.

With the purchase of Donaldson Endurance™ heavy duty air filters (ref. 1), AMSOIL, INC. wants to ensure that dealers and customers receive maximum engine protection while obtaining the best value.

TECHNICAL DISCUSSION:

Air restriction should be the basis to determine air filter maintenance intervals. The element in the air cleaner should be serviced when the maximum allowable restriction, established by the engine manufacturer, has been reached. Over servicing, however, can result when maintenance is based solely on visual observation. Over-servicing can cause increased service cost, time and material and dust contamination of the engine due to:

1. Element damage, due to excessive handling
2. Improper installation of element
3. Decreased initial inefficiencies (ref. 2).

Increased Efficiency and Restriction

As dust and other contaminants accumulate within and on the surface of the air filter media, additional dust and particles accumulate on top of the material previously deposited. (ref. 1) Over time, smaller and smaller particles will be filtered. As the filter accumulates these contaminants, the efficiency of the filter increases, but with a restriction in air flow.

Instrumentation

Restriction is best recorded by a water manometer, an air cleaner service indicator or a dial gauge calibrated in inches of water. Since some users will not have a water manometer or dial gauge available, the use of permanently mounted service indicators should be considered (ref. 2). The indicator can be mounted in an area where the operator can monitor the condition of the element constantly. Air filter companies sell air restriction measuring devices such as continuous reading gauges and pass/fail measuring kits (refs. 3, 4). Newer heavy duty truck and equipment offer devices from the factory, however.

Restriction Measurement

Most engine manufacturers suggest a maximum allowable restriction between 15 inches and 20 inches for gas and LP engines, and from 20 inches to 30 inches for diesels (ref. 2). Exceeding these maximums will affect engine performance. The operator should not be alarmed when the signal on the restriction indicator begins to appear. The air filter manufacturer furnished your service element to withstand several times these recommended maximums without collapsing or leaking dirt into the engine.

Submitted By: RH

Reviewed By: DY

Approval By: Alan Amatzio

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Restriction Measurement

Restrictions are measured in the air cleaner outlet tap, at a tap in the air transfer tube, or within the engine intake manifold. As a dry air cleaner element becomes loaded with dust, the vacuum on the "engine side" of the air cleaner increases. This vacuum is generally measured as restriction in inches of water. The engine manufacturer often places a maximum allowable limit on the amount of restriction the engine can withstand without loss of performance before the element must be serviced (ref. 2).

RECOMMENDATION:

AMSOIL recommends owners of heavy duty equipment and over the road truck in classes six, seven and eight follow the original equipment manufacturers recommendation when changing their vehicle's air filter (ref. 5). Since most of these units come with restriction gauges already installed, AMSOIL is recommending that owner's utilize air flow instrumentation for ease of use, reliability, and to reduce costs. The Donaldson Endurance Air Filter is so good that Donaldson guarantees Endurance Air Filters will last twice as long as standard filters; otherwise, Donaldson will provide a new filter at no charge. In order to qualify for this guarantee, you must do the following:

- Use only Donaldson Endurance Air Filters.
- Have accurate records of current cellulose media change intervals.
- Keep accurate track of miles driven with Donaldson Endurance air filters.
- Maintain accurate maintenance records.
- Provide filter for inspection.
- Standard Donaldson warranty terms and conditions apply.

REFERENCES:

- 1) Graham, Kristine, et.al., "Polymeric Nanofibers in Air Filtration Applications", Proceedings of the Fifteen Annual Technical Conference and Expo of the American Filtration and Separations Society, Galveston, Texas, 2002.
- 2) Filter Manufacturers Council, "Servicing Heavy-Duty Air Filter Elements", Technical Service Bulletin 89-3R1, pp. 1-2.
- 3) Donaldson Company, Inc., "On Highway Filters-Donaldson Endurance", Donaldson Brochure No. F111004, p. 3.
- 4) Fleetguard, Inc., "Air Filtration Systems", Fleetguard Brochure No., LT15066, p. 1.
- 5) Fleetguard, Inc., "Air Filtration, Questions and Answers", on website at address: http://www.fleetguard.com/fleet/en/customer_assistance/en_faqs.jsp?searchCategory=0

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