



Technical Service Bulletin

Date: 02/16/2005

Product Description: Donaldson Endurance™ Lube Filters (ELF)

Subject: Lube Filter Change Recommendations

OBJECTIVE:

To communicate the proper Donaldson Endurance™ lube filter change recommendations to AMSOIL dealers and their customers.

ISSUES:

AMSOIL Heavy Duty SDF 70, 72, 73, 74, 75, and 77 are being replaced with Endurance™ filters and are designed for use in vehicle classes 6, 7 and 8. Endurance™ Filter ELF7349, will replace the AM-SOIL SDF 80, which is used in Dodge pick ups, buses and other applications equipped with the Cummins 5.9L Turbo diesel and other Cummins engines.

In light of these significant changes, questions have arisen pertaining to the proper filter change recommendations for commercial applications.

With the purchase of Donaldson Endurance™ heavy duty oil filters, AMSOIL wants to ensure dealers and customers receive maximum engine protection while obtaining the best value.

TECHNICAL DISCUSSION:

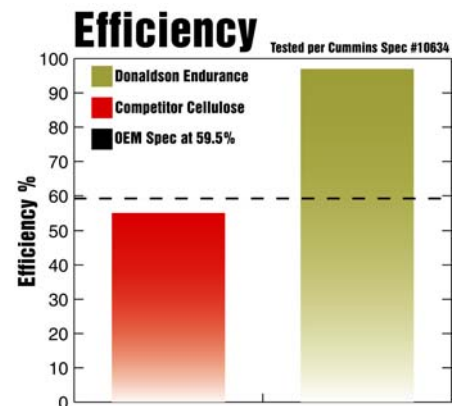
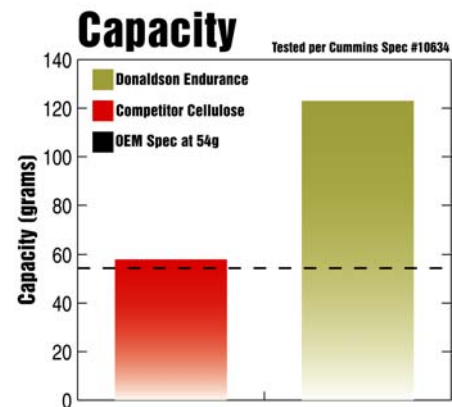
Background

AMSOIL is continually investigating new and innovative technologies to improve its filtration product line, hence the reason for the introduction of the Endurance™ product line. Endurance™ lube filters are manufactured with full synthetic, nanofiber media that are less than one micron in diameter. The small uniform filter fibers and resulting tiny inter-fiber spaces allow more contaminate to be captured in and on the surface of the media. Smaller fibers allow for more efficient filtration, longer life and more oil flow in cold weather conditions. Fibers found in cellulose or even synthetic blend filters are larger and

have larger spaces between the fibers, causing the contaminant to load inside the media and plug the flow path, resulting in higher restriction and lower capacity (1). Also, the media and internal parts of the Endurance™ filters are more resistant to degradation. Simply stated, the Endurance™ diesel filters exceeds the performance of the SDF diesel filters.

Performance

All Endurance™ lube filters have an efficiency rating of 98.7% at 15 micros and 50% at 7 microns when tested under ISO 4548-12 protocol. Also, Endurance filters perform well above the requirements set forth by the OEM (2).



Submitted By: RH

Reviewed By: DY

Approval By: Alan Amatzio

Date: 03/03/2005

Distribution: ___Internal __X__All

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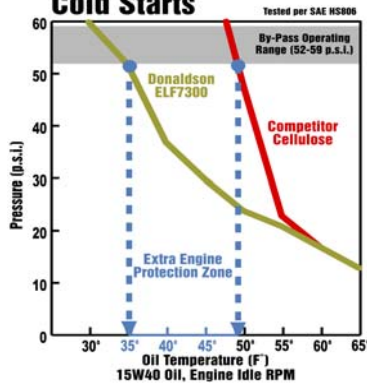
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Flow Restriction During Cold Starts



- Donaldson ELF7300
- Increased Lubricant Flow
- Minimize pressure drop
- Reduces time in by-pass, ensuring longer filtering time

recommended services should be followed very closely. If severe driving conditions exist, service intervals should be shortened (4). If an Extended oil drain program is of interest, AMSOIL recommends a oil sampling protocol be established. It should be noted, however that oil analysis alone is not an acceptable means of comparing oil filter performance (5).

RECOMMENDATION:

AMSOIL will guarantee Endurance™ lube filters up to twice the manufacturers recommended service interval, to a maximum of 60,000 miles for heavy-duty diesel applications. Endurance™ filters are guaranteed to extend the customer's drain interval when used under normal on-highway conditions while following these maintenance practices:

- Use of Endurance™ lube filter(s)
- Use of AMSOIL Synthetic motor oil
- General preventative maintenance practices performed in accordance with manufacturer's recommendations

Engine in good operating condition prior to attempting extended drain intervals

REFERENCES:

- 1) Donaldson Company, Inc., "Engine Lube Filter Media Comparison", Donaldson Brochure No. F111001, p. 2.
- 2) Donaldson Company, Inc., "Donaldson ELF7300 Extra Long Life Lube Filter for Popular Cummins Engines", Donaldson Brochure No. F111002, p. 2.

Extended Filter Change and Drain Intervals

The purpose of an oil filter is to remove contaminants from the oil before they generate wear on engine component surfaces. There are a number of filtration products offered in the industry that claim to allow for extended oil drain intervals. The filter alone will not extend the life of engine oil (3). The filter has one function, to filter contaminants from the oil. do an excellent job in filtering, and have been designed with the best adhesives, rubber compounds, filter media, and steel construction. Endurance™ lube filters can achieve the same type of extended service intervals as SDF filters even under today's stringent operation conditions. As for those new Endurance™ lube filters with no direct read across to SDF filters, we recommend to follow the OEM's recommendations till we gather more experience and oil analysis data with these filters (3).

In addition, light duty diesel engine service requirements are different than what we are used to for gasoline and larger diesel engines. Owner's manual

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- 3) Filter Manufacturers Council, "Extended Oil Drain Intervals", Technical Service Bulletin 98-1, pp. 1-2.
- 4) Filter Manufacturers Council, "Light Duty Diesel Engine Service", Technical Service Bulletin 84-3R2, p.2.
- 5) Fleetguard, Inc., "Differentiating Filter Performance by Oil Analysis Results", Part number LT15105, p. 1.

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