Performance PURE

BALDWIN FILTERS®


BALDWIN
FILTERS
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B2

Protecting today's engines

As modern, high-performance engines have continued to evolve over the past 50 years, so has the requirement for more sophisticated oil filters. While filters play a "passive" role in engine protection, they nevertheless must work together with the lubricating oil to keep engines protected and clean.

Modern oils play vital functions in protecting engines, especially in heavy-duty situations such as trucking, construction, mining and agriculture. Lubricating oil acts to reduce friction and wear, cool engine parts, seal combustion chambers, clean engine components and inhibit corrosion. These functions are carried out by special additives in the oil, which complement the action of the oil itself. The protective action of the lubricating oil and its additives are supported and balanced by the work of the lube filter.

Lube filters, particularly those designed for heavy-duty applications, have the sole purpose of keeping damaging contaminants away from sensitive engine parts. Filters trap oil contaminants in two ways:

- Some particles "adhere" to filter media as the oil flows through the filter. Such particles attach themselves to the media surface without plugging up the media "pores."
- Other particles are trapped in the filter media by the pressure of the oil as it flows through the filter. As the oil changes direction in its path through the filter, particles are driven or "impinged" into the media. Ideally, most of these particles are trapped in the outer portion of the media, leaving inner media surfaces open to continue catching particles that slip through. Eventually, however, media pores will "fill up" and the filter will begin to lose its effectiveness and will need to be replaced.

Baldwin: The Basics of Lube Filtration

The purpose of a lube filter is to promote long system life by keeping damaging contaminants away from sensitive engine components. Particles that are the most damaging are in the 5 to 20 micron range. To put this in perspective, the thickness of a human hair is about 50 microns in diameter.

Contaminants come in several forms:

- **Ingested.** Those that enter with the fuel, air or oil.
- **Built In.** During the assembly of the engine, some dirt will be left in. Core sand is relatively common.
- **Created.** As the engine runs, friction between moving parts causes minute pieces of bearings, cylinder walls, pistons, etc. to break off and circulate through the fluid stream.

Over the years various filters have evolved:

- ***By-Pass filters*** — with a by-pass system, about 10 percent of the oil flow is finely filtered and returned to the sump where it sweetens the dirty oil. It's a continual process and within minutes all the oil is filtered.
- ***Full-Flow filters*** — with this system 100 percent of the oil is filtered before it reaches the bearings. It is less restrictive and more free-flowing than a by-pass filter and should remove all particles large enough to cause immediate damage.
- ***Dual-Flow filters*** — with this method, all oil is continuously filtered by the full-flow filter before it reaches the engine's critical components. About 10 percent of the oil is diverted to the by-pass filter where it is scrubbed of fine contaminants. Oil from the by-pass is then returned to the sump.

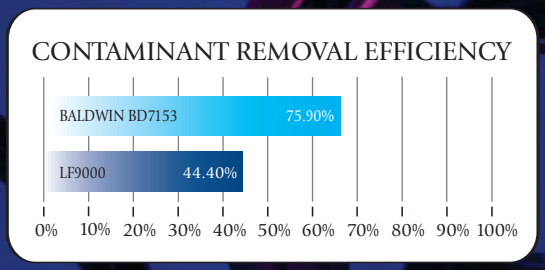
PURE PERFORMANCE: TESTED TIME & AGAIN

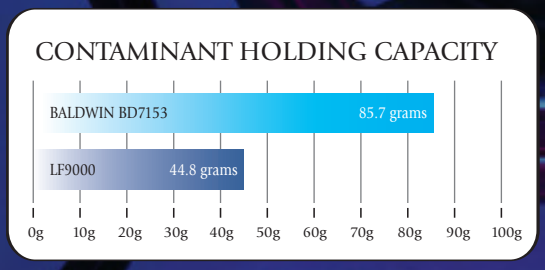
Pure Performance: tested time & again

ISO 4548-12 and SAE HS806 are industry standard filtration performance tests for determining the contaminant removal efficiency and contaminant holding capacity.

Baldwin lube filters mean pure performance, system protection and hours of trouble-free operation for all types of equipment.

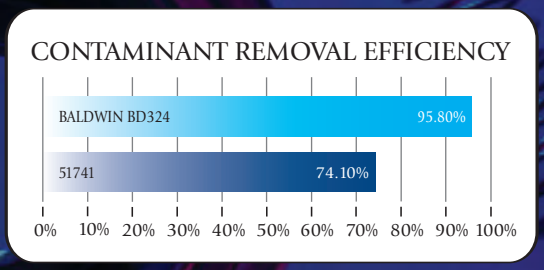
Baldwin vs. Leading Competitor

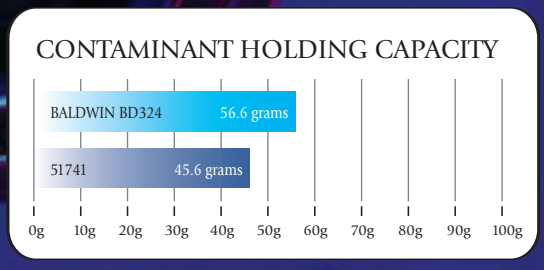




ISO 4548-12 Test: Flow Rate - 39.6 GPM; Temperature - 100°F; Terminated Pressure - 10.2 PSID. Efficiency @ 10 Microns.

Baldwin vs. Leading Competitor





SAE HS806 Test: Flow Rate - 20 GPM; Contaminant - PTIFTD at 5 g/hr. (Fine Test Dust); Terminated Pressure - 20 PSID.

Does extended oil change interval pay?

Baldwin engineers, as well as most engine and equipment manufacturers, have been researching extended oil drain intervals in the field for more than 30 years. These engineers agree that extended drain intervals should be approached with extreme caution. While extended intervals may save a few dollars in the short run, improperly managed intervals can lead to accelerated engine wear and costly engine rebuilds. When considering extended drain intervals, it's important to develop a consistent oil analysis program.

Another factor to consider is that oil consumption tends to increase toward the end of extended change intervals, because engines burn more used oil than new oil. Increased oil usage reduces the savings from extending the drain interval.

When evaluating the value of extended oil change intervals, a key factor for selecting lube filters is capacity — the amount of contaminants the filter can hold before it begins to plug. As oil begins to deteriorate, soot and sludge accumulate in the filter and can rapidly plug the filter media. Lube filters with higher capacity protect the engine better when oil change intervals are extended.

Whether your equipment can tolerate extended oil drain intervals depends on such variables as operating environments, engine types, oils used, etc. Consider miles traveled vs. hours of operation. For example, over-the-road trucks, averaging 80,000 miles per year, may handle extended drain intervals better than local service trucks that travel less than 40,000 miles per year. Remember, too, that the accumulation of oil contaminants builds up over time, regardless of miles traveled or hours operated.

Extended oil change intervals do not lessen the need for effective preventive maintenance, including regular oil analysis. In fact, a strict maintenance schedule is necessary.

The "life cycle" of a lube filter

Three factors determine the effectiveness of a lube filter in protecting a heavy-duty engine:

- ***Efficiency.*** The filter's ability to trap contaminants within the range of sizes most likely to cause engine wear and damage.
- ***Capacity.*** The amount of contaminants the filter media can hold before the pores begin to plug and interrupt proper oil flow through the filter.
- ***Service Life.*** The length of time the filter can successfully perform its functions of trapping and holding contaminants. Service life is dependent upon the capacity and efficiency of the lube filter.

Baldwin High Velocity design surpasses OE

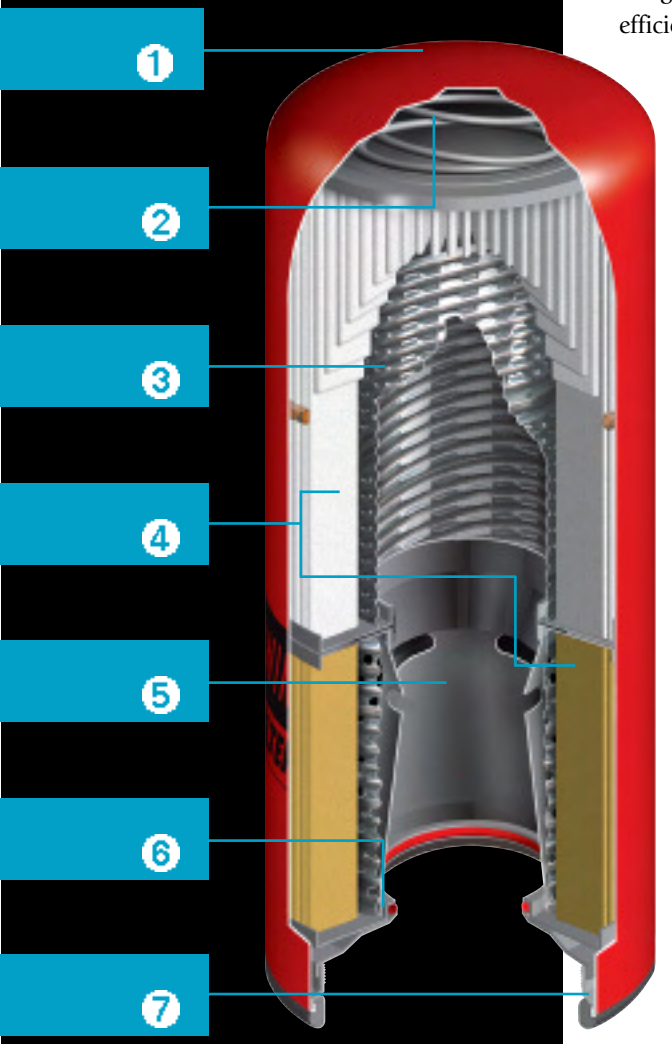
Baldwin Filters' High Velocity Dual-Flow™ lube filters provide improved engine protection during extended oil drain intervals, high idle time and harsh operating conditions. ISO 4548-12 laboratory tests, performed per Cummins Engineering Standard 10765, prove Baldwin Filters' High Velocity Dual-Flow design surpasses the OE in contaminant removal efficiency and contaminant holding capacity. The patent pending design of the High Velocity Dual-Flow filters provides maximum filtration, while the heavy-duty construction insures dependable operation.

Baldwin Filters' High Velocity Dual-Flow line includes patent pending dual-flow lube filters to be used on Cummins ISM, ISX and Series 600 engines as replacements for the Fleetguard Venturi™ filter line.

There are differences between standard dual-flow lube filters and the High Velocity Dual-Flow designs.

High Velocity Dual-Flow filters have one inlet and one outlet. Oil flowing through the filter is sent directly to the engine to protect vital engine components, rather than a portion being returned to the sump as with conventional dual-flow filters.

The High Velocity Dual-Flow design is also superior to standard full-flow/by-pass designs in that a larger portion of the flow travels through the high efficiency element, removing more small contaminants. In traditional full-flow/by-pass designs, only a small percentage of flow, 10% or less, travels through the high efficiency element.



HIGH Velocity® Dual-Flow BALDWIN FILTERS®

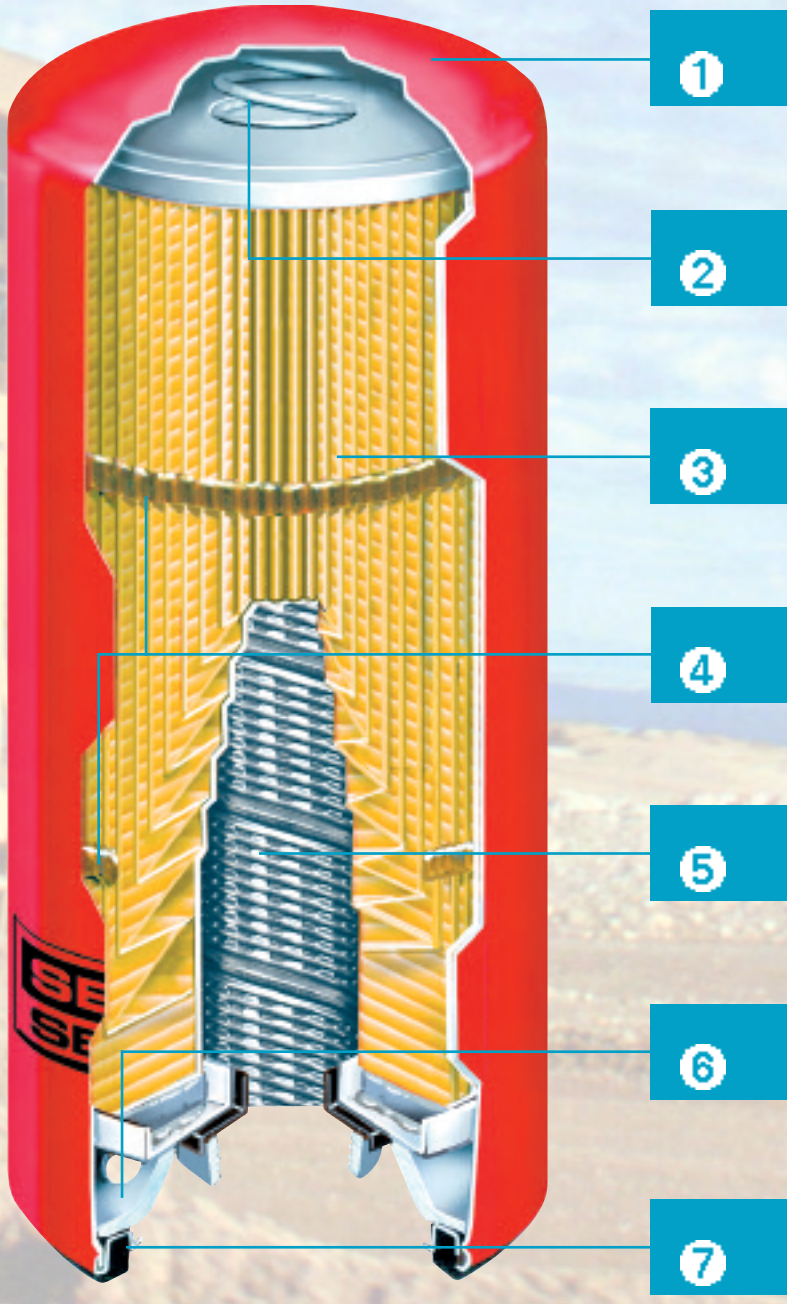
1. ***Heavy-Duty, All-Metal Housing*** provides unequaled burst- and pulse-withstanding strength.
2. ***Steel Coil Spring*** keeps its shape, maintaining a positive load pressure on the elements.
3. ***Spiral Wound Louvered Centertube*** with fluted ribs allows for maximum flow and adds strength to resist pressure surges.
4. ***Patent Pending Design*** provides maximum contaminant holding capacity and contaminant removal efficiency, while minimizing flow restriction during operation and cold start-ups.
5. ***High Velocity Dual-Flow Nozzle*** uses a venturi-type cone to balance the flow between the elements, taking advantage of the positive filtering properties of each.
6. ***Heavy-Duty Steel Retainer and End Cap*** are welded together to prevent the post seal from dislodging.
7. ***Heavy-Duty Steel Baseplate*** is joined to the can with a J-lock seam, reducing the possibility of leakage due to high pressure.

Severe Service® Filters from Baldwin

Responding to today's demands for effective lube filtration for high performance engines, with the capacity for extending oil change intervals, Baldwin Filters offers a line of "Severe Service" filters.

Severe Service filters incorporate the proven effectiveness of cellulose media, blended with synthetic media technology. Under appropriate conditions, these filters have extra efficiency and capacity to handle extended drain intervals. On the other hand, for equipment operating under extreme conditions, Severe Service lube filters provide added protection against harmful oil contaminants.

1. ***Heavy-Duty, All-Metal Housing*** provides unequaled burst- and pulse-withstanding strength.
2. ***Steel Coil Spring*** keeps its shape, maintaining a positive load pressure on the adapter seal.
3. ***Cellulose/Synthetic Blend Media*** specifically developed to increase structural strength, efficiency and contaminant capacity.
4. ***Two Evenly Spaced Glue Bead Supports*** help insure flow through the entire pleated surface and reduce media fatigue between extended oil changes.
5. ***Louvered Centertube*** with fluted ribs allows for maximum flow and adds strength to resist pressure surges.
6. ***Heavy-Duty Baseplate*** is joined to the can with a double-rolled, tuck lock seam or J-lock seam design to resist leakage due to high pressure.
7. ***High Strength Gasket*** resists heat and corrosion for extended life.



Baldwin Filters…known for Quality!

Baldwin is the industry leader in heavy-duty filters. Our multi-million dollar research and testing facility anticipates an ever-increasing demand for filters that meet or exceed original equipment specifications.

Long before the industry adopted the philosophy, Total Quality Management guided our manufacturing and distribution processes. Baldwin continues to earn preferred vendor status, such as the QS 9000 and ISO 9001 certification.

We're committed to giving our customers the best products and services in the filter marketplace. It's a commitment based on continued engineering of our production facilities, ongoing training of our employees, and refinement of already sophisticated research operations.

BALDWIN FILTERS®

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4400 E. Hwy. 30 / P.O. Box 6010 / Kearney, NE 68848-6010
(800) 822-5394 or (308) 234-1951

Order Entry: (308) 237-9700
Order FAX: (800) 828-4453
Int'l FAX: (308) 237-9769

Catalog Info: (308) 237-9706
Catalog FAX: (800) 634-1951

Internet: www.baldwinfilter.com

QS 9000
ISO 9001
QUALITY SYSTEM CERTIFIED

Africa
Baldwin Filters South Africa
Ph: 27-21-534-0029
Fax: 27-21-534-3730
E-mail: africa@baldwinfilter.com

Australia & New Zealand
Baldwin Filters Aust., Pty. Ltd.
Ph: 61-3-9353-7300
Fax: 61-3-9353-7301
E-mail: australia-newzealand@baldwinfilter.com

Central & South America
Baldwin Filters
Ph: (786) 425-1896
Fax: (786) 425-9138
E-mail: latinamerica@baldwinfilter.com

China
Baldwin Filters
Ph: 852 2814 7722
Fax: 852 2814 7744
E-mail: china@baldwinfilter.com

Europe
Baldwin Filters N.V.
Ph: 32 3 328 18 88
Fax: 32 3 328 18 99
E-mail: europe@baldwinfilter.com

Mexico
Filtros Baldwin de Mexico, S.A. de C.V.
Ph: 5255-5445-0660
Fax: 5255-5446-0677
E-mail: mexico@baldwinfilter.com

Middle East
Baldwin Filters
Ph: (308) 237-9782
Fax: (308) 237-9769
E-mail: middleeast@baldwinfilter.com

Russia
Baldwin Filters
Ph: (308) 237-9749
Fax: (308) 237-9769
E-mail: russia@baldwinfilter.com

Southeast Asia & Pacific Rim
Baldwin Filters
Ph: 65-6382-6619
Fax: 65-6382-6182
E-mail: southeastasia@baldwinfilter.com

UK & Ireland
Baldwin Filters Ltd.
Ph: 44-1702-291668
Fax: 44-1702-290846
E-mail: uk-ireland@baldwinfilter.com

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