

TRANSMISSION ELEMENTS



Improved Reliability through
Cleaner Transmission Fluid

Extended Service Life with Low ΔP

Lower Maintenance Costs
and Better Performance

Transmission and Filtration Applications Explained

The transmission of any moving vehicle is one of the most important components. **During normal operation, fibers, wear metals and other solid particles can contaminate the system, leading to expensive down time and costly repairs.** On larger vehicles, such as buses, trucks and waste haulers, keeping the transmission free and clear of contaminants, especially large wear metal particles, ensures peak performance and lower maintenance costs. From a maintenance perspective, it is imperative to choose the best element in terms of efficiency, capacity and pressure drop. Many hours of development, engineering and live testing (both in the lab and in the field) went in to the making of our transmission elements, with the goal of creating the highest performing filter element at the lowest possible cost.

Transmission Element Evaluation Particle Removal Efficiency and Pressure Drop

Laboratory test results show Schroeder's superior efficiency when comparing our element against two competitive versions of element 29545780, which is a common element used in kit 29548988. Schroeder's element shows significantly better removal of both wear metals and other particulate. Additionally, the average center tube collapse values demonstrate our superior design features and ability to withstand higher differential pressures.

- ◆ Tighter pore size and higher particulate removal efficiency
- ◆ Greater Beta stability over life of element
- ◆ Media designed to remove critical transmission wear metals
- ◆ Better construction

Multi-Pass Test Data

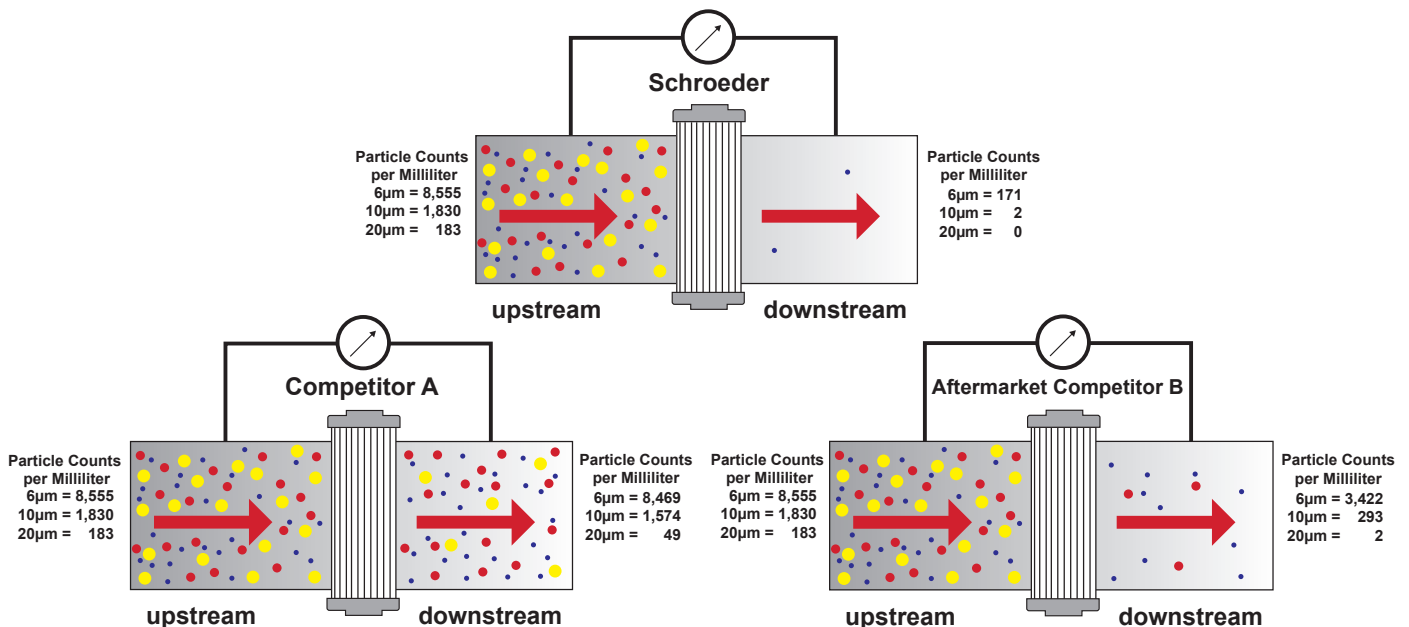
Manufacturer	β_{200} Efficiency	β_{1000} Efficiency	Efficiency at 10 μ m	Average Center-Tube Collapse Pressure (PSID)	Media Area (square feet)	Pressure Drop (psid) at 20 gpm
Schroeder	13 μ m	15.5 μ m	98%	2,068	2.75	2.5
Competitor A	> 30 μ m	> 30 μ m	> 30 μ m	1,511	2.1	3.0
Aftermarket Competitor B	> 30 μ m	> 30 μ m	75%	913	2.0	2.0

***Note: Poor element efficiency caused particles to re-circulate, saturating the particulate sensors and prematurely ending the test.**

ISO 16889 details the industry standard test used to rate element performance. Schroeder owns a distinct advantage against the competition when you compare our filtration efficiency and beta stability (defined as the ability of the element to maintain its efficiency throughout its useful life). As a result, we offer the right level of filtration for optimal transmission performance at the lowest cost-per-gram of contamination retained.

What Ends Up In Your Transmission?

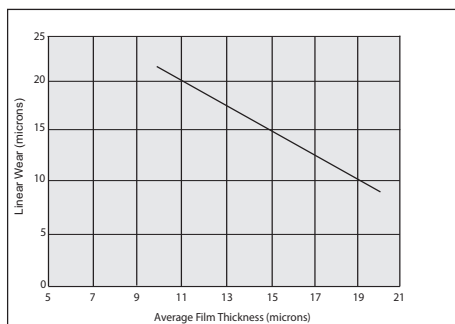
Upstream and Downstream Particle Counts and How This Impacts Transmission Life



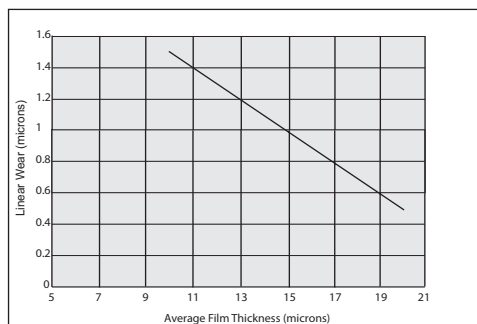
Are Your Existing Filters Efficient Enough? Particle Size vs. Bearing Wear: Are You Removing the Right Particle Sizes?

There is a direct relationship between the minimum film thickness for a journal bearing and the most damaging particle sizes. Minimum film thicknesses range from 1 – 20 µm. Schroeder elements provide 99.9% efficiency for particles sizes > 15 µm, whereas the two competitive elements only have an efficiency of ≤ 50% for particles > 20 µm.

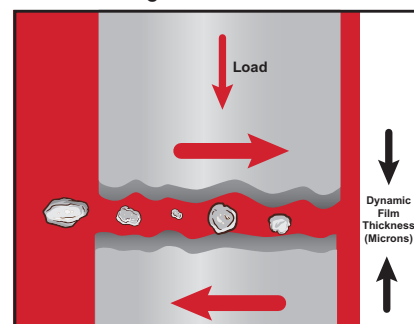
**Bearing Wear vs. Film Thickness
Contaminated Oil¹**



**Bearing Wear vs. Film Thickness
Clean Oil¹**



**Film Thickness Should Be ≥
Largest Particle Size**

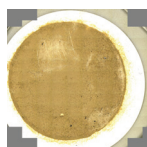


Why Does Better Filtration Matter? New vs. Used Media Comparison

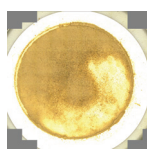
Competitor A



Competitor A Media at 5X magnification



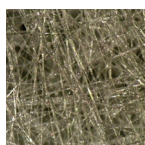
Total Contamination Captured – 198.47 mg/in² of media



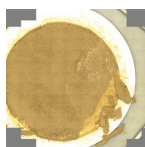
Contamination captured downstream of the main "working" layers – 112.8 mg/in² of media

Conclusion: 57% of the contaminant was not being captured by the main "working" layers of the media.

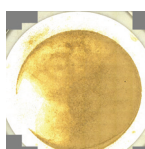
Aftermarket Competitor B



Aftermarket Competitor B Media at 5X magnification



Total Contamination Captured – 219.37 mg/in² of media



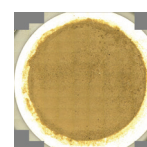
Contamination captured downstream of the main "working" layers – 130.35 mg/in² of media

Conclusion: 60% of the contaminant was not being captured by the main "working" layers of the media.

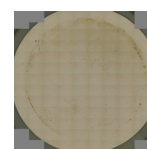
Schroeder



Schroeder Media at 5X Magnification



Total Contamination Captured – 335.24 mg/in² of media



Contamination captured downstream of the main "working" layers – 1.71 mg/in² of media

Conclusion: < 1% of the contaminant was not being captured by the main "working" layers of the media.

Cross Reference Part Numbers

Our elements can be used in the following Allison transmission models: ♦ MD3000/B 300/B 400 ♦ MD3070PT ♦ HD4000/B 500

Allison Transmission [®] Series	Allison Transmission [®] Model Number	Allison Kit Number	Allison Part Number (Element Only)	Schroeder Part Number (BestFit [®] Kit)	Part Description	Schroeder Part Number (BestFit [®] Element Only)
3000	MD3000/B 300/B 400; MD3070PT	29548987	29545777	SBF-2954K-4Z10V	(2) 4" elements with seal kit	SBF-2954E-4Z10V
4000	HD4000/B 500	29548988	29545780	SBF-2954K-6Z10V	(2) 6" elements with seal kit	SBF-2954E-6Z10V

*Allison Transmission is a registered trademark of Allison Transmission, Inc.

¹Kelly Collins and John Duchowski. "Cleanliness Requirements for Journal Bearing Lubrication." Machinery Lubrication. 26 June 2015. <<http://www.machinerylubrication.com/Read/126/journal-bearing-contamination>>.



For over 70 years, Schroeder Industries, an ISO 9001:2015 certified company, has designed, manufactured and marketed a complete range of filtration products for the hydraulic and lubrication, filter systems, process/water and fuel industries. Our products are positioned to serve the manufacturers and users of industrial and mobile equipment. Our expertise in filtration technology, superior filter and element technology capabilities, dedication to customer service and product support are the reasons Schroeder is a worldwide leader in Advanced Fluid Conditioning Solutions®.

Schroeder Industries' corporate headquarters is located in Leetsdale, PA, with manufacturing facilities at the Leetsdale location, as well as Cumberland, MD.

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Better Process, Better Materials Equals a Better Element Every Time

Schroeder Industries, an ISO 9001:2015 certified company, focuses on developing filtration and fluid service products for use in the fluid power industry. Over the last 73 years, we have a proven track record of providing high quality products. Schroeder was one of the first companies to demonstrate the need for and benefits of hydraulic filtration. We pioneered the development of filtration technology while helping to set performance standards in contamination control. As a result, Schroeder is now a leader in fluid conditioning.

The proof of our expertise lies in our broad mix of filtration products with a solutions-driven orientation. Our goal is to work with our customers by leveraging our proven technologies across a wide variety of markets. Some of the

resources to help us mutually achieve these goals lie in our expertise in filtration technology, continuous manufacturing improvement and advanced design capabilities. Furthermore, we achieve repeatable performance through automation while manufacturing high quality products.

As both customer requirements and government regulations continue to drive more efficient filtration, developing new products requires a state-of-the-art testing laboratory. Schroeder has leveraged 73 years of filtration knowledge and brought industry-wide testing standards and custom engineered testing capabilities in a single location to form what we are now proud to call the Fluid Care Center, or FCC. The equipment and test methods are developed to reconstruct specific operating environments while measuring the implications of different fluid conditioning solutions. Using the tools in the FCC, we are now able to diagnose, analyze and trend issues stemming from particulate and wear metal contamination. We are committed to providing the best available products to meet our partners' performance and technology requirements.

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