BHA TotalPleat™ Delivers Long Filter Life

Replacement for Donaldson PowerCore® CP Filter Pack
Now Available

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Table of Contents

Introduction

The Parker Hannifin BHA TotalPleat™ aftermarket replacement filter is a cost-effective alternative to the PowerCore® filter pack for the Donaldson PowerCore® CP dust collector. Parker Hannifin's proprietary MERV 15 TotalPleat™ filter provides significant advantages over the PowerCore® design; specifically, customers report longer filter life.

Powercore® is a registered trademark of Donaldson Company, Inc.

Advanced Airflow Technology

The TotalPleat™ filter's advanced airflow technology is at the heart of its exceptional performance. The innovative deep-pleated design is engineered to keep 92% of the filter face open to flow, yielding high efficiency, effectiveness, and long service life.

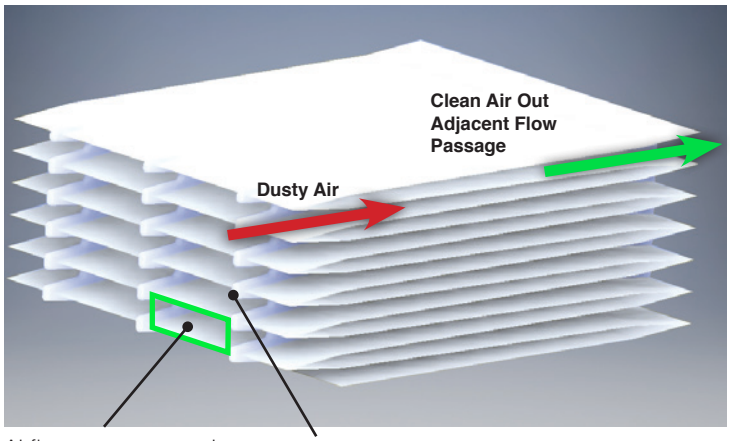
More open air flow passages

The TotalPleat™ filter's proprietary design has larger airflow passages, creating 50% more open airways compared with PowerCore® filter packs. The open-pleat spacing extends to the filter's full height to maximize use of the media surface area. Strategically placed glue beads lock the pleatpack together so the TotalPleat™ air passages remain open throughout pulse cleaning.

Increased available filter face area

The TotalPleat™ filter face is 28% more open compared with the PowerCore® filter. TotalPleat™ has larger and fewer airflow passages, and this pleatpack is designed to minimize the number of glue beads or plugs, such as PowerCore® filter packs use, to hold the pleatpack together. This construction optimizes filter face availability.

BHA TotalPleat™ is a deep-pleated filter engineered to keep 92% of the filter face open to flow.

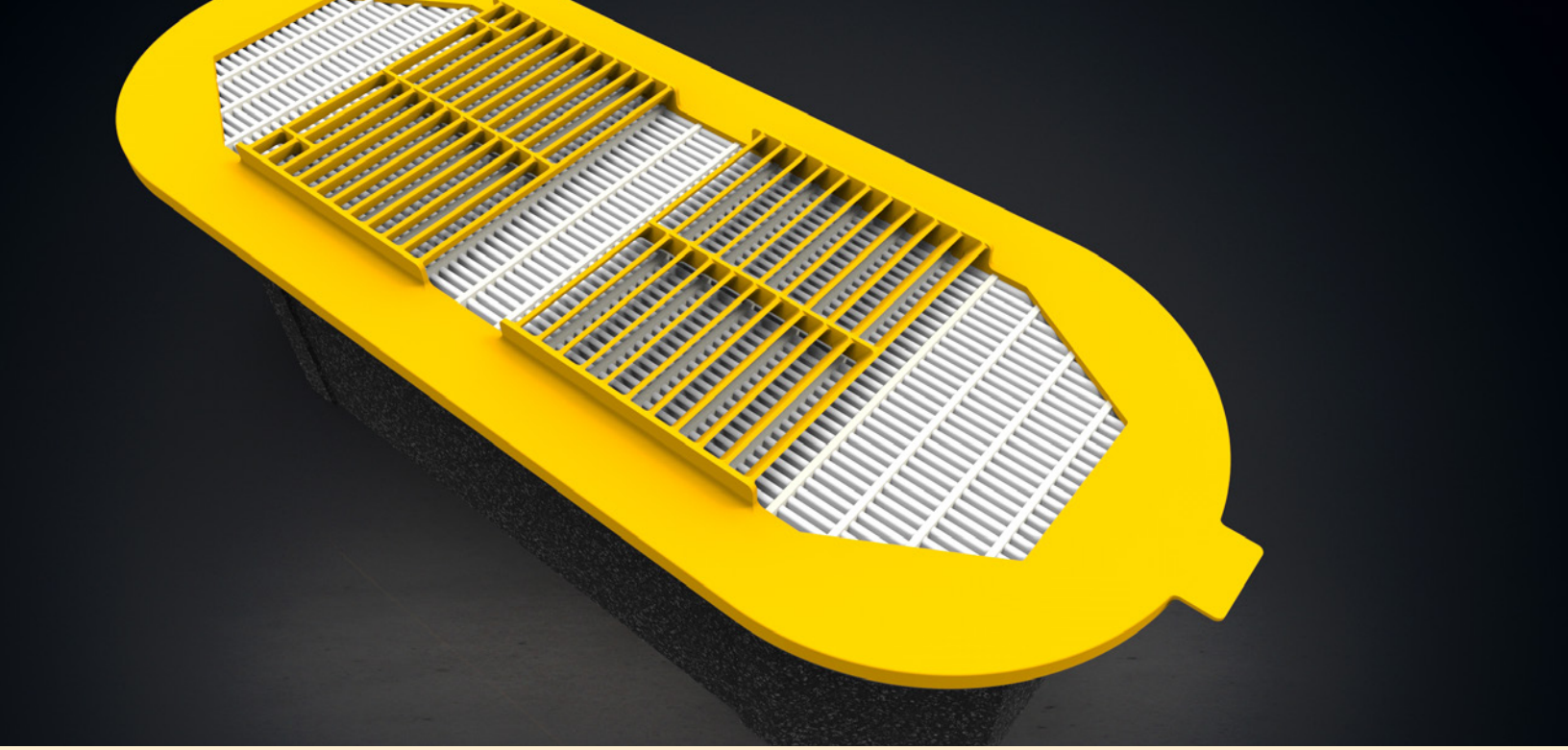


Airflow passage opening 0.19 sq. in. at face; 0.09 sq. in. inside filter

Small glue beads allow 92% of filter face to be open to flow

The TotalPleat pleatpack is locked together by strategically placed glue beads that keep filter pleats open and create individual flow passages that are 50% more open than PowerCore® filter pack flutes.

BHA TotalPleat™ replaces the Donaldson PowerCore® CP filter pack, part numbers **P032358-016-340** and **P280356-016-340**.



The grid creates a more even distribution of cleaning pulse across the entire filter deflecting more of the cleaning pulse toward the front of the filter to improve overall performance.

Technologically Maximizing Pulse Cleaning and Saving Energy

Fully ejects dust during pulse cleaning

Dust-laden air flows into TotalPleat™ at a 22% lower air velocity compared with PowerCore® filters, and the TotalPleat™ filter's higher percentage of available surface area and larger airflow passages prevent dust from getting trapped. The cleaning pulse can reach the full depth of the filter on the clean side. On the dusty side, the open pleat spacing gives improved dust ejection. The cleaning pulse is then better able to reach the full depth of the TotalPleat™ filter and effectively clean the filter media. Dust can be more fully ejected during pulse cleaning.

Even distribution of cleaning pulse

Parker Hannifin engineers applied extensive computational fluid dynamics modeling during the research and design of TotalPleat™ to analyze the effects of the cleaning pulse as it strikes the filter's top face. The cleaning pulse of the collector strikes the back half of the filter at an angle and typically is intended to flow unaided toward the front half. For more cleaning power, BHA TotalPleat™ is designed with an inclined, louvered grid that deflects a portion of the cleaning pulse toward the front of the filter to evenly distribute it across the entire filter.

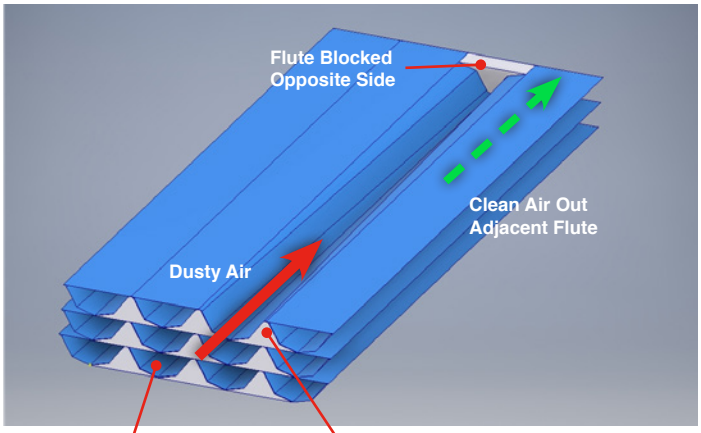
Saving Energy

Energy savings are realized when dust is fully ejected from the filter during cleaning as a result of the even distribution of the cleaning pulse. Fewer pulses are required to keep the filters running at low dp and less energy is consumed. TotalPleat™ beta sites across the country demonstrate this innovation in pulse cleaning results, improved performance, and longer filter life.

For Comparison:
Donaldson PowerCore® CP Filter Pack

Part Numbers: P032358-016-340 and P280356-016-340

The PowerCore® filter pack is designed to move airflow into the flutes, laterally through the filter media into adjacent flutes and out the opposite side of the pleatpack. This flow concept applies to the forward flow as dust is collected in the flutes and during pulse cleaning as the flutes are backflushed with compressed air. Dust-laden air enters the filter on the bottom face and clean air exits the top face. The cleaning pulse strikes the top face and dust is ejected from the flutes out the filter bottom.



Flute opening 0.06 sq. in.

36% of filter face is blocked - each flute alternates from being blocked on one side and open opposite side of filter

The PowerCore® filter pack design allows particulate to accumulate and become trapped deep in the flutes, making it difficult to eject with the cleaning pulse. Eventually, the media becomes blocked, increasing the resistance to flow. At some point the differential pressure across the filter becomes excessive, ending the useful life of the PowerCore® filter pack.

Capacity limits

The PowerCore® filter pack's compact design has several drawbacks that are inherent to its compressed size. Each flute has a small cross-sectional area and is nearly as deep as the 7" filter height. Each flute is open on one side and blocked on the opposite side, leaving only 64% of the top and bottom filter face open to flow. Even at nominal air-to-cloth ratios, upward flow velocity into each flute is high, exceeding 500 FPM.

Abbreviated service life

The small cross-section coupled with the high airflow velocity tends to cause dust particulate accumulation deep in the flutes. This dust can be difficult to eject with the cleaning pulse. Eventually, the filter media within each flute becomes trapped, increasing resistance to flow through the remaining available media. At some point the differential pressure across the filter becomes excessive, ending the useful life of the PowerCore® filter pack.

BHA TotalPleat™ Beta Site Results

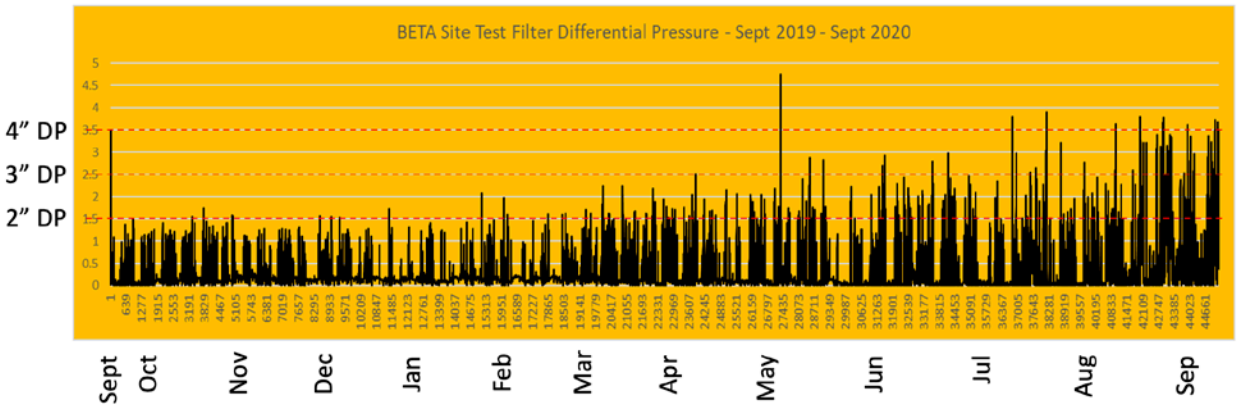
Installations in demanding environments showed BHA TotalPleat™ delivered longer filter life than its competitor.

The beta site dust collectors vent a variety of applications that challenged the BHA TotalPleat™ filters with different operating conditions, grain loads and dusts to be filtered.

Longer service life

At each beta test location, customers reported a longer useful life with BHA TotalPleat™ filters than they experienced with PowerCore® filter packs. At several locations, TotalPleat™ filters have been running for longer than 12 months in applications where PowerCore filters lasted only three to four months. At one beta site PowerCore® filters plugged with dust in one week, requiring replacement; whereas TotalPleat™ was still running after 16 weeks.

TotalPleat™ filter, installed October 15, 2019, has survived several upset conditions and is still running.



Beta testing illustrated the outstanding performance at all seven locations — this is one of many examples illustrating performance.

Full-Scale Testing

Parker Hannifin's R&D department conducted full-scale testing using our ASHRAE 199 test rig at our Industrial Filter Test Lab and Customer Experience Facility in Slater, MO, throughout the TotalPleat™ filter development project. The ASHRAE 199-2016 test protocol defines a six-stage test procedure to measure the performance of industrial pulse-jet dust collectors and air filters. Parker Hannifin collected data to compare filter differential pressure trends and the number of pulse-jet cleaning cycles required to maintain DP.

Each stage of the ASHRAE 199 test has a defined duration, with the entire test being about 50 hours. While designed to be somewhat of a pass/fail test, the test is useful to compare the performance of various filters.

All filters were tested under identical operating parameters. Filters were dust loaded with 7 µm calcium carbonate test dust at a rate of 7 gr/ACF air volume; Air to media ratio was a moderately aggressive 5.9 CFM/FT^2. Identical test rig airflow temperature and relative humidity setpoints were maintained with each test.

Clear advantages of BHA TotalPleat™

- **Low pressure drop, energy savings, and long filter life.** Although initial performance is comparable to PowerCore® filter packs, after 30 to 60 days, BHA TotalPleat™ demonstrates minimal pressure drop and less frequent pulse cleaning translating to reduced compressed air usage.
- **Full dust ejection during pulse cleaning.** The deep-pleat design of the BHA TotalPleat™ filter has larger airflow passages with 92% of the filter face open to flow, allowing for full dust ejection during cleaning.
- **Even distribution of cleaning pulse.** The proprietary inclined, louvered grid above the TotalPleat™ filter face allows for even distribution of the pulse across the entire filter area.
- **Maximum durability.** A stiffened polyester felt outer wrap resists damage during handling and installation.
- **Easy removal.** TotalPleat™ is rigidly glued together to prevent expansion or distortion with use, allowing faster, easier removal compared with the OEM filter.
- **Total incineration after use.** Constructed with no metal components, TotalPleat™ is made to be completely incinerated.

Conclusion: Thoughtful Design Yields Superior Performance

The greater percentage of open flow passages within the BHA TotalPleat™ pleatpack that allow dust to be pulse cleaned more completely is key to TotalPleat's outstanding performance. In combination with the louvered grid, the open flow passages on the clean side significantly improve the cleaning pulse's penetration into the filter's full depth. This keeps TotalPleat™ flow passages clear of dust accumulation; dust doesn't become trapped in the filter. This innovative, new design minimizes pressure drop and results in extended useful filter life.

BHA TotalPleat™ Proven to outperform.

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