

MCF – Magnetically Coupled Filter

Magnetically Driven Self-Cleaning Filter System

The MCF, RPA's next-generation filter, draws upon our rich history of self-cleaning filtration. The innovative, magnetically coupled drive technology that moves the cleaning disc – without the need for shaft or drive external seals – makes MCF unique. This technology also enables a long operating life, with very few moving parts. When the MCF does require maintenance, its easy-access design makes service quick and simple.

The MCF, a cost effective solution, is designed for a wide range of industrial liquid filtration applications. It also addresses the challenges of environmental concerns, loss of valuable product, and demand for greater operator safety. Key benefits include:

- Permanent media retains valuable product otherwise lost by media changeout
- Simple design with very few wear parts – for reduced spare parts stocking needs
- No external shaft or drive seals – eliminates all associated leakage
- Cleanable permanent media eliminates downtime and disposal requirements
- Easy no-tools access for routine maintenance and service
- Continuous operation – even during cleaning cycles

How the MCF works

Filtrate flows from the top down and from the inside of the media toward the outside to increase retention of contaminants. The patented design uses a spring-loaded cleaning disc that travels top to bottom inside the filter media – removing collected contaminants. The cleaning disc and flow continually drive undesirable solids downward, where they are concentrated in the purging chamber for easy expulsion.

A hollow shaft at the center of the system contains a piston with powerful rare earth magnets. These internal magnets are coupled to external magnets housed in a carrier connected to the cleaning disc. Pneumatic actuation moves the inner magnet up and down the shaft, with the cleaning disc following. The result is powerful actuation, without the need for a physical linkage passing through the vessel.



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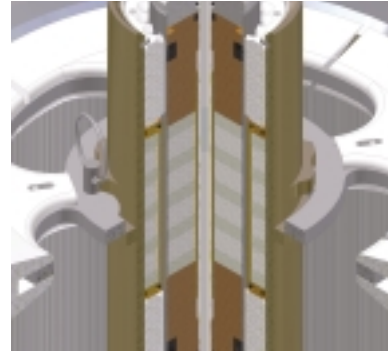
Product Specifications



The purge chamber, engineered using computational fluid dynamics (CFD), ensures even pressure to thoroughly purge all waste and reduce waste volume.



Innovative hinged lid design features no-tools access and requires no thru-holes associated with shaft or drive actuation.



Only 3 wear parts, and only 25 total parts, for a long, reliable service life and easy maintenance.

Dimensions

Weight: 200 lbs (91 kg)
 Height: 47.625 in. (1,210 mm)
 Service: 72 in. (1,626 mm)
 Footprint: 19.6 in. (498 mm) x 18 in. (457 mm)
 Volume: 11 gal (41.6 l) total
 Debris Volume: 1.3 gal (5 l) capacity

Connections

Standard: 3 in. (80 mm) I/O
 NPT thread, 2 in. (50 mm)
 NPTI purge
 Optional: Wide range of I/O connections – including 150# RFSO flanged, Sanitary, DIN (PM16) flanged, or BSPT – and purge valve options

Process Parameters

Temperature: 180°F (82°C) max.
 Flow: 30–200 gpm (115–760 l/min)
 Operating pressure: 30–150 psig (2–10.5 bar)

Media

Wedge wire: 15μ – 1125μ, or defined pore 25μ – 100μ
 Screen: diameter 8 in. (203 mm), length 24 in. (610 mm), area 610in² (3935 cm²)

Elastomer Seal

Standard: Viton®
 Optional: EPDM

Cleaning Disc

Standard: Delrin

Housing/Wetted Parts Materials

Standard: 316 stainless steel

Stand Materials

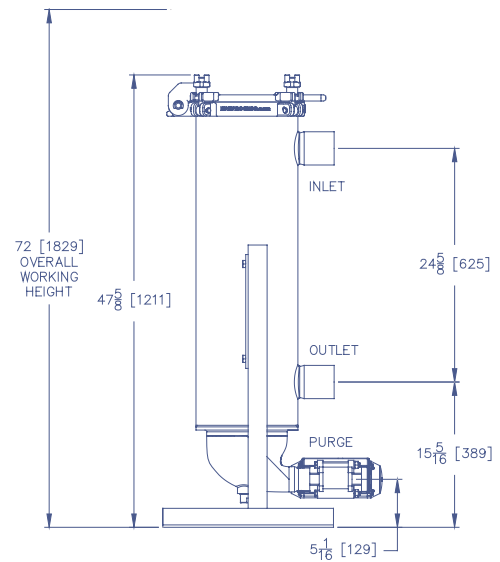
Standard: 304 stainless steel

Controllers

Standard: electric continuous cleaning valve (CCV-E)
 Options: push button, semi-automatic electric, electric timer, PLC

Utilities

Electrical: (if equipped with optional electric automatic control timer): 110 or 220 Volt, 50 or 60 Hz, single-phase
 Air: 80 psig (5.5 bar) at 5 CFM (140 m³/m). Air must be clean, dry, and non-lubricated



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