

Filter Selection Table



Portable Filter Pumps



MP5
(#1535)
MP1EG
(#1721)
MP5E
(#1661)



MCP5E/MDP5E
(#1691)
AVF
(#2023)
HP10/HP30
(#1604)

Stationary Housings



VF-62
(#2076)
VF-61
(#1997)
VF-609
(#1997)
VF-31E
(#1997)



Vel-Max®
(#1961)
VF-71E
(#1654)
VF-166C/VF-2012C
(#1588)
VF82B
(#1708)

Filter Systems



TOC30 (#1751)
TOC5 (#1857)
HCP/HDP (#1693)

Typical Solutions for Industrial Applications Equipment/Cartridge Combinations

For more detailed information, please refer to individual data sheets as indicated by the form # listed below photos or in parenthesis in the table.

Problem	Type of Fluid/Applications	Solution
1. Water and Dirt in Oils	Lube Oil Gear Oil Hydraulic Oil Turbine Oil	1a. Portable Filter Pumps The MP5, 5 GPM Portable Filter Pump is typical and widely used in industry. Use with Aquacon® cartridge (#1582) or FO-718PL pleated media (#1549)
		1b. Stationary Filter Housings and Aquacon® Cartridges Note that Aquacon® super-absorbent filters have become the industry standard for dirt and water removal. See #1770 for more info.
		1c. Turbine Oil Coalescing System (#1751, 1857) Use TOC30 System at 30GPM flow rate.
2. Water and Carbon in Insulating Oils	Transformer Oil Circuit Breaker Oil Switch Gear Oil Tap Changer Oil	2a. Aquacon® Cartridges in Portable Filter Pumps MP-5 at 5 GPM and HP-30 at 30GPM flow rate.
		2b. Insulating Oil Filter Systems Use Aquacon® Cartridges in HCP-30 and TO-30 Systems at 30GPM flow rates.
		2c. Aquacon® 1, 2, 3, and 4-Hi Cartridges (#1684) Replacements for Alsop and Cuno disk type cartridges and Hilco blotter paper filters in existing housings.
3. Water and Dirt in Fuels	Gasoline Diesel Kerosene	3a. Aquacon® Cartridges in VF-61, VF-62 or VF-31E Housings (#1655) Positive Shut-Off features prevents pumping of contaminated fuel. Use Coalescer Cartridges in high volume applications.
		3b. Spin-On Aquacon® Cartridges (#1717) Use on gasoline and diesel fuel dispensers.
		4. High Surface Area Pleated Media and Fiberglass Depth Media Cartridges (#1550) Use in Stationary Housings at 1 to 600 GPM or Portable Filter Pumps at 1 to 30 GPM.
4. Dirt (Particulates) In Oils and Fuels	All Oils All Fuels	5. Adsorbent Cartridges: Fullers Earth or Activated Alumina (#1667) Use in Stationary Housings or Portable Filter Pumps.
5. Acid in Oils	Vacuum Pump Oil	6. Air Aquacon® Filter Cartridge in VF-31E Housing (#1689) "Foolproof" 99.9+% water removal with positive lock-in and positive shut-down. Gross water removal via petcock.
6. Water and Dirt in Compressed Air	Industrial Compressed Air Instrument Air	7. Solvent Aquacon® Cartridges (#1692) Use in Stationary Housings. Typical: 1 to 80 GPM, down to 10 ppm water in effluent with 1 micrometer particulate rating.
7. Water and Dirt in Solvents	Hexane Toluene 1,1,1 -Trichlorene	

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Aquacon® Cartridges



Aquacon® -
Industrial
(#1582)



Air Aquacon®
ACA-210
(#1689)



Aquacon®
Spin-on Industrial
(#1717)

Other Filter Cartridges



Synthetic FOS
(#1734)



Fiberglass
FO-xxxFG
(#1550)



Pleated Filters
(#1549)



Coalescers
(#1561)



Adsorbent LA-6xx
(#1667)



Aquacon® Filter Cartridges

AD Series

Eliminate Diesel Fuel Contamination Problems at the Pump

- Positive shut-off prevents pumping harmful amounts of water
- Removes silt and rust
- Effective protection combined with economical life

DESCRIPTION

AD Series **Aquacon** cartridges were developed in cooperation with a major oil company for diesel fuel applications. Balancing effective water and dirt removal with economical life, AD cartridges have become standard for most diesel users and can also be used with biodiesel.

Nominal filtration efficiency is 25 microns. Effluent water levels are typically below 50 parts per million. The AD design retains the water shut-off feature and the high water holding capacity of similar size AC Series cartridges.


Motor gasoline, hydraulic and lube oils can also be filtered with AD cartridges. Aviation fuels, however, must be filtered with the more efficient series design.



CARTRIDGE INFORMATION:

Model Number	Dimensions (inches)	Max. Diesel Flow Rate per cartridge (GPM)	Use
AD-21025	2 ⁵ / ₈ x 9 ³ / ₄	15	Velcon VF-31E Housing
AD-51225	5 ⁵ / ₈ x 12 ¹ / ₄	50	Velcon VF-61 Housing
AD-60925	6 x 9 ¹³ / ₁₆	35	Velcon VF-609/Facet VFCS-21 Housings
AD-61225	6 x 13 ¹¹ / ₁₆	46	Facet VFCS-22/FBO-14 Housings
AD-61425	6 x 14 ¹ / ₂	50	Velcon Aviation Housings
AD-71825	6 ¹ / ₄ x 18	60	Velcon Industrial Housings

WARNING: Absorbent-type monitor cartridges will not remove water from fuel containing alcohol-blending agents (commonly called gasohol). For removal of solids, please use Velcon particle removal filters specifically made for gasohol. Consult your Velcon representative.



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Due to Velcon Filters' continuing product improvement, drawings, specifications and pictures are subject to change without notice.



Clean Dry • Fuels • Oils • Gasses with High Performance *Aquacon*® Filter Cartridges

FEATURING

- Free and emulsified water to less than 5 ppm
- 1/2 micrometer particulate removal
- Provides protection against “slugs” of water
- Pressure increase signals cartridge change
- Use with existing filter housings

DESCRIPTION

The VF-31E is a versatile filter housing designed for use with several different high performance *Aquacon* filter cartridges. Cartridges are offered for the optimum filtration of aviation fuel (see caution on reverse side), gasoline, diesel fuel, oils, compressed air, and other gasses. Refer to the Cartridge Selection Table on the reverse side of this sheet for details.

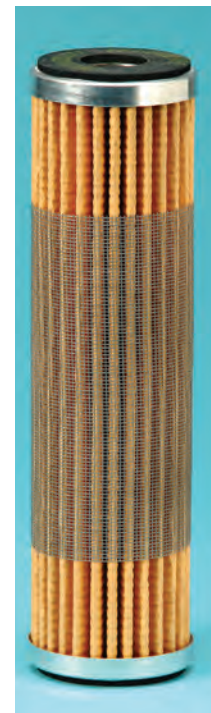
Aquacon filters eliminate water contamination problems by removing water from fuels, oils, and gasses. Filtered water is chemically locked into the cartridge’s inner super-absorbent media.

As a cartridge reaches its water holding limit, the media expands very rapidly and restricts the flow of unfiltered material. This causes an increase in the differential pressure which signals the operator to replace the cartridge. When filtering fuels or compressed air, a saturated *Aquacon* cartridge will completely block the flow until it is replaced.

Aquacon Cartridges are also excellent dirt filters. Silt, rust, and other particulates are removed by the cartridge’s outer filter media. One-half, five, and 25 micron rated cartridges are available for use with fuels and oils. The ACA-210 cartridge, for use with compressed air and other gasses, has a 1 micron rating.



VF-31E
Filter Housing



AC-21005
Filter Cartridge



ACA-210
Filter Cartridge

APPLICATIONS

- | | |
|-----------|-------------|
| Fuels: | Oils: |
| Kerosene | Insulating |
| Diesel | Hydraulic |
| Biodiesel | Lubricating |
| Gasoline | |

Compressed Air and Other Gasses

FILTER CARTRIDGE SELECTION TABLE

Product being filtered	Application	Cartridge P/N	Data Sheet	Type	Micron	Flow Rate (GPM)
Jet Fuel & Avgas ⁽¹⁾	Dirt & Free water	ACO-21001L	1681	Aquacon [®] (Absorbent)	0.5	1-15
Motor Gasoline		AC-21005	1582		5	
Gasohol	Dirt	FOG-21005	N/A	Paper filter	5	1-15
Diesel/ Biodiesel ⁽¹⁾	Dirt & Free water	AD-21025	1655	Aquacon [®] (Absorbent)	25	1-15
Oils		AC-21005	1582		5	Varies with oil viscosity ⁽²⁾
		AD-21025	1655		25	
Air/Gas			ACA-210		1689	1
	Dirt	FOS-210PLP5	N/A	Synthetic Filter	0.5	

(1) For Aviation and Diesel Fuel Systems, if system pressure can exceed 25 psi, **always** install pressure gauge or other means of determining differential pressure.

(2) See Data Sheet #1709 for absorbent cartridge (AC, AD) flow rates.

SPECIFICATIONS

Filter Housing VF-31E

- Recommended maximum flow rate: see table below
- Maximum operating pressure: 150 psi
- Material: cast aluminum head, carbon steel bowl with epoxy painted interior and exterior
- Inlet/Outlet Connection: 1" NPT
- Inlet/Outlet face-to-face: 4"
- Mounting holes in head: four 1/4-20 NC
- Seal: Buna-N gasket
- Height: 13.50" without Petcock, 14.50" with Petcock
- Weight: 3 lbs., 15 oz.
- Shipping Weight: 4 lbs., 15 oz.
- Hardware included: 1 ea. Buna-N Lid Gasket, Mounting Brackets, 1 ea. Plug (for fuel and oil applications), and 1 ea. 1/8" Petcock Drain (for air, gas and aviation fuel applications).

RECOMMENDED SPARES

- 1 ea. Model G-0995 Buna-N Lid Gasket
- 4 ea. filter cartridges (Specify from table.)

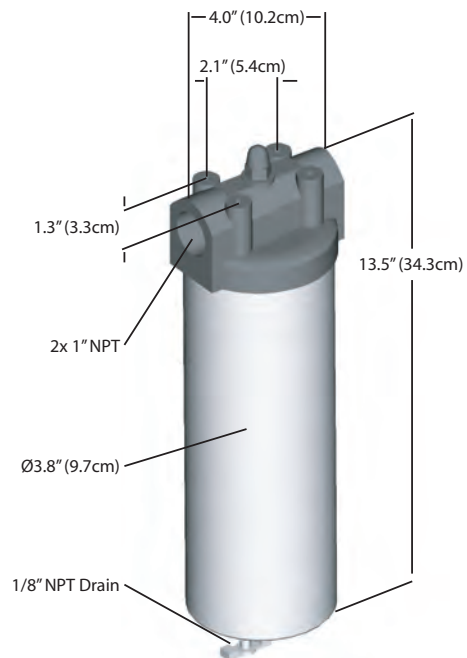
CAUTION

Do not use **Aquacon**[®] absorbent cartridges (AC, ACO or AD Series) with pre-mixed jet fuel containing anti-icing additives, or with gasoline/alcohol blends.


ORDERING INFORMATION

• Model VF-31E Filter Housing

- Supplied without cartridge
- Supplied with 1 ea. Model G-0995 Buna-N Lid Gasket, Mounting Brackets, 1 ea. Plug, and 1 ea. 1/8" Drain Petcock



Dimensions are for estimating purposes only.



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Small Filter Housings

VF-31E, VF-61, VF-609

Clean Dry Fuels and Oils with High Performance

FEATURES

- Wide variety of applications
- Free and emulsified water to less than 5 ppm
- 1/2 micron particulate removal
- Provides protection against “slugs” of water
- Pressure increase signals cartridge change

These filter housings are versatile housings designed for use with several different high performance **Aquacon**® and other filter cartridges. Refer to the cartridge selection table on page 3 for application and other details.

Aquacon® cartridges filter out water by chemically locking it into layers of super-absorbent media. Water capacity is as much as 1½ quarts, depending on the specific vessel and cartridge. These cartridges also effectively filter out dirt, rust and other particulates. (See caution, back cover.)

As an **Aquacon**® cartridge reaches its water-holding limit, the media expands very rapidly and restricts the flow. The pressure drop will rapidly increase, signaling the need to change cartridges.

The VF-61, with **Aquacon**® ACO series cartridges installed, has become the standard for low flow rate full flow aviation fuel monitor applications.

APPLICATIONS

- Jet Fuel
- Avgas
- Motor Gasoline
- Diesel Fuel
- Biodiesel
- Selected Solvents
- Oils: Insulating
- Hydraulic
- Lubricating
- Compressed Air
- Other Gasses



VF-31E



VF-61*



VF-609



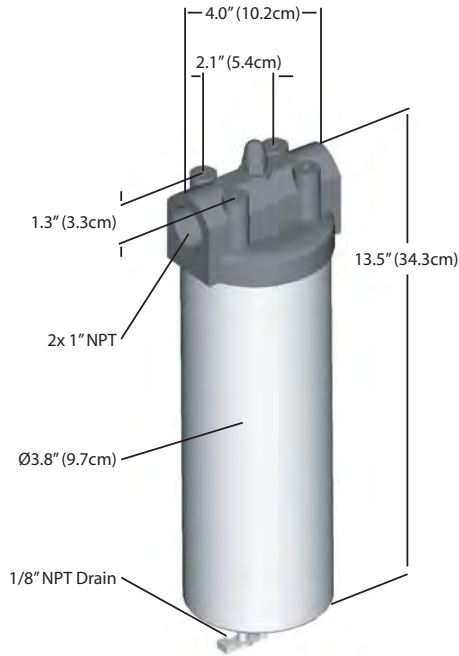
VF-61 connected to a diesel fuel dispenser

***Also available: VF-61UL Filter Housing, for diesel fuels. Recognized under the Component Recognition Program of Underwriters Laboratories Inc.**

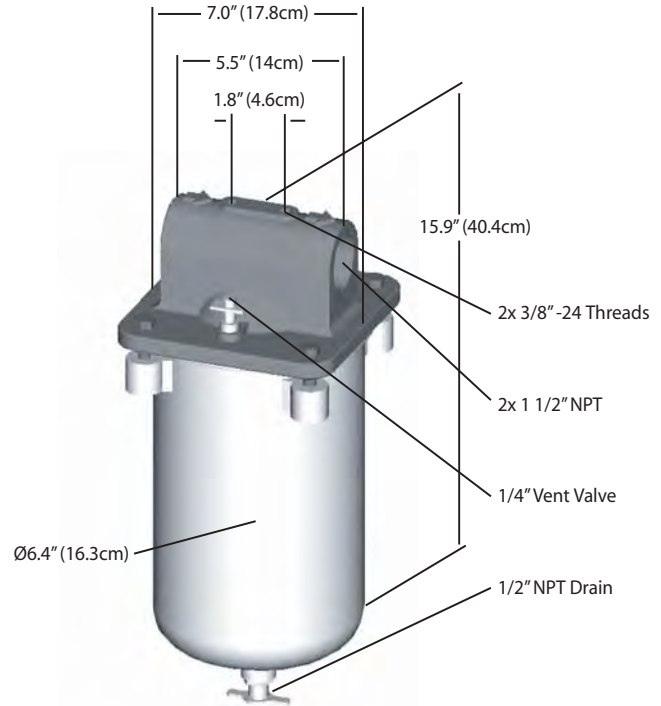
DIMENSIONAL DRAWINGS

Please note: Drawings are not to scale. Dimensions are shown for estimating purposes only.

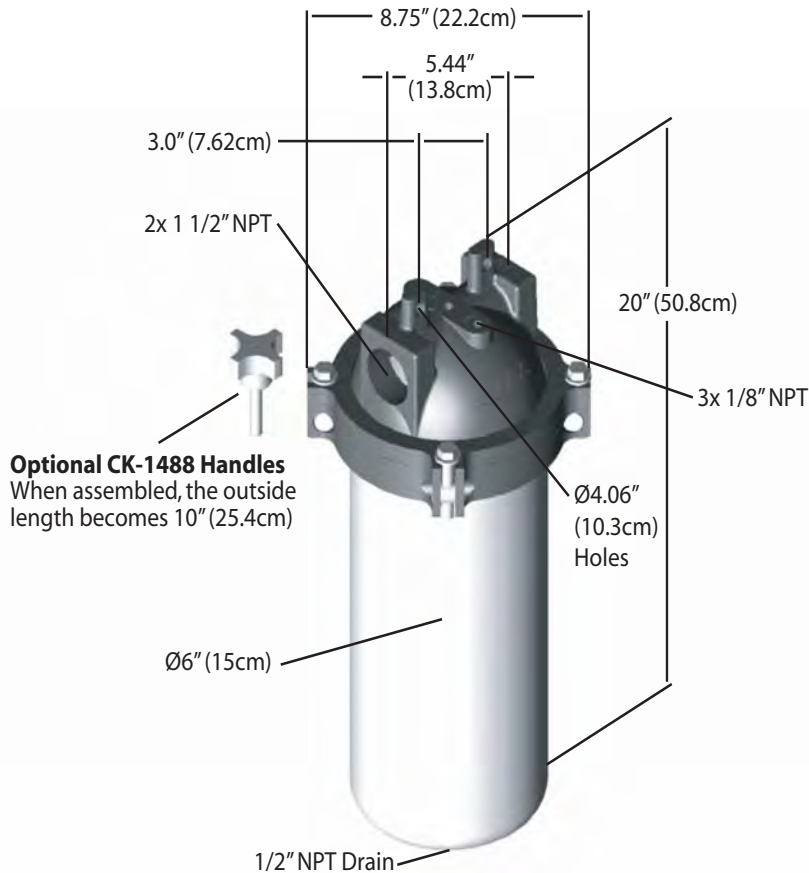
VF-31E



VF-609



VF-61



OPTIONAL ACCESSORIES - DIFFERENTIAL PRESSURE GAUGES

See page 4 for ordering information



**P/N 10678
for VF-61**



**P/N 07-224
for VF-609**

Optional mounting block
for gauge,
P/N 07-224AMB,
not shown

FILTER CARTRIDGE SELECTION TABLE

Housing P/N	Product being filtered	Application	Cartridge P/N	Data Sheet	Type	Micron	Flow Rate (GPM)
VF-31E	Jet Fuel & Avgas ⁽¹⁾	Dirt & Free water	ACO-21001L	1681	Aquacon [®] (Absorbent)	0.5	1-15
	Mo-gas		AC-21005	1582		5	
	Gasohol	Dirt	FOG-21005	N/A	Paper filter	5	1-15
	Diesel ⁽¹⁾	Dirt & Free water	AD-21025	1655	Aquacon [®] (Absorbent)	25	1-15
	Oils		AC-21005	1582		5	Varies with oil viscosity ⁽²⁾
			AD-21025	1655		25	
	Air/Gas		ACA-210	1689		1	100 SCFM @ 100 psig
	Dirt	FOS-210PLP5	N/A	Synthetic Filter	0.5		
VF-61	Jet Fuel & Avgas ⁽¹⁾	Dirt & Free water	ACO-512P3L	1681	Aquacon [®] (Absorbent)	0.3	5-50
			ACO-51201L			0.5	5-50
			OS-51288	1858	Coalescer/ Separator	0.5	Jet: 5-35 Avgas: 5-45
	Mo-gas		AC-51205	1582	Aquacon [®] (Absorbent)	5	5-50
	Diesel ⁽¹⁾		AD-51225	1655		25	15-50
				OS-51286	1858	Coalescer/ Separator	5
	Oils		AC-51205	1582	Aquacon [®] (Absorbent)	5	Varies with oil viscosity ⁽²⁾
			AD-51225	1655		25	
	Solvents		ASL-51201	1692		1	5-50
	ALL		Dirt	FO-512PL1/2	1549	Paper Filter	0.5
		FO-512PL05		5			
		FO-512PL25		25			
		FOS-512PL25		1734	Synthetic Filter	25	
VF-609	Jet Fuel & Avgas ⁽¹⁾	Dirt & Free water	ACO-609P3L	1681	Aquacon [®] (Absorbent)	0.3	15-36
			ACO-60901L			0.5	
			ACO-60905L			5	
			OS-60988	1858	Coalescer/ Separator	0.5	Jet: 5-35 Avgas: 5-45
	Diesel ⁽¹⁾		AD-60925	1655	Aquacon [®] (Absorbent)	25	15-30
			OS-60986	1858	Coalescer/ Separator	5	5-18

NOTES:

(1) For aviation and diesel fuel applications, always install a differential pressure gauge or other means of determining differential pressure.

(2) See Data Sheet #1709 for absorbent cartridge (AC, AD) flow rates.

(3) See Data Sheet # 1532 for paper filter (FO) flow rates, see Data Sheet # 1747 for synthetic filter (FOS) flow rates. For Biodiesel applications, please contact Valcon.

Please consult installation instructions and operating procedures that accompany products for more detailed information.

ORDERING INFORMATION

(Please note: Cartridges are NOT supplied. They must be ordered separately)

HOUSING P/N:	VF-31E	VF-61	VF-609
SUPPLIED WITH:	<ul style="list-style-type: none"> 1 ea P/N G-0995 Buna-N O-ring Mounting holes in head - 4 ea 1/4-20 NC 1 ea plug (for fuel & oil applications) 1 ea 1/8" petcock drain (for air, gas, & aviation fuel applications) 	<ul style="list-style-type: none"> 1 ea P/N G-0986 Buna-N O-ring 1/8" brass petcock vent valve, installed 1/2" drain plug, installed 1 ea 1/2" petcock drain, shipped loose 	<ul style="list-style-type: none"> 1 ea P/N G-0565 Buna-N O-ring 1/4" brass petcock vent valve 1/2" drain valve
RECOMMENDED SPARES	<ul style="list-style-type: none"> 1 ea P/N G-0995 Buna-N O-ring 4 ea replacement filter cartridges 	<ul style="list-style-type: none"> 1 ea P/N G-0986 Buna-N O-ring 6 ea replacement filter cartridges 	<ul style="list-style-type: none"> 1 ea P/N G-0565 Buna-N O-ring 6 ea replacement filter cartridges
If using with gasoline/solvent applications:		<ul style="list-style-type: none"> 2 ea P/N G-0986A Viton O-rings 	<ul style="list-style-type: none"> 2 ea P/N G-0565A Viton O-rings
OPTIONS	N/A	<ul style="list-style-type: none"> P/N 554Y020 - (carbon steel 1/2" NPT ball valve, with mounting nipple) P/N 10678 - (differential pressure gauge assembly) P/N CK-1488 (quick release hand bolts) 	<ul style="list-style-type: none"> P/N 554Y020 - (carbon steel 1/2" NPT ball valve, with mounting nipple) P/N 07-224 - (differential pressure gauge assembly) PN 07-224AMB (mounting block)
SPECIFICATIONS			
Weight	3 lbs, 15 oz	8 lbs	8 lbs
Shipping Weight	4 lbs, 15 oz	10 lbs	10 lbs
Inlet/Outlet Connection	1" NPT	1 1/2" NPT	1 1/2" NPT
Cover	Bolted	Bolted, 4 bolts	Bolted, 4 bolts
Maximum Operating Pressure: 150 psi			
Material: Cast aluminum head, carbon steel shell with epoxy powder coated exterior & interior			

OVER PRESSURE PROTECTION


When exposed to a high concentration of water, the differential pressure across an absorbent cartridge (AC, ACO, AD, or ASL Series cartridges) will immediately increase. Pressure bypasses or other means to limit the inlet pressure to 75 psi (5 bar) should be installed to prevent cartridge from collapsing.

CAUTION

To protect the fuel system, including the VF-609 & other components, be sure to install pressure relief valve(s).

CAUTION

Do not use **Aquacon**® absorbent cartridges (AC, ACO, AD or ASL Series) with pre-mixed jet fuel containing anti-icing additives, or with gasoline/alcohol blends.



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**Liquid Filtration
and Separation
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Aquacon[®] Air Filter

Cartridge Model ACA-210

Housing Model VF-31E

Water Removal from Compressed Air

FEATURES

- Minimal routine maintenance
- 99.9+% Water-Free Air
- Efficient particulate removal
- Residual oil mist removal

APPLICATIONS

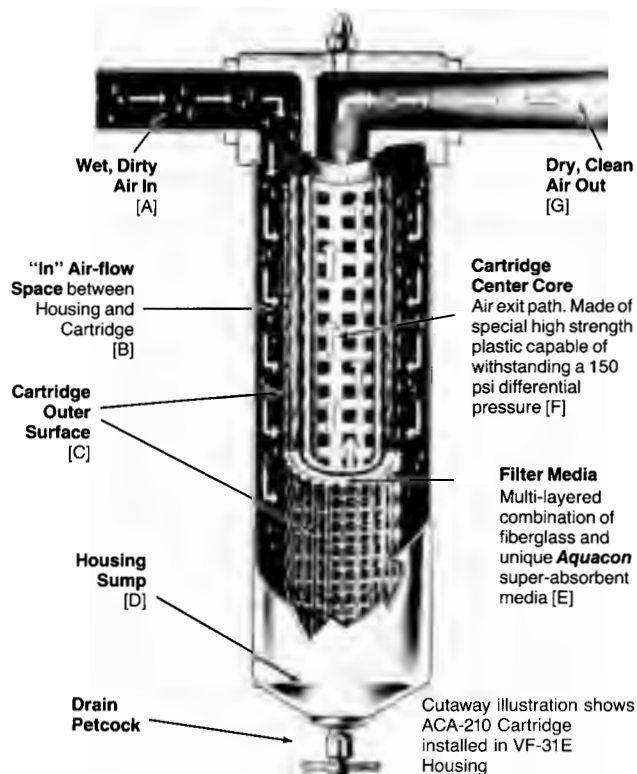
- Spray Painting
- Instrument Air
- Air Bearings
- Fluidic Controls
- Gas Chromatography
- Gas Sampling Equipment
- Machine Tools
- Air Driven Hand Tools
- Etching Tools
- Servo Pneumatic Control Systems
- Sand Blasting Equipment
- Compressed Air Cleaning

GENERAL DESCRIPTION

Aquacon super-absorbent cartridges remove 99.9+% of liquid water from compressed air. This is considered to be “total” water removal for many industrial and scientific applications. Note that water vapor is not removed.

Filtered water is locked into the super-absorbent media and cannot be squeezed out. When a cartridge reaches its water holding limit, the media expands and restricts the flow of unfiltered air until the cartridge is replaced. Periodic draining of the sump will extend cartridge life by keeping accumulated water away from the super-absorbent media.

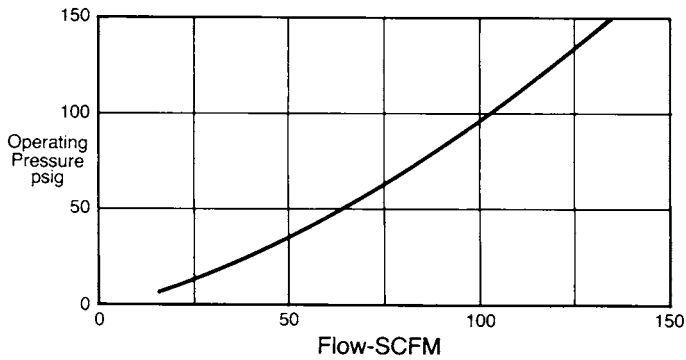
Aquacon Cartridges are also excellent dirt filters. They are rated at 99.9+% for particles down to 1 micrometer. In addition, the cartridges remove residual oil mist that may have gotten past a primary filter.



HOW IT WORKS

- (1) **Wet, Dirty Air** [A] flows into housing and down into space between housing and cartridge [B].
- (2) **Gross Water** coalesces in large drops on the cartridge's outer surface [C] and drips down into the housing sump [D].
- (3) **Finely Dispersed Water Mist** penetrates into the cartridge's multi-layered filter media [E] where it is absorbed and “locked-in” to the super-absorbent water media layers. When saturated, this media swells up and restricts airflow.
- (4) **Dirt Particles** are filtered by the fiberglass layers of the multi-layered filter media [E]. When fully loaded with dirt, the cartridge plugs up like any conventional filter.
- (5) **Residual Oil Mist** – Oil drops coalesce on the cartridge surface [C] and fall into the vessel sump [D]. Some oil mist penetrates into the cartridge and is trapped in voids in the fiberglass media layers [E]. Oil removal capacity is limited.
- (6) **Dry, Clean Air** passes up through Center Core [F] and out [G].

FLOW CHARACTERISTICS



Note: Assumes 2 psi differential with clean cartridge installed.

APPLICATION NOTES

- Aquacon®** Filters function best at the end of an air line close to the point of use. They should not be installed immediately downstream from a compressor.
- A large "slug" of water in the line may cause **Aquacon** Filters to completely block the air flow within seconds. If maintaining air flow is critical, a duplex filter arrangement with automatic valves should be considered.

SPECIFICATIONS

VF-31E Filter Housing

Cast aluminum head. Carbon steel shell with corrosion resistant phosphate coated interior and epoxy painted exterior.

Maximum operating pressure:	150 psi (10 bar)
Height:	14½" (37 cm)
Inlet/Outlet Connection:	1" NPT
Inlet/Outlet face-to-face:	4" (10 cm)
Bottom Drain:	⅛" Petcock
Lid Gasket, Buna-N, Model:	G-0995
Cartridge, (one required) Model:	ACA-210

ACA-210 Aquacon Filter Cartridge

I.D.	1" (2.5 cm)
O.D.	2" (5.1 cm)
Length:	9¾" (25 cm)
Minimum collapse pressure:	150 psi (10 bar)
Maximum operating temperature:	250°F (121°C)
Water removal efficiency:	99.9 +% of liquid water
Particulate removal efficiency:	99.9 +% of 1 micrometer and larger particles
Water holding capacity:	100 ml



ORDERING INFORMATION (SPECIFY)

- The VF-31E Housing is shipped without an element installed. Specify cartridge model number ACA-210. Includes Buna-N Lid Gasket, Petcock Drain, and Mounting Brackets.

RECOMMENDED SPARES

- 4 each Model ACA-210 Cartridges
- 1 each Model G-0995 Buna-N Lid Gasket



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