

# CARTRIDGE FILTERS AND FILTER-SILENCERS

FOR BLOWERS, COMPRESSORS, AND ENGINES



## Outstanding Features

- Weatherhoods for CCF and CCS sizes 2½ in. through 5 in. are rugged blue ABS composite material that may be painted. All other components are carbon steel construction with a high-quality semi-gloss enamel finish.
- Unique design options, combined with the latest manufacturing techniques, ensure optimum performance and long life even under demanding conditions.
- Choice of filter only or filter-silencer.
- Female pipe thread connections are standard for pipe sizes ½ in. through 3½ in. and optional for pipe sizes 4 in. and 5 in.
- Removable lightweight weatherhood (CCS and CCF) or removable top plate (CS and CF) for easy access to the filter element.
- Interchangeable element options for desired filtration characteristics in the same housing.
- Filter restriction gauges are optional for all units.

## Advanced Design and Testing

- Our extensive in-house engineering, manufacturing, and testing facilities ensure optimized process, mechanical, and acoustic performance for your application.

Universal Silencer's cartridge filters and filter-silencers offer high-performance filtration and silencing in a convenient, economical cartridge configuration. Choose from four standard models for pipe sizes ranging from ½ in. to 16 in. and for flow capacities ranging from 15 to 7700 CFM. Three types of filter element media — pleated paper, pleated felt, or wire mesh — are available to suit your application.

The CCF and CF series filters are high-quality air filters without a silencing section. The CCF has a removable weatherhood, and the CF has a removable top plate. Our CCS and CS intake filter-silencers have a built-in silencing section. The CCS features a removable weatherhood, and the CS has a removable top plate for easy access to the filter element.



**UNIVERSAL**

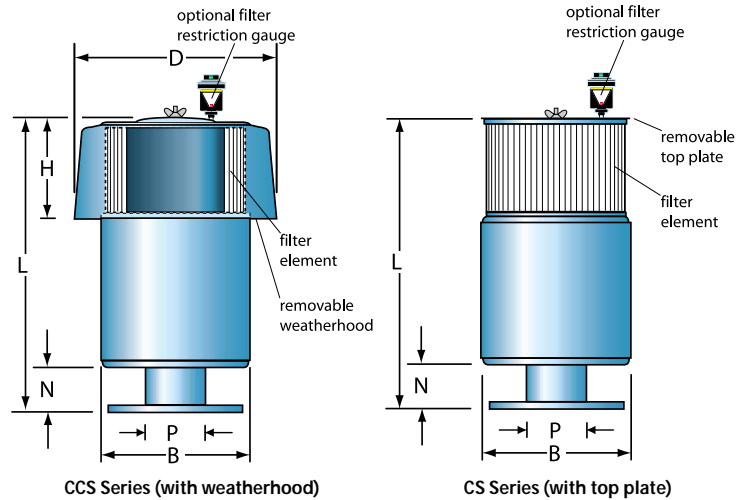
Acoustic & Emission Technologies

# SPECIFICATIONS

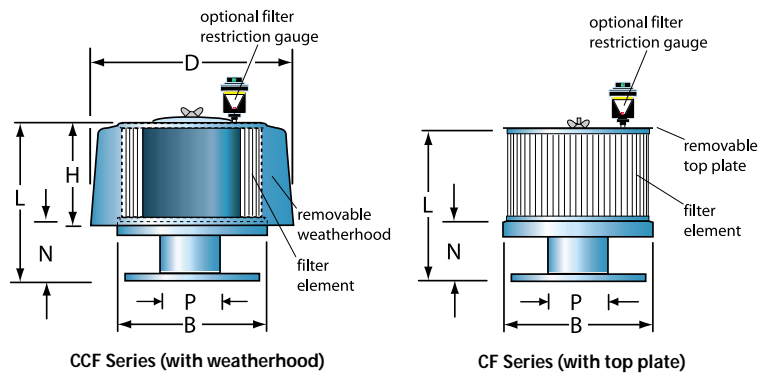
## CCS and CS Filter-Silencers

Noise Attenuation,  
CCS and CS Filter-Silencers

Octave Band Center Frequency, Hz	63	125	250	500	1 k	2 k	4 k	8 k
Attenuation, dB	5	8	10	12	14	14	14	14



## CCF and CF Filters



### DIMENSIONS AND WEIGHTS

P (size)	Rated Flow Capacity (CFM)	D	H	B	N				L				Approximate Weight with Paper Elements			
					CCF	CCS	CF	CS	CCF	CCS	CF	CS	CCF	CCS	CF	CS
1/2	15	8.00	3.13	6.00	Use	—	Use	—	Use	6.50	Use	6.50	Use	7	Use	7
3/4	22	8.00	3.13	6.00	CCS	—	CS	—	CCS	6.50	CS	6.50	CCS	7	CS	7
1	35	8.00	3.13	6.00	Series.	—	Series.	—	Series.	6.50	Series.	6.50	Series.	7	Series.	7
1 1/4	60	9.00	3.50	6.50	—	—	—	—	3.50	7.88	3.50	7.88	9	10	5	9
1 1/2	75	9.00	3.50	6.50	—	—	—	—	3.50	7.88	3.50	7.88	9	10	5	9
2	120	9.00	3.50	6.50	—	—	—	—	3.50	7.88	3.50	7.88	8	10	5	8
2 1/2	190	13.44	6.75	10.00	1.00	1.00	1.00	1.00	7.50	17.69	7.13	17.31	11	19	10	18
3	275	13.44	6.75	10.00	1.00	1.00	1.00	1.00	7.50	17.69	7.13	17.31	10	18	9	17
3 1/2	375	13.44	6.75	10.00	1.13	1.13	1.13	1.13	7.63	17.69	7.25	17.31	13	20	12	19
4 (NPT)	500	13.44	6.75	10.00	1.13	1.13	1.13	1.13	7.63	17.69	7.25	17.31	12	19	11	18
4 (flanged)	500	13.44	6.75	10.00	4.00	3.00	4.00	3.00	10.50	19.63	10.13	19.25	14	21	13	20
5 (NPT)	750	13.44	6.75	10.00	1.81	1.81	1.81	1.81	8.38	18.25	8.00	17.88	12	19	11	18
5 (flanged)	750	13.44	6.75	10.00	4.00	3.00	4.00	3.00	10.50	19.56	10.13	19.13	16	23	15	22
6	1100	18.00	9.50	14.00	4.00	3.00	4.00	3.00	13.31	25.25	12.75	24.75	31	43	23	35
8	2200	18.00	18.00	14.00	4.00	3.00	4.00	3.00	21.88	33.88	21.38	33.38	43	56	30	43
10	3000	24.00	11.50	18.00	4.00	3.00	4.00	3.00	15.38	29.25	14.19	28.13	52	83	41	67
12	4300	24.00	11.50	18.00	4.00	3.00	4.00	3.00	15.38	29.25	14.19	28.13	64	91	48	75
14	5900	30.00	15.44	24.00	4.00	3.00	4.00	3.00	19.38	36.25	18.25	35.06	97	143	75	121
16	7700	30.00	15.44	24.00	4.00	3.00	4.00	3.00	19.38	36.25	18.25	35.06	101	145	79	123

- All models have a 1/8-in. FNPT tap for installation of a gauge or manometer to monitor pressure drop.
- Sizes 1/2 in. through 3 1/2 in. are standard with female pipe thread connection (FNPT).
- Sizes 4 in. and 5 in. are available with female threads or flanges. Please specify "threaded" or "flanged" when you order 4 in. and 5 in. sizes.
- Sizes 6 in. through 16 in. are standard with 150# ANSI drilled plate flanges.
- Rated capacity is based upon exit velocity of approximately 5500 ft/min. If pressure drop allowance permits, capacity may be increased by as much as 50%.

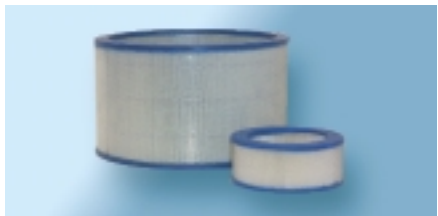
### PRESSURE DROP, CLEAN, ALL MODELS

Percentage of Rated Flow	50	75	100	125	150
Pressure Drop, Inches H <sub>2</sub> O	0.7	1.6	2.8	4.4	6.3

# FILTER ELEMENTS

Three types of filter elements are available for Universal's cartridge filters and filter-silencers. The pleated paper elements provide the highest efficiency and are considered standard. Pleated felt and wire mesh elements are available for less demanding service, with respect to efficiency. The three types of elements are completely interchangeable and will fit the CCS, CS, CF, or CCF filter housings.

**SERVICE INTERVALS:** Paper and felt elements are typically cleaned or replaced when the air flow resistance has increased by 4 inches of water over the initial clean resistance. The maximum restriction recommended across the filter elements is 20 inches of water, but this value may be greater than the equipment can tolerate for best efficiency. The wire mesh elements should be cleaned when they are visibly dirty and re-treated with Universal Oil-Free Adhesive or motor oil. Resistance is typically not a good indicator for cleaning wire mesh elements; a periodic cleaning schedule is recommended.



## Pleated Paper Element

### SPECIFICATIONS:

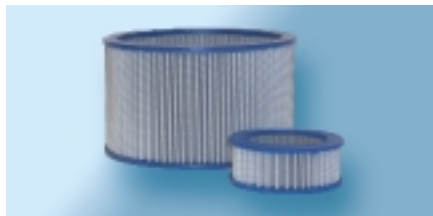
- High-quality industrial grade filter paper—pleated and oven-cured during production.
- Oven-cured plastisol end caps with molded sealing beads (larger elements for pipe sizes (P) 10 in., 12 in., 14 in., and 16 in. have metal end caps and closed-cell rubber gaskets).
- Media efficiency: 99.5% on 2 microns; 97% on 1 micron.
- Maximum operating temperature: 200° F for units with ½ in. through 16 in. pipe sizes.

### SERVICE INSTRUCTIONS:

Because of the low cost of the paper element, it is generally treated as a consumable and replaced when dirty. However, depending upon customer preference, the paper element may be cleaned with compressed air and reused.

### Compressed Air Cleaning:

Carefully direct compressed air (100 PSI maximum) through the dry element, opposite the normal direction of flow. After cleaning, inspect carefully for holes or cracks. If damaged, replace element.



## Pleated Felt Element

### SPECIFICATIONS:

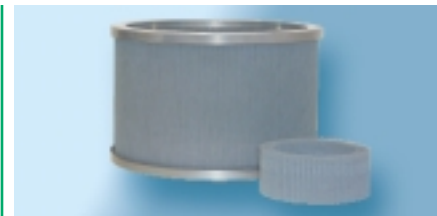
- Durable polyester felt media — pleated.
- Oven-cured plastisol end caps with molded sealing beads (larger elements for pipe sizes (P) 10 in., 12 in., 14 in., and 16 in. have metal end caps with closed cell rubber gaskets).
- Media efficiency: 99% on 10 microns.
- Maximum operating temperature: 200° F for units with ½ in. through 8 in. pipe sizes. 250° F for units with 10 in. through 16 in. pipe sizes using elements with metal end caps.

### SERVICE INSTRUCTIONS:

Pleated felt elements may be cleaned with compressed air (as described for paper elements) or water and reused.

### Water Cleaning:

Rap gently to dislodge accumulated dirt, soak thoroughly approximately 15 minutes in warm water and mild detergent. Rinse thoroughly under low-pressure water. Air dry—do not dry with compressed air. After cleaning, inspect carefully for holes or cracks. If damaged, replace element.



## Wire Mesh Element

### SPECIFICATIONS:

- Galvanized wire-mesh media—corrugated construction.
- Larger elements for pipe sizes (P) 6 in., 8 in., 10 in., 12 in., 14 in., and 16 in. have metal end caps.
- For best efficiency, wire mesh elements must be treated with oil or oil-free adhesive.
- May be cleaned and reused indefinitely.
- Wire mesh elements are considered “roughing” filters and are not recommended for applications that require efficient filtration of fine particles.
- Approximate efficiency: 93% on 10 microns. Efficiency will vary with element oil or adhesive coverage.
- Maximum operating temperature: 200° F for ½ in. through 16 in. with oil-free adhesive (the flash point for oil-free adhesive is 235° F). 300° F for ½ in. through 16 in. without oil-free adhesive. Filter efficiency is much lower without oil-free adhesive on the filter. Higher temperatures can be used with uncoated ½ in. through 5 in. filter elements without end caps.

### SERVICE INSTRUCTIONS:

New elements are delivered pre-treated with Universal Silencer's oil-free adhesive. See the back page for details. For best efficiency, wire mesh elements must be re-treated after each cleaning. Spray the element on both sides with Universal Oil-Free Adhesive, P/N 81-0323, following the directions on the container. For oil treatment, dip the element in SAE 30-50 motor oil and drain thoroughly before using.

To clean wire mesh elements, wash in solvent or warm water and detergent in a container large enough for complete immersion of element. Rinse completely, drain, and either air dry or use compressed air. After cleaning and drying, re-treat the element with oil-free adhesive or oil as described.

P (nom.)	Replacement Element Part No.		
	Paper	Felt	Wire
1/2	81-0470	81-1202	81-1035
3/4	81-0470	81-1202	81-1035
1	81-0470	81-1202	81-1035
1 1/4	81-0471	81-1203	81-1036
1 1/2	81-0471	81-1203	81-1036
2	81-0471	81-1203	81-1036
2 1/2	81-1063, 81-0472 (old)	81-1205, 81-1204 (old)	81-1038, 81-1037 (old)
3	81-1063, 81-0472 (old)	81-1205, 81-1204 (old)	81-1038, 81-1037 (old)
3 1/2	81-1063	81-1205	81-1038
4	81-1063	81-1205	81-1038
5	81-1063, 81-0474 (old)	81-1205, 81-1206 (old)	81-1038, 81-1039 (old)
6	81-0475	81-1207	81-1040
8	(2) 81-0475	(2) 81-1207	(2) 81-1040, (1) 81-1199 (old)
10	81-1163	81-1209	81-1200
12	81-1163	81-1209	81-1200
14	81-1164	81-1210	81-1201
16	81-1164	81-1210	81-1201

UNIVERSAL



Our corporate headquarters are located in Stoughton, Wisconsin, just southeast of Madison, the state capital. This new building houses administration, sales, and engineering departments.



Manufacturing facilities are in Muscoda (above), 75 miles west of Stoughton, and Montello (below), 70 miles north.



Our products have been used to protect, quiet, and optimize the performance of industrial equipment for 50 years. We maintain a fully equipped testing facility to qualify filters and silencers. We are an ISO 9001 registered firm and ASME Code certified.

*Keeping  
industrial equipment  
clean and quiet.*

# Cartridge Air Filters and Filter-Silencers

## AIR FILTER RESTRICTION GAUGE

Universal's Filter Restriction Gauge provides a convenient, accurate means of monitoring filter pressure drop as the filter element becomes increasingly loaded with dirt. Cartridge filters and filter-silencers are standard with threaded connections for direct mounting of the gauge. See product bulletin 81-1234 for a complete description.



## OIL-FREE ADHESIVE FOR WIRE MESH ELEMENTS

This is an oil-free product developed for use on viscous impingement filters. It is a substitute for applications that do not permit oil wetting of the filter elements, such as oil-free compressors. Universal oil-free filter adhesive is available in 16-ounce aerosol spray cans, packaged 6 cans per case. Order by part number 81-0323.



Contact us for more information about our complete line of industrial silencers, air filters, and filter-silencers:

- Air filters and filter-silencers, catalog 241-A
- CB compact blower silencers, catalog 255-A
- CBF/CBFI compact blower filter-silencers, catalog 261-A
- Air filter restriction gauge, catalog 81-1234
- Reciprocating engine silencers and filters, catalog 246-A
- Rotary positive blower silencers, catalog 244-D
- Absorptive silencers, catalog 245-B
- Vent and blowdown silencers, catalog 243-C
- Compressor silencers and filters, information provided by application
- Vacuum pump separator silencers, catalog 222-B
- Industrial fan silencers, catalog 249-A, 249-D
- Steam ejectors, pressure reduction valves, and other special applications
- Gas turbine silencers and filters, catalog B-249-A
- Acousti-Tube® Silencers, catalog 260
- Acousti-Tube® Silencer Series, technical bulletin 94-1315
- StrataClean™ barrier air filter systems, catalog 268
- StrataClean™ Pulse air filter systems, catalog 269



**UNIVERSAL**

Acoustic & Emission Technologies

P. O. Box 411, Stoughton, Wisconsin 53589  
608-873-4272 Fax 608-873-4298

[info@universalAET.com](mailto:info@universalAET.com)  
[www.universalAET.com](http://www.universalAET.com)