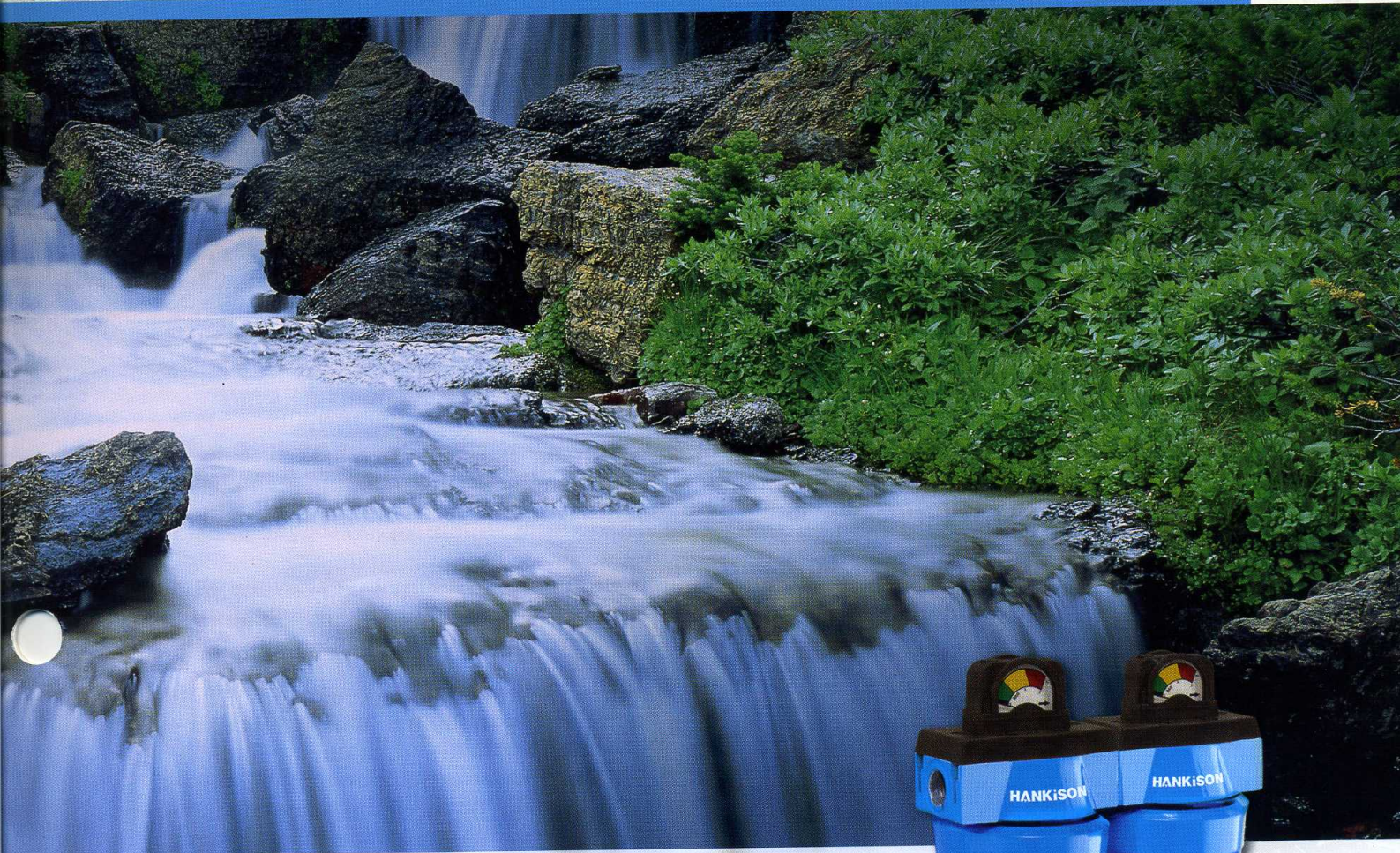


Yongteh Taiwan

 **HANKISON**  
hankisonintl.com



**COMPRESSED AIR FILTERS**

HF SERIES

## **COMPRESSED AIR TREATMENT REDUCES OPERATING COSTS**

**Cut the Cost of Compressed Air. Hankison filters remove more contaminants with less pressure drop. Compare the operating pressure drop of competitive brands and remember that for every extra 2 psi of pressure drop, power input needs to be increased by 1%.**



### **FROM THE LEADER IN COMPRESSED AIR TREATMENT**

Since Hankison first developed their coalescing filters in the 1970s, they have been a leader in filtration design. HF Series filters are the result of extensive testing of the latest state-of-the-art materials in filtration media. Filter elements have been designed utilizing the latest media innovations and manufacturing techniques. The result is increased performance, reduced size and lower operating pressure drop, in a variety of grades to match your requirements. Housings have large flow areas to reduce pressure drop and to allow easier installation, operation and maintenance. A systems approach has been used to allow for convenient matching of filter types to achieve the air quality you desire, while comprehensive third party testing guarantees performance to CAGI,<sup>1</sup> ISO<sup>2</sup> and PNEUROP<sup>3</sup> standards.

With a greater selection of filter grades, more models to choose from and worldwide technical and service support, Hankison offers a systemized solution for your compressed air quality needs.

### **LET HANKISON GIVE YOU THE COMPRESSED AIR QUALITY YOU REQUIRE**

A typical compressed air system is contaminated with...abrasive solid particles such as dust, dirt, rust and scale...compressor lubricants (mineral or synthetic)...condensed water droplets and acidic condensates...and oil and hydrocarbon vapors.

If not removed, these contaminants increase pneumatic equipment maintenance costs, lead to instrument and control failure, contribute to poor product fit and finish, and contaminate processes.

The right Hankison filter or filter system will remove these contaminants allowing your compressed air system to deliver the quality of air required by your application...whether it's plant air, instrument air or medical air...helping to ensure consistent output quality while minimizing operating costs.

<sup>1</sup> CAGI - Compressed Air And Gas Institute

<sup>2</sup> ISO - International Standards Organization

<sup>3</sup> PNEUROP - European Committee of Manufacturers of Compressors, Vacuum Pumps and Pneumatic Tools



**MODULAR HOUSINGS FOR FLOWS THROUGH 780 SCFM**

- Enlarged flow paths reduce pressure drop
- Manufactured from top quality aluminum, zinc and steel
- Chromated and epoxy powder painted (interior and exterior) for added durability and corrosion resistance
- 300 psig (21 kgf/cm<sup>2</sup>) maximum working pressure (tested to a 5:1 safety factor)

**EASY TO OPERATE**

**New differential pressure indicators**

Indicates optimum time for element change – maximizing your element investment while minimizing pressure drop.

**Slide indicator**

Economical – changes color when filter element requires replacement.

**Gauge**

- Large easy to read gauge face
- Dual gauge faces allow housings to be mounted in any flow direction
- Can be mounted remotely
- Switch for remote indication available

**Liquid level indicator**

- Allows visual monitoring of liquid level and signals the need for preventative maintenance to avoid downstream contamination
- Manufactured from thermoset polyurethane, compatible with synthetic lubricants

**Internal automatic drains**

- Pilot operated, pneumatically actuated...reliably discharges collected liquids
- Viton seals...totally compatible with synthetic lubricants
- Inlet screen for additional protection
- Discharge fitting threaded to facilitate drain line connection

**EASY TO INSTALL**

- Modular connections - allow housings to be connected in series easily, while saving space
- Wall mounting bracket optional
- Can be mounted for left or right entry
- New space saving design reduces service clearances



**EASY TO MAINTAIN**

- ¼ turn, self locking bayonet head to bowl connections (through 1")
- Push on elements make element replacement quick and easy
- If housing is not depressurized before disassembly, escaping air gives audible warning
- Captive o-ring
- Ribbed bowls allow use of C spanner
- Color coded elements for easy identification



## HANKISON ELEMENTS OFFER ENHANCED PERFORMANCE AND LOW PRESSURE DROP

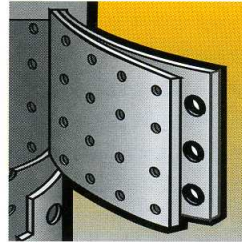
### A CHOICE OF SEVEN ELEMENT GRADES ALLOWS YOU TO DESIGN A SYSTEM THAT DELIVERS THE AIR QUALITY YOU REQUIRE

- Push-on elements make element replacement easy
- Piston type element to housing seal keeps unfiltered air from by-passing element
- Corrosion resistant cores
  - Stainless steel for added structural integrity
  - Low resistance to flow
  - Seam welded for extra strength
- New "matrix blended fiber" media
  - Large, effective surface area - improves capture rate - ensures high efficiencies
  - Large open area minimizes pressure drop
- Coated, closed cell foam sleeve
  - Resists chemical attack from oils and acids
  - Ensures high efficiencies by preventing reentrainment of coalesced liquids
- Chemically resistant end caps bound to media with specially formulated adhesive
- Silicone free
- Withstands temperatures to 150°F (66°C)

#### Air Quality/Pressure Drop

Grade	Solid Particles Down to micron	Remaining Oil Content ppm by weight	Pressure Drop at Rated Conditions psid [kgf/cm <sup>2</sup> ]	
			Dry	Wet
11 ■	10	-	0.8 [0.06]	0.8 [0.06]
9 ■	3	5	1 [0.07]	1.5 [0.11]
7 ■	1	1	1 [0.07]	2 [0.14]
6 ■	1	-	1 [0.07]	-
5 ■	0.01	0.008	1 [0.07]	3 [0.21]
3 ■	0.01	0.0008	2 [0.07]	6 [0.42]
1 ■	0.01	0.003	1 [0.07]	NA

### Grade 11 ■



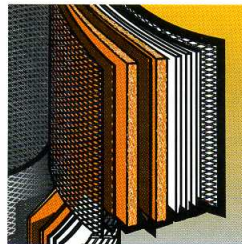
#### MOISTURE SEPARATOR

bulk liquid removal. Maximum inlet liquid Load: 30,000 ppm w/w

#### Filtration

- Two stainless steel orifice tubes provide 10 micron mechanical separation

### Grade 7 ■



#### GENERAL PURPOSE AIR LINE FILTER

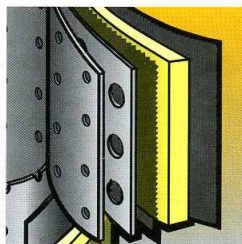
for removal of liquid water and oil; removes solid particles to 1 micron (1.0 ppm w/w maximum remaining oil content) <sup>1</sup>

- Corrosion resistant inner and outer cores

#### Two-stage filtration

- **First stage** - captures larger particles with alternate layers of fiber media and media screen
- **Second stage** - coalesces aerosols and captures solid particles with multiple layers of epoxy bonded, blended fiber media

### Grade 9 ■



#### SEPARATOR/FILTER

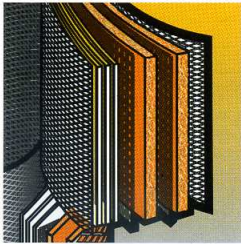
mechanical for bulk liquid removal plus a 3 micron coalescer (5 ppm w/w maximum remaining oil content) <sup>1</sup>

#### Two-stage filtration

- **First stage** - two stainless steel orifice tubes provide 10 micron mechanical separation
- **Second stage** - in-depth fiber media captures solid and liquid particles to 3 microns



**Grade 6 ■**



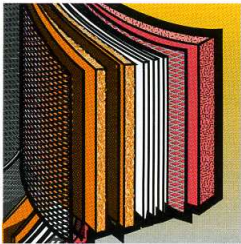
**DRY PARTICULATE AIR LINE FILTER**

for removal of solid particles to 1 micron

**Two-stage filtration**

- First stage - coalesces aerosols and captures solid particles with multiple layers of epoxy bonded, blended fiber media
- Second stage - captures larger particles with alternate layers of fiber media and media screen

**Grade 5 ■**



**HIGH EFFICIENCY OIL REMOVAL FILTER**

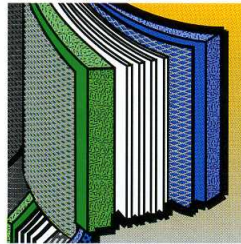
for coalescing fine water and oil aerosols; removes solid particles to 0.01 micron (0.008 ppm w/w maximum remaining oil content) <sup>1</sup>

- Corrosion resistant inner and outer cores

**Two-stage filtration**

- First stage - multiple layers of fiber media and media screen remove larger particles, prefiltering the air for the second stage
- Second stage - multiple layers of bonded, blended fiber media for fine coalescence
- Outer coated, closed cell foam sleeve

**Grade 3 ■**



**ULTRA HIGH EFFICIENCY OIL REMOVAL FILTER**

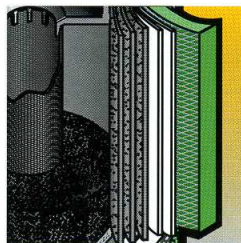
for coalescing ultra-fine oil aerosols; removes solid particles to 0.01 micron (0.0008 ppm w/w maximum remaining oil content) <sup>1</sup>

- Corrosion resistant inner and outer cores

**Two-stage filtration**

- First stage - coated, closed cell foam sleeve acts as prefilter and flow disperser
- Second stage - multiple layers of matrix blended fiber media for ultra-fine coalescence
- Outer coated, closed cell foam sleeve

**Grade 1 ■**



**OIL VAPOR REMOVAL FILTER**

for removal of oil and hydrocarbon vapors normally adsorbable by activated carbon; removes solid particles to 0.01 micron (0.003 ppm w/w maximum remaining oil content) <sup>2</sup>

- Corrosion resistant inner and outer cores

**Two-stage filtration**




- First stage - a stabilized bed of finely divided carbon particles removes the majority of the oil vapor
- Second stage - multiple layers of fiber media with bonded microfine carbon particles remove the remaining oil vapor
- Multiple layers of fine media prevent particle migration
- Outer coated, closed cell foam sleeve prevents fiber migration
- Designed for 1000 hour life at rated conditions

<sup>1</sup> Filter efficiency has been established in accordance with CAGI standard ADF400 and is based on 100°F (38°C) inlet temperature.

<sup>2</sup> Filter efficiency has been established in accordance with CAGI standard ADF500 and is based on 100°F (38°C) inlet temperature.

# APPLICATION GUIDE, PRODUCT FEATURES AND SPECIFICATIONS

## APPLICATION GUIDE

Element Type	Description	CAGI, ISO, and PNEUROP Performance Data	Where Used
 Grade 11 Water Separator Element	Bulk Liquid Separator • Bulk Liquid	<u>Removes:</u> • Liquids and Solids 10 microns and larger  Maximum inlet liquid load: 30,000 ppm w/w	Downstream of aftercoolers  
 Grade 9 Separator / Element	Mechanical separator and 3 micron coalescer removes • Liquid • Large particles	<u>Removes:</u> • Solids and liquids 3 microns and larger • Remaining oil content 5 ppm w/w  ISO 8573.1 Quality Class - Solids: Class 3, Oil Content: Class 5 Maximum inlet liquid load: 25,000 ppm w/w	At point-of-use if no aftercooler/separator used upstream  
 Grade 7 Air Line Element	General Purpose 1 micron coalescer for shop air operating • Tools • Motors • Cylinders	<u>Removes:</u> • Solids and liquids 1 micron and larger • Remaining oil content 1 ppm w/w  ISO 8573.1 Quality Class - Solids: Class 2, Oil Content: Class 4 Maximum inlet liquid load: 2,000 ppm w/w	Upstream of ultra high efficiency oil removal filters  At point-of-use if aftercooler/separator installed upstream  
 Grade 6 Dry Particulate Element	Dry Solids Removal • Pipeline protection from abrasive desiccant dust	<u>Removes:</u> • Solids 1 microns and larger  No liquid should be present at filter inlet	Downstream of pressure-swing (heatless) desiccant dryers  
 Grade 5 High-Efficiency Oil Removal Element	Fine coalescer for oil free air for industrial use • Painting • Injection molding • Instruments • Control valves	<u>Removes:</u> • Solids and liquids 0.01 micron and larger • 99.99+% of oil aerosols; remaining oil content 0.008 ppm w/w  ISO 8573.1 Quality Class - Solids: Class 1, Oil Content: Class 2 Maximum inlet liquid load: 1,000 ppm w/w	<u>Removes:</u> • Solids and liquids 0.008 micron and larger 99.99+% of oil aerosols; remaining oil content 0.01 ppm w/w  ISO 8573.1 Quality Class - Solids: Class 1, Oil Content: Class 2 Maximum inlet liquid load: 1,000 ppm w/w   
 Grade 3 Ultra High Efficiency Oil Removal Element	Ultra fine coalescer for oil free air for critical applications • Where air contacts product • Conveying • Agitating • Electronics manufacturing • Nitrogen replacement	<u>Removes:</u> • Solids and liquids 0.01 micron and larger 99.999+% of oil aerosols; remaining oil content 0.0008 ppm w/w  ISO 8573.1 Quality Class - Solids: Class 1, Oil Content: Class 1 Maximum inlet liquid load: 100 ppm w/w	Upstream of desiccant or membrane dryers; use a Grade 7 as a prefilter if heavy liquid loads are present  Downstream of refrigerated dryers   
 Grade 1 Oil Vapor Removal Element	Activated carbon filter for odor free air for • Food and drug manufacturing • Breathing air • Gas processing	<u>Removes:</u> • Oil vapor: remaining oil content 0.003 ppm w/w (as a vapor) • Solids 0.01 micron and larger  ISO 8573.1 Quality Class - Solids: Class 1, Oil Content: Class 1  No liquid should be present at filter inlet - use a high efficiency oil removal filter upstream of Grade 1 filters to prevent liquid oil contamination	Downstream of high efficiency oil removal filters   OR 
Filter Type	Description	CAGI, ISO, and PNEUROP Performance Data	Where Used
 HTA Series High Temperature Dry Particulate	High Temperature Dry Particulate Afterfilter	<u>Removes:</u> • Solids 1 micron and larger  No liquid should be present at filter inlet	Downstream of heat reactivated desiccant dryers  

HF SERIES COMPRESSED AIR FILTERS



**HTA SERIES PRODUCT SPECIFICATIONS**

Model Number	Max. Flow @ 100 psig scfm	MWP <sup>1</sup> @ 450°F psig	Connections <sup>2</sup>	Dimensions		Weight			
				H in.	mm	W in.	mm	lbs.	kg
HTA100	100	250	1" NPT	14.31	364	4.25	108	13	5.9
HTA200	200	250	1" NPT	23.81	605	4.25	108	19	8.6
HTA400	400	165	3" NPT	39.56	1005	10.25	260	95	43
HTA600	600	165	3" NPT	39.56	1005	10.25	260	95	43
HTA1200	1,200	165	3" NPT	41.44	1053	16.00	406	159	72
HTA1800	1,800	165	3" NPT	43.25	1099	16.25	413	219	99
HTA2400	2,400	165	4" ANSI Flange	54.69	1389	20.00	508	236	107
HTA3000	3,000	165	4" ANSI Flange	54.69	1389	20.00	508	239	108
HTA4800	4,800	165	6" ANSI Flange	53.00	1346	24.00	610	319	145
HTA6600	6,600	165	6" ANSI Flange	62.00	1575	28.00	711	548	249
HTA8400	8,400	165	6" ANSI Flange	62.00	1575	28.00	711	548	249
HTA11400	11,400	165	8" ANSI Flange	68.19	1732	33.00	838	772	350

Pressure drop: At rated flow conditions pressure drop will be less than 1 psid (0.07 kgf/cm<sup>2</sup>). Pressure drop will increase only as the filter cartridges become loaded with solid particles.

Filter cartridge replacement: Filter cartridges should be replaced annually or, when pressure drop across the cartridge exceeds acceptable differential pressure. Maximum temperature: 450°F (232°C)

<sup>1</sup> Units with higher MWP are available; contact factory. Model HTA1200 and larger are ASME code constructed and stamped.

<sup>2</sup> BSP connections and DIN Flanges are available.

**HF SERIES PRODUCT SPECIFICATIONS**

Model Number	Max. Flow @ 100 psig scfm	Connections NPT / ANSI Fig.	Standard Features Filter Grades					Max. Pressure & Temp.		Dimensions			Replacement Element			
			11	9	7,5,3	6	1	Manual Drain	With D	H in.	mm	W in.	mm	Weight lb	kg	Model
<b>Modular Type Housings</b>																
HF(Grade)-12-(Conn.)-(Features)	20															
HF(Grade)-16-(Conn.)-(Features)	35	3 - 3/8" NPTF or 4 - 1/2" NPTF	D	P	P	P										
HF(Grade)-20-(Conn.)-(Features)	60		P	L	L	L										
HF(Grade)-24-(Conn.)-(Features)	100	6 - 3/4" NPTF or 8 - 1" NPTF	D	D	G, L	D										
HF(Grade)-28-(Conn.)-(Features)	170															
HF(Grade)-32-(Conn.)-(Features)	250	8 - 1" NPTF or 10 - 1-1/4" NPTF or 12 - 1-1/2" NPTF	(1)	G	G	L										
HF(Grade)-36-(Conn.)-(Features)	375															
HF(Grade)-40-(Conn.)-(Features)	485	16 - 2" NPTF or 20 - 2-1/2" NPTF	(1)	G	D	G										
HF(Grade)-44-(Conn.)-(Features)	625															
HF(Grade)-48-(Conn.)-(Features)	780	20 - 1/2" NPTF	(1)	G	D	G										
<b>ASME Pressure Vessels</b>																
HF(Grade)-52-(Conn.)-(Features)	625															
HF(Grade)-54-(Conn.)-(Features)	1,000	24 - 3" NPTM		D, G	D, G											
HF(Grade)-56-(Conn.)-(Features)	1,250	80 - DN 80 Flange														
HF(Grade)-60-(Conn.)-(Features)	1,875	24 - 3" NPTM														
HF(Grade)-64-(Conn.)-(Features)	2,500															
HF(Grade)-68-(Conn.)-(Features)	3,125	4F - 4" ANSI Flange														
HF(Grade)-72-(Conn.)-(Features)	5,000	6F - 6" ANSI Flange	(1)	G	G	G										
HF(Grade)-76-(Conn.)-(Features)	6,875															
HF(Grade)-80-(Conn.)-(Features)	8,750	6F - 6" ANSI Flange														
HF(Grade)-84-(Conn.)-(Features)	11,875	8F - 8" ANSI Flange														
HF(Grade)-88-(Conn.)-(Features)	16,250	8F - 8" ANSI Flange														
HF(Grade)-92-(Conn.)-(Features)	21,250	10F - 10" ANSI Flange														

- Filter Grades  
 11 - Mechanical Separator (bulk liquid)  
 9 - Separator/Filter (3 micron and bulk liquid)  
 7 - Air Line Filter (1 micron)  
 6 - Dry Desiccant Afterfilter (1 micron)  
 5 - High Efficiency Oil Removal Filter (0.008 ppm)  
 3 - Maximum Efficiency Oil Removal Filter (0.0008 ppm)  
 1 - Oil Vapor Removal Filter (activated carbon)

- Features:  
 D - Internal Automatic Drain Mechanism  
 G - Differential Pressure Gauge Indicator  
 L - Liquid Level Indicator  
 M - Filter Monitor  
 P - Differential Pressure Slide Indicator  
 S - Corrosion Proof Stainless Steel Cores  
 X - External Drain Adapter

<sup>(1)</sup> Drain plugs standard. Externally mounted automatic drains are available.  
<sup>(2)</sup> Time-based Filter Monitor recommended.

**CAPACITY CORRECTION FACTORS**

To find the maximum flow at pressures other than 100 psig (7 kgf/cm<sup>2</sup>), multiply the Max. Flow (from tables below) by the Correction Factor corresponding to the minimum pressure at the inlet of the filter. --Do not select filters by pipe size; use flow rate and operating pressure.

**Table 1 - Correction Factors (multipliers) for Inlet Pressure**

Minimum Inlet Pressure	psig	20	30	40	60	80	100	120	150	200	250	300
		kgf/cm <sup>2</sup>	1.4	2.1	2.8	4.2	5.6	7.0	8.4	10.6	14.1	17.6
Correction Factor		0.30	0.39	0.48	0.65	0.82	1.00	1.17	1.43	1.87	2.31	2.74

## FILTER MONITOR



## SERIOUS SAVINGS WITH FILTER MONITOR

Titans of industry know how costly compressed air generation can be. Companies that are serious about reducing costs generally consult professional compressed air system auditors to analyze their air generation systems and plant air demands so they can strategize on areas to eliminate waste and improve efficiencies. It is no wonder that many filters are ordered and installed with an optional Filter Monitor.

### Annual Energy Saving Potential

Flow SCFM	System Pressure Reductions				
	2 psig	4 psig	6 psig	8 psig	10 psig
100	\$ 143.77	\$ 287.54	\$ 431.31	\$ 575.08	\$ 718.85
250	359.42	718.85	1,078.27	1,437.69	1,797.11
500	718.85	1,437.69	2,156.54	2,875.38	3,594.23
1,000	1,437.69	2,875.38	4,313.07	5,750.76	7,188.46
2,000	2,875.38	5,750.76	8,626.15	11,501.53	14,376.91
5,000	7,188.46	14,376.91	21,565.37	28,753.82	35,942.28
10,000	14,376.91	28,753.82	43,130.74	57,507.65	71,884.56

\* Assumes 5 scfm/HP, \$0.10 per kWh, 8,760 hours of operation per year

Filter Monitor's accuracy lets you manage element condition to reduce costly system pressure. Example: 500 scfm air system - change filter element at 2 psig vs. 10 psig to add \$ 2,875.38 to your bottom line.

## TAKE CONTROL

Filter Monitor uses advanced microprocessor technology to help you take control with 3 complementary modes of operation – as standard.

- Time Monitoring Mode – provides notification when it is time to change the filter element per your selection from 1-15 months.
- Differential Pressure Mode - select the exact pressure differential you will tolerate to initiate the warning to minimize the cost of pressure drop.
- Filter Performance Mode – Filter Monitor automatically analyzes your systems flow dynamics 1,800 times per hour to chart its unique operating characteristics. It references the parameters you selected and continually plots your system's profile to forecast the days left until it will cost more to operate the dirty element than to replace it. A warning is triggered 60 days before change-out is recommended and the days countdown until the filter element is changed.

## ISO 8573.1 QUALITY CLASSES

Class	Solid Particles			Humidity and Liquid Water		Oil	
	Particle Size, d (micron)			Pressure Dew Point		Total concentration, Aerosol, Liquid and Vapor	
	0.10 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	°C	°F	mg / m <sup>3</sup>	ppm w/w
0	As Specified			As Specified		As Specified	
1	100	1	0	≤ -70	≤ -94	≤ 0.01	≤ 0.008
2	100,000	1,000	10	≤ -40	≤ -40	≤ 0.1	≤ 0.08
3	Not Specified	10,000	500	≤ -20	≤ -4	≤ 1	≤ 0.8
4	Not Specified	Not Specified	1,000	≤ +3	≤ +38	≤ 5	≤ 4
5	Not Specified	Not Specified	20,000	≤ +7	≤ +45		
6				≤ +10	≤ +50		
				Liquid Water Content, C <sub>w</sub> g/m <sup>3</sup>			
7				C <sub>w</sub> ≤ 0.5			
8				0.5 < C <sub>w</sub> ≤ 5			
9				5 < C <sub>w</sub> ≤ 10			

Per ISO8573-1: 2001(E)

# SPX HANKISON

### SPX Dehydration & Process Filtration

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Improvements and research are continuous at SPX Hankison  
 Specifications may change without notice.

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