# Compressed Air Filtration and Mist Eliminators

### **Efficient Filtration Solutions**



- Low pressure drop
- Reduces energy requirements
- Performance guarantee
- Durable element construction



### **Sullair Capabilities**

#### **Sullair Leadership**

Since 1965, Sullair has been recognized around the world as an



innovator and a leader in rotary screw compression and vacuum technology. For more than 40 years, Sullair

has designed and manufactured its own rotors and air end assemblies at the corporate headquarters in Michigan City, Indiana.

The award-winning rotary screw design sets the industry standards and delivers the quality and reliability one expects from a leader.



### **Sullair Technology**

Utilizing the most modern technologies, equipment and advanced manufacturing techniques, Sullair designs, manufactures, assembles, and tests the most innovative compressed air and vacuum products in the industry. Sullair

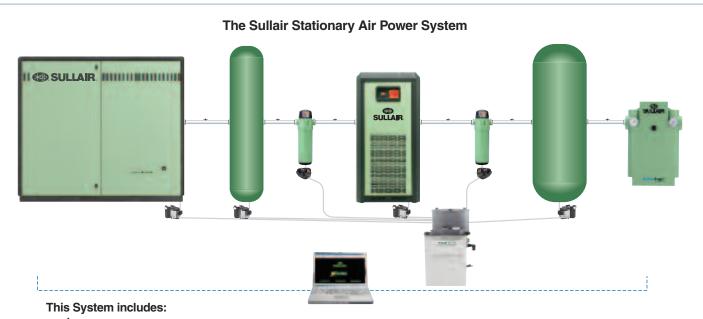
products are known around the world for their universally applicable design, outstanding craftsmanship and superior quality.

#### **Sullair's Statistical Process Control**

Sullair's Statistical Process Control (SPC) system monitors rotor quality standards to assure consistent compressor and vacuum performance.

### **Sullair's Commitment to Innovation**

Underlying Sullair's leadership is a dedication to excellence and a commitment to innovation. Sullair is constantly exploring new ideas and seeking new ways to meet industry's need for increasingly energy efficient compressed air and vacuum solutions.



- rotary screw compressor
- · wet storage
- refrigerated dryer
- · filters to meet your requirement
- dry storage
- flow controller
- drains
- · oil/water separator
- ethernet-based eConnect<sup>™</sup> to monitor and control the entire system

### The Importance of Clean, Dry Compressed Air

### How much water is too much? Any amount of water is too much.

Water jeopardizes everything you want your compressed air system to do. It ruins product and fouls processes.

- Relative humidity is the amount of water vapor in air relative to what it could hold at a given temperature
- Moisture in compressed air remains in a vapor state through the compression cycle, so it is not a problem until it leaves the compressor
- Air discharged from a compressor is approximately 150°F to 450°F
- At 75°F and 75% relative humidity, a 75 hp compressor takes in 46 gallons of water vapor in 24 hours. When this air is cooled to approximately 35°F at 100 psig, the water vapor condenses into 46 gallons of liquid!



Liquid remaining after the aftercooler: 14.7 gallons (32%)



Liquid remaining after a refrigerated dryer: 1.8 gallons (4%)



Liquid remaining after a desiccant dryer: .14 gallon (0.3%)

### **Sullair Family of Filtration**

Sullair offers superior filtration from 1 micron to .01 micron. Durable element construction and an efficient drain layer ensure continued performance after optimal element change periods.

#### Particulate Filters: F and FR Elements

High-efficiency particulate filters remove particles to 1 micron, including coalesced liquid water and lubricants. Maximum remaining aerosol content after filtration is 0.5 ppm at 70°F.

#### High Efficiency Coalescing Filtration: H and HR Elements

For maximum filtration, Sullair offers compressed air filters to remove particulate down to 0.01 micron, including water and oil aerosols, providing a maximum remaining oil aerosol content of 0.01 ppm at 70°F, when used with Sullair particulate filters.

### **Carbon Filters: C Elements**

Sullair filters use activated carbon to remove lubricant and hydrocarbon odors. After filtration, remaining vapor content is less than 0.003 ppm (excluding methane). This filter installation should always be preceded by high efficiency filter grades.

#### **High Pressure: HP Element**

Sullair high pressure filters are available up to 725 psig.

### **High Temperature: HT Element**

Sullair high temperature filters are available up to 350°F.

#### **Ultra Filter: U Element**

For your most sensitive and high end applications Sullair offers the Ultra Filter. The Ultra Filter is an extremely high efficiency particulate filter. The Ultra is an absolute high efficiency filter.

FX = Standard NPT inlet and outlet ports (BSP optional) FW = Flange inlet and outlet ports



### **Sullair Compressed Air Filters**

Sullair filters protect your plant equipment and processes, improve your product quality and reduce your energy costs. Sullair offers filtration products in an application range from general purpose air to the most stringent food and pharmaceutical applications. Sullair filters are available from 25 to 17,700 scfm, 15 to 725 psig, 36°F to 350°F, ISO 8573.1 quality classes (ASME/CRN approved).

- Filtration equipment includes pre-filters, high efficiency filters, high pressure high temperature and odor-removal filters.
- The type, number, and placement of filters depend on the applications and the degree of contaminant removal required.

#### **Element Features**

- 7 Element types
- Superior construction
- Efficient drainage layer
- Hydrophobic micro fiber
- Deep pleats

- Stainless steel cores
- Special disruptive pattern
- PVC impregnated layer
- End cap key fit
- Color coded elements

### **Five-Year Filter Guarantee**

Sullair backs this technology with a five-year warranty on the housing and a five-year warranty on performance, provided the element is changed annually.

#### All Inclusive "Peace of Mind" Warranty

Sullair backs our commitment to quality with an unparalleled, non-prorated 5-year warranty (parts and labor) on the major components. No other manufacturer offers a warranty that is as all inclusive.



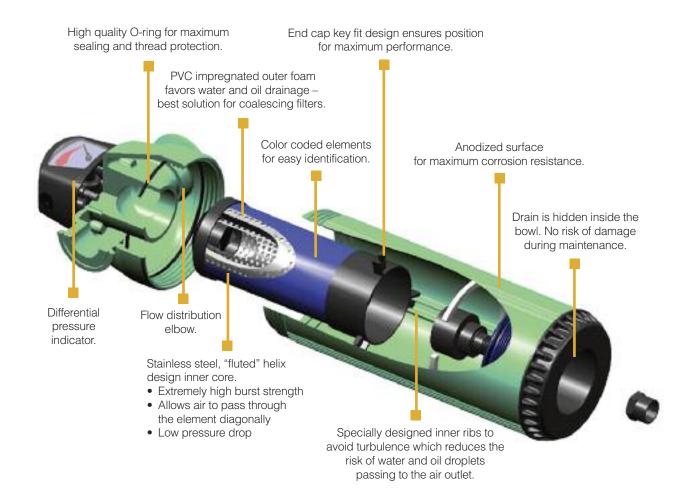
(Note: a Sullair pre-filter must

be installed upstream of the dryer as a prerequisite for this warranty.)

### Quality is Third Party Certified and Guaranteed



Filters are manufactured in an ISO 9001 environment.



### **Sullair Advanced Filter Housings**



### **Compact and Lightweight**

Advanced housing and element design provide a smaller, more compact and lightweight filter, which is quick and easy to maintain.



### **Filter Connections**

More port sizes are available to match both pipe size and system flow rate giving additional customer choice.



### **Fully Corrosion Protected**

Anodized aluminum and dry powder epoxy coated for full corrosion protection.



#### **Differential Pressure Indicator**

A high quality differential pressure indicator is used to identify pressure differential.



### Fixing Clamp and Wall Mounting Bracket

The fixing clamps join two or more filters together for maximum filtration while the robust wall mounting brackets provide an easy mounting solution.



### "Clean Change" Filter Element

Element changes are now easy and do not require the user to touch the contaminated element during annual element change.

#### **Service Clearance**

Space saving design minimizes service clearance and allows installation in confined spaces.

### State of the Art Filter Element and Features



Sullair's range of compressed air filters have been designed from the outset to meet current and forthcoming requirements for compressed air quality. Using aerospace technology, Sullair has optimized the flow path

through the housing and element, significantly reducing air turbulence and pressure losses. Providing an optimal flow path is key to reducing pressure drop and system operating costs.



### **Drainage Ribs**

Filter housing and element integrate to provide capillary action which greatly improves liquid drainage. Interaction between housing and element also ensures maximum coalescing performance is achieved at all times.



### **Recessed Drain**

Specially designed auto drain system protects the auto drain against damage during shipping, handling and installation.

### **The Filtration Process**



#### **Deep Bed Pleating**

For particle and aerosol removal, deep bed pleating provides 450% more filter media than an ordinary element, giving a larger filtration area, lower flow velocities, increased dirt holding capacity, lower running costs and a more compact filter element. Graded density further improves filter life and overall performance.

### **Oil Vapor Removal**

While mechanical filtration is capable of removing extremely fine liquids and

solid particles, it cannot remove gaseous contaminants such as oil vapor or odors. To efficiently remove these vapors, Sullair FXC and FWC filters employ absorption techniques.



Micro-glass filter media

### **Sullair's Mist Eliminators**

The time-tested range of Sullair Mist Eliminators combine extensive research and development with decades of experience in compressed air treatment.

Sullair now offers the ideal solution to ever increasing demands from the industry for clean, high quality compressed air, efficient removal of oil-mist carryover from piston or oil flooded rotary compressors.

Compressed air processing equipment must have a very low pressure drop, long service life, and be strong enough to withstand the most harsh operating conditions. Protection from slugs of oil or compressor air/oil separator failure is essential.

The range of Mist Eliminators is specifically designed to meet these demands and will — optimize oil removal while ensuring extremely low pressure drop and long service life.

### **Element**

- Ultra low .05 psi differential
- High load factor compared to conventional hand packed media which is prone to poor performance under varying load conditions
  - Provides 9–10 times greater filtration surface area, greater dirt holding capability, and lower pressure drop
  - Eliminates migration of airflow to area of least resistance, also known as "channeling"
  - Eliminates the shedding of media
  - Consistent quality
- Strong stainless steel support sleeve construction
  - Eliminates rust and corrosion which can contaminate the air system
  - Integral support of the filtration media to eliminate bypass of contaminants



 For the removal of particles down to 1 micron including coalesced liquid water and oil providing a maximum remaining oil aerosol content of 0.5 ppm

### Special machine pleated element construction

The machined pleating of the filter media increases its stability under changing loads and reduces the specific surface tension.

## Low Pressure Drop and Operating Costs

The Sullair Mist Eliminator's pressure drop is one of the lowest available at 0.5 psi which is typically 4 psi lower than conventional filters. This provides significant energy savings based on the rule of thumb for every 2 psi pressure drop that is eliminated a 1% energy reduction in compressor horsepower is achieved.

### Therefore annual energy savings would be:

4 psi = 2% savings in lost compressor power

### Annual energy savings on 100 hp system

\$0.05/kWh x 8760 hours x 74.6 kW x 2% = **\$ 653** \$0.08/kWh x 8760 hours x 74.6 kW x 2% = **\$1046** \$0.10/kWh x 8760 hours x 74.6 kW x 2% = **\$1307** 





5-Year Performance Guarantee that the differential pressure will not exceed 1 psid

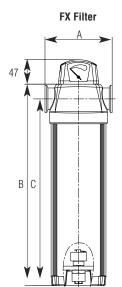
# **Specifications**

Filter	Inlet–Outlet			ļ.	4		nension B			Wei	ight
Model	Port Size	scfm	m³/min	in	mm	in	mm	in	mm	lbs	kg
* FX-25	3/8"	25	0.70	4	101	8	203	7	178	3	1.3
FX-25	1/2"	25	0.70	4	101	8	203	7	178	3	1.3
* FX-45	1/2"	45	1.27	4	101	10	254	9	228	3	1.3
* FX-65	3/4"	65	1.84	5	127	10	254	11	279	4	1.8
FX-65	1"	65	1.84	5	127	10	254	11	279	4	1.8
* FX-130	1"	130	3.68	5	127	15	381	14	355	6	2.7
* FX-240	1-1/2"	240	6.79	5	127	19	482	17	432	7	3.2
* FX-350	1-1/2"	350	9.91	5	127	21	533	19	482	8	3.6
* FX-475	2"	475	13.45	6	152	24	609	22	559	12	5.4
FX-700	2"	700	19.82	6	152	27	686	25	635	12	5.4
* FX-925	3"	925	26.19	8	203	29	736	21	533	23	10.4
* FX-1350	3"	1350	38.23	8	203	29	736	27	686	26	11.7
* FX-1600	3"	1600	45.31	8	203	42	1067	40	1016	27	12.2

<sup>\*</sup>Denotes standard inlet and outlet port sizes.

Filter Model	Maximum ope psig	rating pressure bar	Maximum oper Fahrenheit	ating temperature Celsius	Minimum opera	Standard drain type	
FXF	290	20	176°F	80°C	36°F	2°C	auto
FXH	290	20	176°F	80°C	36°F	2°C	auto
FXC	290	20	176°F	80°C	36°F	2°C	manual
FXFR	290	20	176°F	80°C	36°F	2°C	manual
FXHR	290	20	176°F	80°C	36°F	2°C	manual
FXFRHT	290	20	350°F	176°C	36°F	2°C	manual

(An optional zero-loss drain is available for all Sullair filters)  $\,$ 



### Pressure correction factor for standard pressure filters

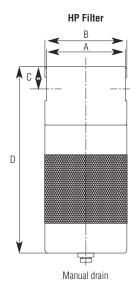
Line Pressure (psig)	25	40	50	60	75	90	100	110	125	140	150	160	175	200	
Correction Factor	0.49	0.62	0.69	0.76	0.86	0.95	1.00	1.04	1.10	1.17	1.21	1.25	1.31	1.40	
Line Pressure (barg)	1	2	3	5	7	9	11	13							
Correction Factor	0.38	0.53	0.65	0.85	1.00	1.13	1.25	1.36							

# **Specifications**

Sullair Element Type	Color Code	Efficiency Performance	Media / Type / Pattern	Flow Direction	Dry Pres psig	sure Drop bar	Wet Pres psig	sure Drop bar
F	Blue	1 micron & .5 ppm carryover	Wrapped	In-to-Out	.6	.04	1.2	.08
FR	Blue	Reverse 1 micron & .5 ppm carryover	Pleated	Out-to-In	.35	.02	.6	.04
FRHT	Metal	High temperature reverse 1 micron & .5 ppm carryover	Pleated	Out-to-In	.35	.02	.6	.04
Н	Red	0.01 micron & .01 ppm carryover	Wrapped	In-to-Out	1.2	.08	2.3	.15
HR	Red	Reverse 0.01 micron & .01 ppm carryover	Pleated	Out-to-In	.45	.03	.7	.04
С	Metal	0.01 micron & .003 ppm carryover	Carbon	Out-to-In	2.3	.15	2.3	.15
Ultra U	White	0.01 micron absolute	Wrapped	Out-to-In	5	.34	abso	lute

F								mension	_	_			
Filter	Inlet-Outlet	_			Α		В	(	3		)	-	ight
Model	Port Size	scfm	m³/min	in	mm	in	mm	in	mm	in	mm	lbs	kg
FHP-60	1/4"	60	1.70	4	101	9	228	1	25	6	152	7	3.2
FHP-175	1/2"	175	4.95	4	101	9	228	1	25	6	152	7	3.2
FHP-350	3/4"	350	9.91	4	101	9	228	1	25	8	203	8	3.6
FHP-500	1"	500	14.16	5	127	5	127	1	25	10	254	14	6.3
FHP-700	1"	700	19.82	5	127	5	127	1	25	12	304	18	8.2
FHP-950	1-1/2"	950	26.90	5	127	5	127	2	50	14	355	21	9.5
FHP-1500	2"	1500	42.48	6	152	6	152	2	50	15	381	25	11.3
FHP-1750	2-1/2"	1750	49.56	6	152	7	177	2	50	15	381	28	12.7

Filter Model	Maximum operating pressure psig bar	Maximum operating temperature Fahrenheit Celsius	Minimum operating temperature Fahrenheit Celsius	Standard drain type
FXP	725 50	176°F 80°C	36°F 2°C	manual



### Pressure correction factor for high pressure filters

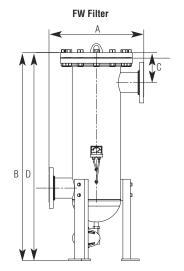
Pressure psig	290	363	435	508	580	653	725
Pressure barg	20	25	30	35	40	45	50
Correction factor	0.63	0.7	0.78	0.83	0.9	.95	1

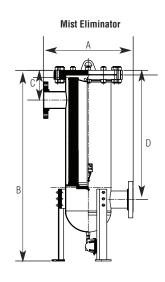
# **Specifications**

		Dimension										
Filter	Inlet–Outlet	A			В		C	- 17	D	Min. Clearance for	Drain Port	Element
Model	Port Size	in	mm	in	mm	in	mm	in	mm	Element Change	Size NPT	Qty.
FW-1500	3" flange	18	457	46	1168	11	279	30	762	26"	1/2"	2
FW-1900	4" flange	18	457	46	1168	11	279	30	762	26"	1/2"	3
FW-2500	4" flange	21	533	46	1168	11	279	30	762	26"	1/2"	4
FW-3800	6" flange	23	584	50	1270	13	330	31	787	26"	1/2"	6
FW-5000	6" flange	23	584	51	1295	13	330	31	787	26"	1/2"	8
FW-6500	6" flange	29	736	53	1346	15	381	33	838	26"	1/2"	10
FW-8300	8" flange	30	762	55	1397	15	381	33	838	26"	1/2"	14
FW-10000	10" flange	32	813	58	1473	16	406	34	863	26"	1/2"	16
FW-12400	12" flange	34	864	61	1549	18	457	35	889	26"	1/2"	16

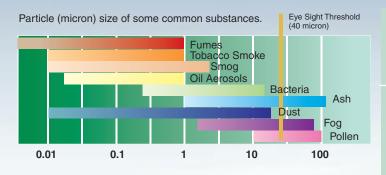
					Din	nension						
Mist Eliminator	Inlet-Outlet	А		[	3		С		D	Min. Clearance for	Drain Port	Separator
Model	Port Size	in	mm	in	mm	in	mm	in	mm	Element Change	Size NPT	Qty.
ELM-150	2" flange	20	508	35	889	9	228	18	457	13"	1/2"	1
ELM-300	2" flange	20	508	39	990	9	228	22	558	17"	1/2"	1
ELM-600	2" flange	20	508	53	1346	9	228	36	914	31"	1/2"	1
ELM-800	3" flange	20	508	61	1549	11	279	43	1092	37"	1/2"	1
ELM-1200	3" flange	24	609	56	1422	11	279	37	939	31"	1/2"	1
ELM-1600	3" flange	24	609	62	1574	11	279	43	1092	37"	1/2"	1
ELM-2100	4" flange	28	711	56	1422	13	330	38	965	31"	1/2"	1
ELM-2750	4" flange	28	711	64	1625	13	330	44	1117	37"	1/2"	1
ELM-4200	6" flange	32	812	61	1549	15	381	39	990	31"	1/2"	1
ELM-6000	6" flange	32	812	71	1803	15	381	49	1244	41"	1/2"	1
ELM-8000	8" flange	34	863	75	1905	16	406	50	1270	41"	1/2"	1
ELM-10000	10" flange	40	1016	79	2006	19	482	51	1295	41"	1/2"	1
ELM-12000	12" flange	40	1016	101	2565	20	508	73	1854	61"	1/2"	1

Filter	Maximum ope	rating pressure	Maximum oper	rating temperature	Minimum opera	ting temperature	Standard
Model	psig	bar	Fahrenheit	Celsius	Fahrenheit	Celsius	drain type
FW / ELM	200	14	176°F	80°C	36°F	2°C	external float drain

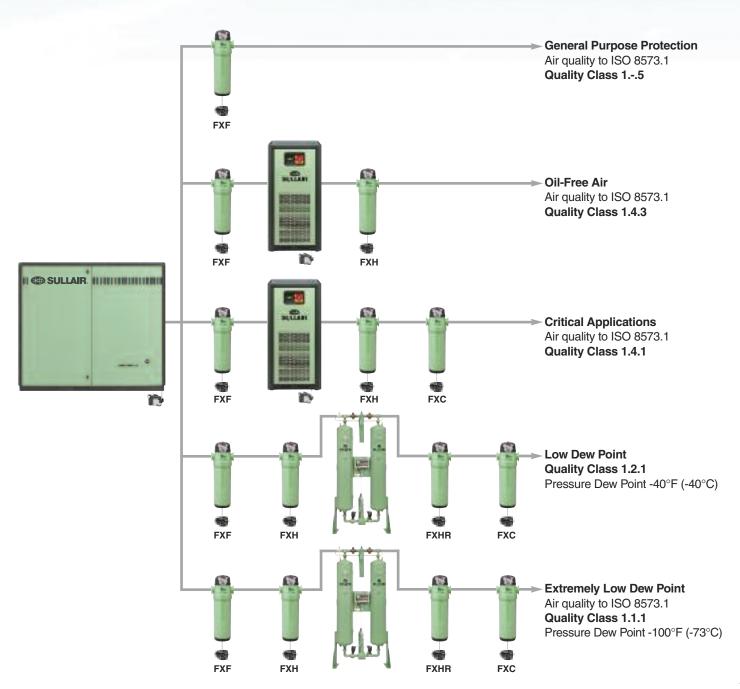




### Air Quality Standards ISO 8573.1 Classes



Class	Max	Solid Particle imum numbe articles per n	er of		sure Point	Oil (incl. vapor)
	0.1-0.5 micron	0.5-1 micron	1.0-5 micron	°F	°C	mg/m³
1 2 3 4 5 6	100 100,000 - - - -	1 1,000 10,000 - - -	0 10 500 1,000 20,000	-94 -40 -4 37 45 50	-70 -40 -20 3 7 10	0.01 0.1 1.0 5.0



# **Sullair's Compressed Air Products**

www.sullair.com



Fundamental to Sullair's leadership is a dedication to reduce not only the amount of natural resources consumed to create energy, but to minimize environmental impact, in both the manufacture and use of all our products. We are constantly exploring new ideas and seeking new technologies to meet the ever-increasing need for high quality, energy-efficient compressed air products and environmental sustainability.



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