

Intake Filters

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Note: Please read the maintenance instructions given by the OEM for the machinery first. The OEM's manual should be adhered to in order to protect the equipment. Solberg Manufacturing, Inc has made every effort to make sure that these instructions are accurate but is not responsible for any typos, slight variations or for human errors that may occur.

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Maintenance Manual

Intake Filters

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**For Further Information Please Call: 630-773-1363*



Section A

INTRODUCTION

The purpose of this manual is instruction on the proper assembly and care of Solberg intake filters.

WARNING

This manual must be read and thoroughly understood before using and caring for this air filter. Failure to comply could result in explosion, product/system contamination or personal injury.

This manual should be used as a supplement to the user's understanding of the proper care needed to maintain a safe and dependable intake filter. It is the responsibility of the user to interpret and explain all instructions to persons who do not read or understand English BEFORE they are allowed to maintain and use this filter.

This manual should be readily available to all operators responsible for operation and maintenance of the intake filters.

We thank you for selecting products from Solberg Manufacturing, Inc. We are confident that our superior filter designs will meet your application requirements.

Section B

GENERAL INFORMATION

1. Identification of Solberg Intake Filters

All Solberg intake filters should have an identification label/nameplate that gives the following information:

**Assembly Model #
Replacement Element #**

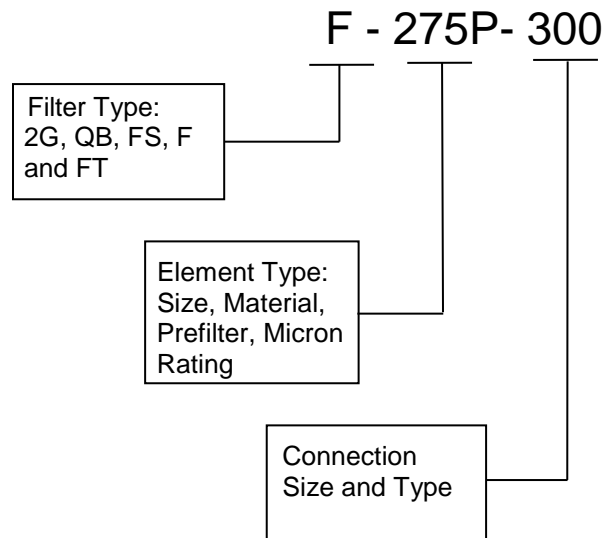
(The exception is OEM supplied units. In this case, please enter the OEM part numbers in Table 1.)

Fill in the actual nameplate data from your new Solberg intake filter(s):

No.	Filter Model Number	Replacement Element	Initial Delta P Readings
1			
2			
3			
4			
5			

Table 1

The model number designates the filter type, the original element configuration and housing connection size. For example, the following part number identifies the filter as being a 'F' design filter with a 275 element with prefilter and 3" MPT connection size:



2. Filtration Rules of Thumb

General: For peak output performance from a compressor, blower, vacuum pump, engine, or any other machine that consumes air, one must have clean, unrestricted air. Proper filtration can help stabilize the working environment within rotating equipment even when the external conditions may be quite severe. A critical component in creating the right working conditions is filter sizing. With the properly sized filter, equipment will run smoothly over its entire expected operating life.

A major factor in filtration and filter sizing is air velocity through the filter media. Generally, the slower the velocity of air through a media the higher the filter efficiency and, conversely, the lower the pressure drop. Therefore, the primary goal in filter sizing is to optimize the velocity of air through the media (sometimes called face velocity).



Rule of Thumb #1: Always begin with the filter cartridge requirements when sizing a filter. Once the appropriate element has been selected then move on to the housing requirements.

Rule of Thumb #2: Always ask or specify a filter based on a micron rating **with filtration efficiencies**. As an example, stating a requirement for a 1-micron filter is misleading because no efficiency rating has been specified. A 1-micron filter at 95% efficiency may be less efficient than a 5-micron filter at 99% efficiency. For proper air system performance in light and industrial duty environments, a filter with a minimum of 99% filtration efficiency at 5 microns is required.

Rule of Thumb #3: Size your filter correctly by understanding the impact air velocity through a media has on efficiency and pressure drop. Maintain the suggested Air-to-Media ratios listed below based on the external environment listings and Filtration efficiency needs.

Filtration Efficiency Requirements (99%+ efficiency)	Environmental Conditions	Air to Media Ratio	
		CFM/ft ²	(m ³ /h)/cm ²
<i>Industrial Grade 2-micron Paper</i>	Industrial Duty (clean, office/warehouse-like)	30 CFM/ft ²	(51m ³ /h)/cm ²
	Severe Duty (workshop, factory-like)	15 CFM/ft ²	(25.5m ³ /h)/cm ²
	Extreme Duty (Foundry, Construction-like)	10 CFM/ft ²	(17m ³ /h)/cm ²
<i>Industrial Grade 5-micron Polyester</i>	Industrial Duty (clean, office/warehouse-like)	50 CFM/ft ²	(85m ³ /h)/cm ²
	Severe Duty (workshop, factory-like)	40 CFM/ft ²	(68m ³ /h)/cm ²
	Extreme Duty (Foundry, Construction-like)	25 CFM/ft ²	(42.5m ³ /h)/cm ²
<i>Industrial Grade 1-micron Polyester</i>	Severe Duty (Foundry, Construction-like)	10 CFM/ft ²	(17m ³ /h)/cm ²
<i>Industrial Grade 0.3-micron HEPA Glass @ 99.97% Efficiency</i>	Industrial Duty (Pre-filtered Applications)	12 CFM/ft ²	(20m ³ /h)/cm ²
	Severe Duty (workshop, factory-like)	7 CFM/ft ²	(12m ³ /h)/cm ²
	Extreme Duty (Foundry, Construction-like)	5 CFM/ft ²	(8.5m ³ /h)/cm ²

Table 2



Rule of Thumb #4: Pressure drop is also caused by the dirt holding capacity of the element. As the element fills up with dirt, the pressure drop increases. It is important to document the pressure drop across a given filter when it is new and then clean or replace it when the pressure drop increases by 10" to 15" / 250-280mm H₂O over the original reading.

Rule of Thumb #5: The inlet connection greatly influences the overall pressure drop of the filter system. To minimize the restriction contributed by an inlet filter, a velocity of 6,000 ft/min (10200m³/h) or less is suggested through the outlet pipe. The table below lists the suggested flows based on pipe size:

Pipe Size (inches)	Max Airflow		Pipe Size (inches)	Max Airflow	
1/2"	10 CFM	17m ³ /h	4"	520 CFM	884m ³ /h
3/4"	20 CFM	34m ³ /h	5"	800 CFM	1360m ³ /h
1"	35 CFM	60m ³ /h	6"	1,100 CFM	1870m ³ /h
1 ¼"	60 CFM	102m ³ /h	8"	1,800 CFM	3060m ³ /h
1 ½"	80 CFM	136m ³ /h	10"	3,300 CFM	5610m ³ /h
2"	135 CFM	230m ³ /h	12"	4,700 CFM	7990m ³ /h
2 ½"	195 CFM	332m ³ /h	14"	6,000 CFM	10200m ³ /h
3"	300 CFM	510m ³ /h			

Table 3 *Note: This information is for general use only. A qualified engineer must properly design each system.

3. Element Specifications

Temperature Range: -15° to 220°F / -26° to 105°C

Filter Change-Out Differential: 10" to 15" / 250-380mm H₂O Over Initial Delta P

Media	Micron Rating
Standard Paper	99+% @ 2 micron
Standard Polyester	99+% @ 5 micron
"S" Series Wire Mesh	Epoxy Coated Wire Mesh
"Z" Series Polyester	99+% @ 1 micron
"HE" Series HEPA	99.97% @ 0.3 microns
"U" Series Polyester	99+% @ 25 micron
"W" Series Polyester	99+% @ 100 micron
"S2" Series	Stainless Steel Wire Mesh
"AC" & "ACP" Series	N/A
"Y" Series Polypropylene	99+% @ 5 micron

Table 4

Temperature Range: -15° to 385°F / -26° to 196°C

Filter Change-Out Differential: 10" to 15" / 250-380mm H₂O Over Initial Delta P

Media	Micron Rating
"MX" & "MXD" Series – Nomex Cloth	99+% @ 5 micron

Table 5



4. Element Cleaning - Inlet Filtration

Solberg elements should be cleaned or replaced, once the pressure drop reaches 10 to 15-inches water column (250 - 380mm WC) above the initial pressure drop of the installation.

The decision to clean the element rather than replace it is left to the discretion of the operator. Any damage which results from by-pass or additional pressure drop created by element cleaning is the sole responsibility of the operator.

WARNING

The overall performance of a filter element is altered once cleaned.

The initial pressure drop after cleaning will be greater than the original, clean pressure drop of the element.

After each subsequent cleaning, the initial pressure drop will continue to increase.

Under all circumstances, the initial pressure drop of the element needs to be maintained at less than 15-inches water column (380mm WC).

Cleaned elements that exceed 15-inches water column (380mm WC) at start-up should be replaced with new elements.

With many types of equipment, the maximum pressure drop allowed will be dictated by the ability of the equipment to perform to its rated capacity. Under all circumstances, the operator should avoid exceeding the manufacturer's recommended maximum pressure drop for their specific equipment.

- A. **Polyester Element.** The polyester element may be washed in warm soapy water, vacuumed, gently blown out or replaced. The element should be dry before reinstallation. The element should be replaced after a maximum of three cleanings.
- B. **Paper Element.** The paper element may be lightly blown with low pressure air. It is disposable and in most cases should be replaced with a new element.

- C. **Polyurethane Prefilter.** The prefilter may be washed as a sponge or replaced to give the element a longer service life.
- D. **Epoxy Coated Wire Mesh and Stainless Steel Wire Mesh Elements:** Cleaning instructions similar to polyester, except mild solvents may be used.
- E. **Activated Carbon Element.** Not cleanable
- F. **Polypropylene Element.** Cleaning instructions similar to polyester
- G. **Nomex Cloth Element.** Cleaning instructions similar to polyester

If you are not confident that the integrity of the element was maintained during cleaning, it is recommended that a new element be installed. Also, spare parts such as gaskets, wing nuts and washers can be supplied upon request.

Section C

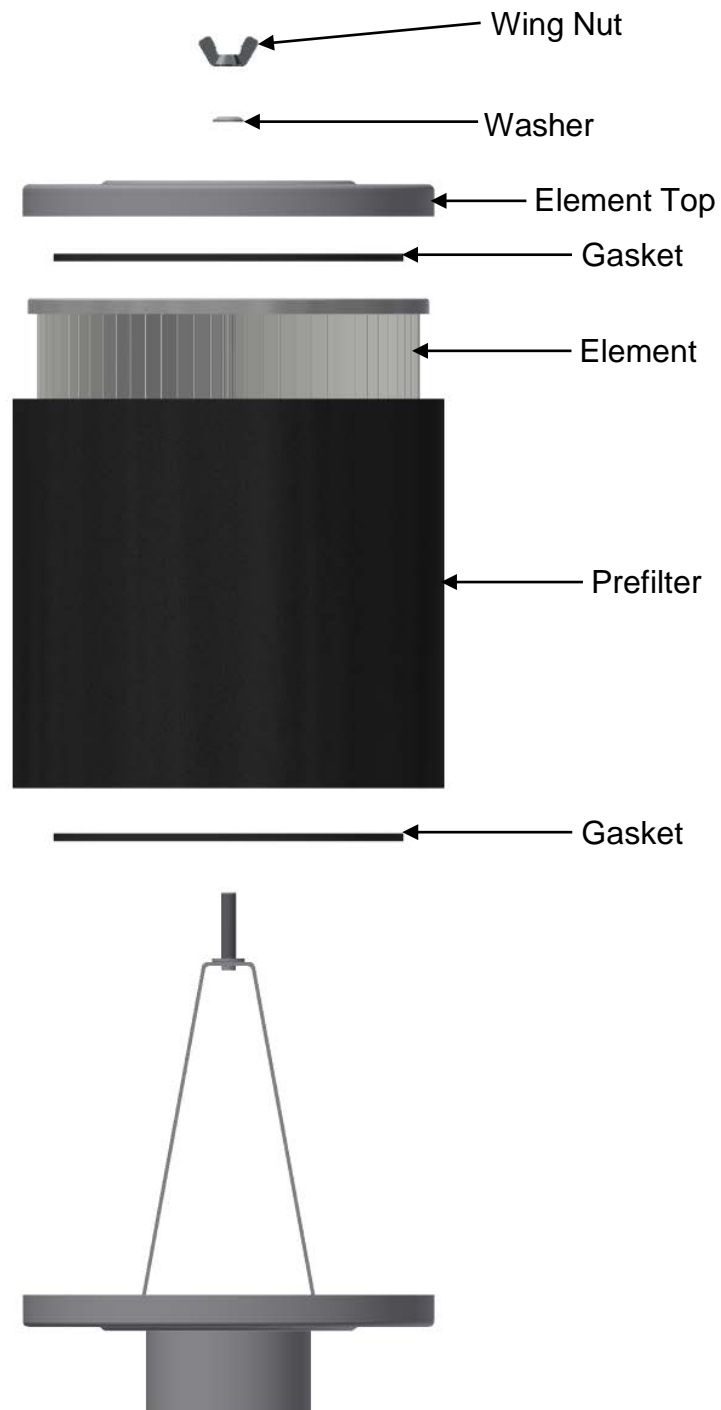
MAINTENANCE RECOMMENDATIONS

1. Pressure drop readings are recommended to have an effective air filter. Always document initial pressure drop during start-up when element is clean. Replacement cartridge is needed when system experiences 10" to 15" / 250-380mm H₂O above drop above the initial reading. Refer to page 4 for initial values.
2. Always check inlets/outlets, element base and its components when replacing element to insure cleanliness. Wipe clean if necessary.
3. Operate only when a proper seal exists.

Section D

REPLACEMENT PARTS LIST

1. FT SERIES



FT Series Compact Exposed Inlet Filter
Available Replacement Parts

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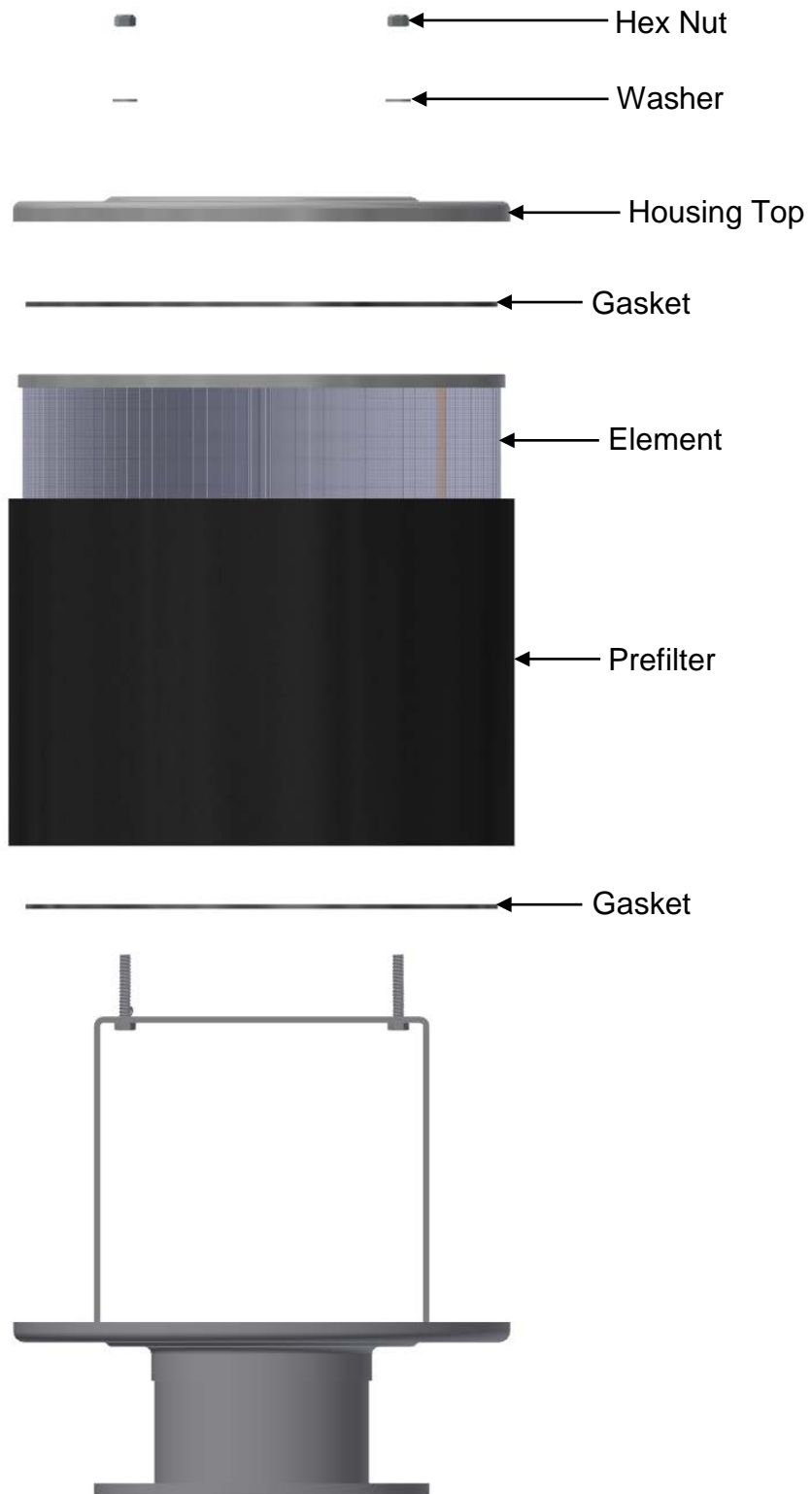
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Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Housing top	Washer	Wing Nut
FT-14P-XXX	14	9010200	N/A	1030400+01	5040200	5030500
FT-15P-XXX	15	9010200	N/A	1030400+01	5040200	5030500
FT-18P-XXX	18	9010400	N/A	1030400+01	5040200	5030500
FT-19P-XXX	19	9010400	N/A	1030400+01	5040200	5030500
FT-30P-XXX	30	9010500	N/A	1030500+01	5040200	5030500
FT-31P-XXX	31	9010500	N/A	1030500+01	5040200	5030500
FT-230P-XXX	230	9010700	N/A	1030500+01	5020150	5030600
FT-231P-XXX	231	9010700	N/A	1030500+01	5020150	5030600
FT-234P-XXX	234	9010800	N/A	1030700+01	5020150	5030600
FT-235P-XXX	235	9010800	N/A	1030700+01	5020150	5030600
FT-244P-XXX	244	9010900	N/A	1030900+01	5020150	5030600
FT-245P-XXX	245	9010900	9110100	1030900+01	5020150	5030600
FT-274P-XXX	274	9011000	9110200	1031000+01	5020150	5030600
FT-275P-XXX	275	9011000	9110200	1031000+01	5020150	5030600

****Note:** *Even element numbers are Paper elements and odd element numbers are Polyester elements.*





FT Series Big Boy Exposed Inlet Filter
Available Replacement Part

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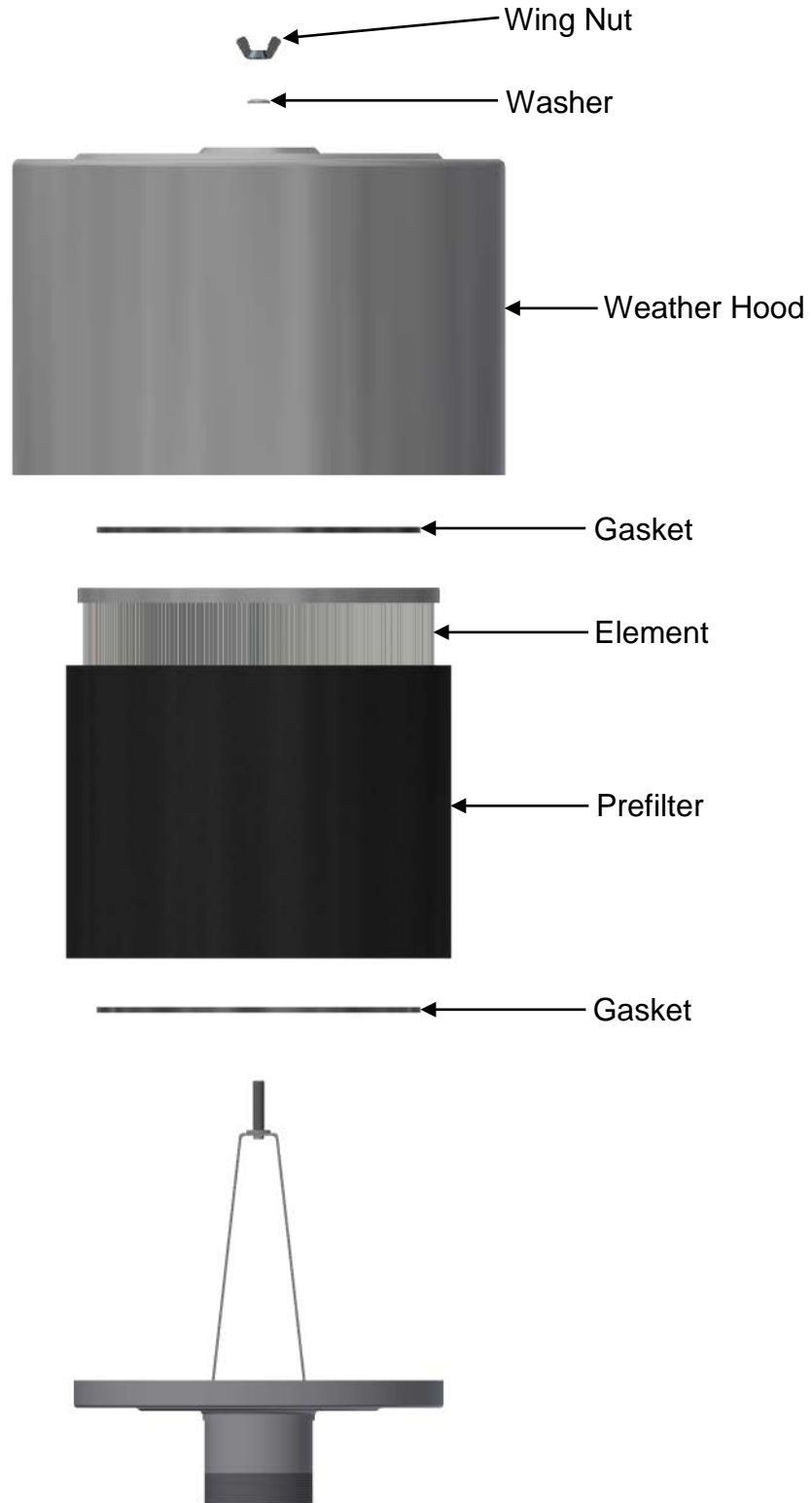


Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Element Top	Washer	Hex Nut
FT-376P-XXX	376	9011200	9110400	1031100+01	5020200	5011401
FT-377P-XXX	377	9011200	9110400	1031100+01	5020200	5011401
FT-384P-XXX	384	9011300	9110500	1031300+01	5020200	5011401
FT-385P-XXX	385	9011300	9110500	1031300+01	5020200	5011401
FT-484P-XXX	484	9011400	9110500	1031300+01	5020200	5011401
FT-485P-XXX	485	9011400	9110500	1031300+01	5020200	5011401
FT-384P(2)-XXX	384(2)	9011300	9110500	1031300+01	5020200	5011401
FT-685P-XXX	685	9011500	9110500	1031300+01	5020200	5011401

****Note:** *Even element numbers are Paper elements and odd element numbers are Polyester elements.*



2. F SERIES



F Series Compact Inlet Filter
Available Replacement Parts

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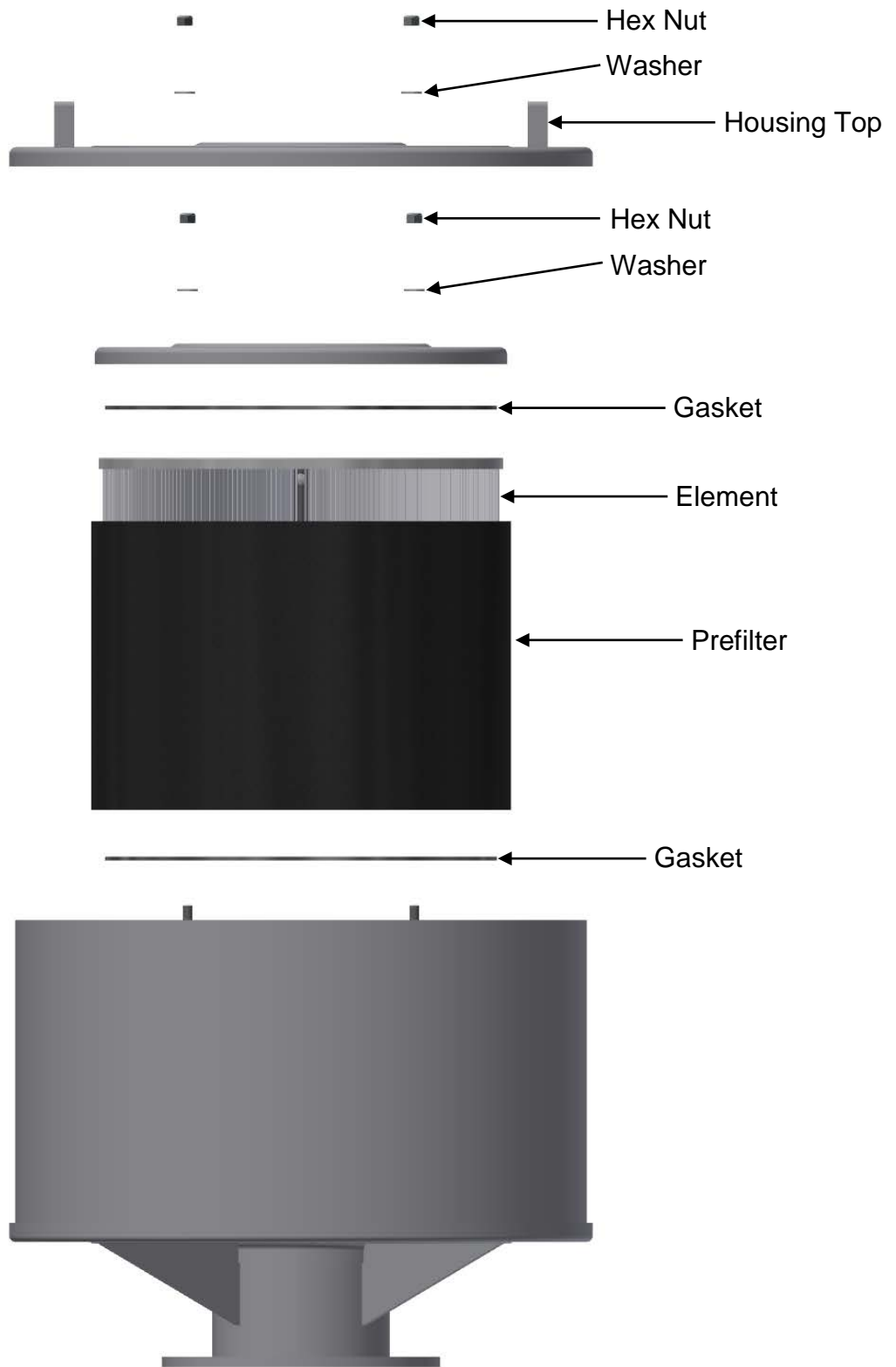
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Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Weather Hood	Washer	Wing Nut
F-14P-XXX	14	9010200	N/A	1050300+01	5040200	5030500
F-15P-XXX	15	9010200	N/A	1050300+01	5040200	5030500
F-18P-XXX	18	9010400	N/A	1050500+01	5040200	5030500
F-19P-XXX	19	9010400	N/A	1050500+01	5040200	5030500
F-30P-XXX	30	9010500	N/A	1050700+01	5040200	5030500
F-31P-XXX	31	9010500	N/A	1050700+01	5040200	5030500
F-230P-XXX	230	9010700	N/A	1051000+01	5020150	5030600
F-231P-XXX	231	9010700	N/A	1051000+01	5020150	5030600
F-234P-XXX	234	9010800	N/A	1051000+01	5020150	5030600
F-235P-XXX	235	9010800	N/A	1051000+01	5020150	5030600
F-244P-XXX	244	9010900	N/A	0004822+01	5020150	5030600
F-245P-XXX	245	9010900	9110100	0004822+01	5020150	5030600
F-274P-XXX	274	9011000	9110200	1051200+01	5020150	5030600
F-275P-XXX	275	9011000	9110200	1051200+01	5020150	5030600

****Note:** *Even element numbers are Paper elements and odd element numbers are Polyester elements.*





F Series Big Boy Inlet Filter
Available Replacement Parts

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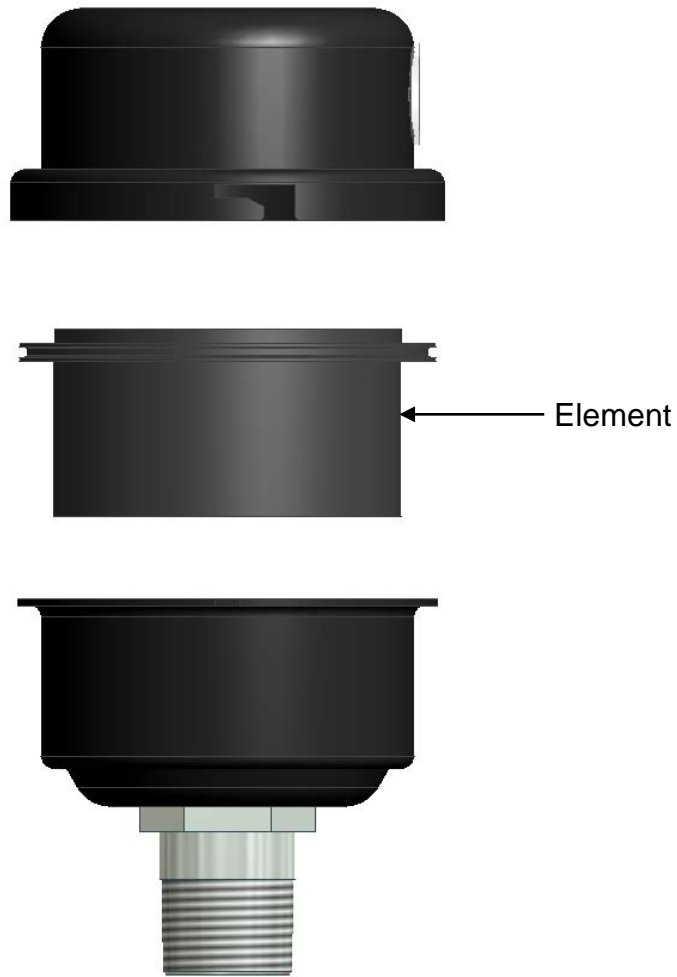


Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Housing Top	Washer	Hex Nut
F-376P-XXX	376	9011200	9110400	200-1031500+01	5020200	5011401
F-377P-XXX	377	9011200	9110400	200-1031500+01	5020200	5011401
F-384P-XXX	384	9011300	9110500	205-1031600+01	5020200	5011401
F-385P-XXX	385	9011300	9110500	205-1031600+01	5020200	5011401
F-484P-XXX	484	9011400	9110500	203-1031600+01	5020200	5011401
F-485P-XXX	485	9011400	9110500	203-1031600+01	5020200	5011401
F-384P(2)-XXX	384(2)	9011300	9110500	200-1031600+01	5020200	5011401
F-685P-XXX	685	9011500	9110500	200-1031600+01	5020200	5011401
F-484P(2)-XXX	484(2)	9011400	9110500	200-1031600+01	5020200	5011401
F-485P(2)-XXX	485(2)	9011400	9110500	200-1031600+01	5020200	5011401

****Note:** *Even element numbers are Paper elements and odd element numbers are Polyester elements.*

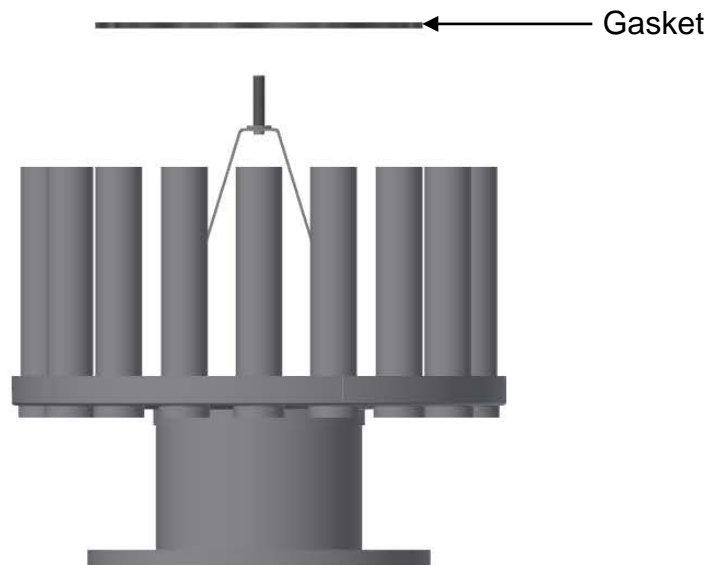
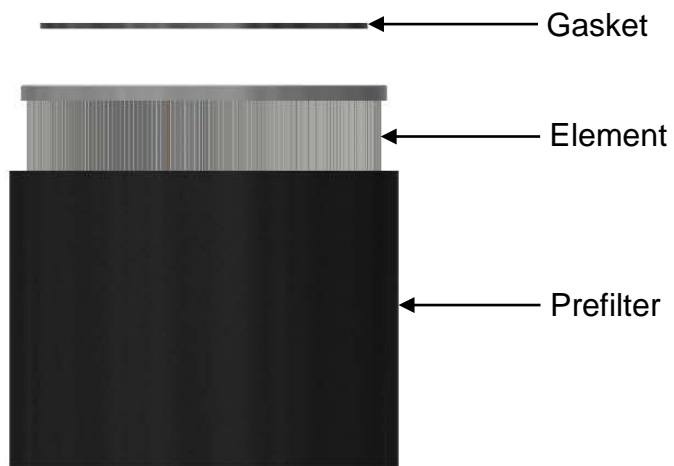
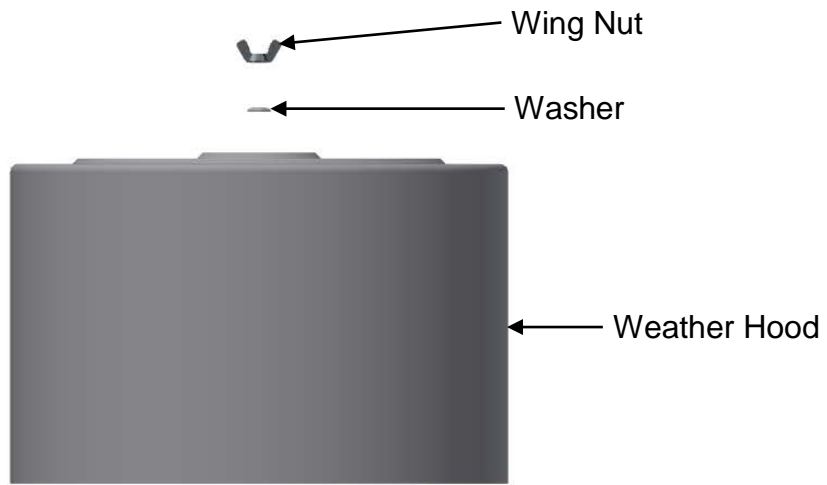


3. FS SERIES



FS Series Miniature Filter Silencer
Available Replacement Parts

Available Replacement Part by Product Number		
Product Number	Element Type	Replacement Part Number
FS-04-XXX	Paper	04
FS-05-XXX	Polyester	05
FS-06-XXX	Paper	06
FS-07-XXX	Polyester	07
FS-10-XXX	Paper	10
FS-11-XXX	Polyester	11



FS Series Compact Filter Silencer
Available Replacement Parts

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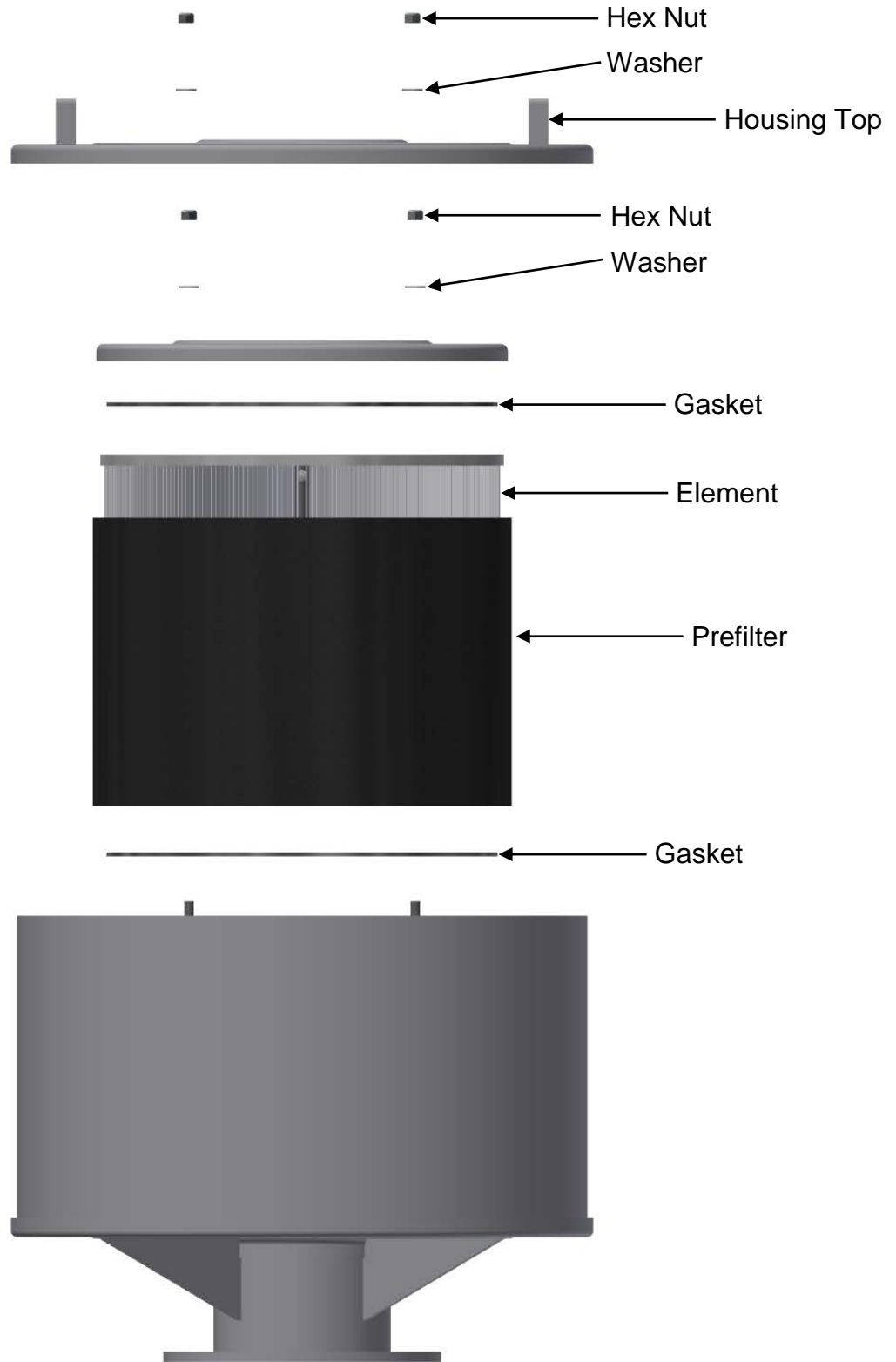
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Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Weather Hood	Washer	Wing Nut
FS-14P-XXX	14	9010200	N/A	1050300+01	5040200	5030500
FS-15P-XXX	15	9010200	N/A	1050300+01	5040200	5030500
FS-18P-XXX	18	9010400	N/A	1050500+01	5040200	5030500
FS-19P-XXX	19	9010400	N/A	1050500+01	5040200	5030500
FS-30P-XXX	30	9010500	N/A	1050900+01	5040200	5030500
FS-31P-XXX	31	9010500	N/A	1050900+01	5040200	5030500
FS-230P-XXX	230	9010700	N/A	1051000+01	5020150	5030600
FS-231P-XXX	231	9010700	N/A	1051000+01	5020150	5030600
FS-234P-XXX	234	9010800	N/A	1051200+01	5020150	5030600
FS-235P-XXX	235	9010800	N/A	1051200+01	5020150	5030600
FS-244P-XXX	244	9010900	N/A	1051200+01	5020150	5030600
FS-245P-XXX	245	9010900	9110100	1051200+01	5020150	5030600
FS-274P-XXX	274	9011000	9110200	1051200+01	5020150	5030600
FS-275P-XXX	275	9011000	9110200	1051200+01	5020150	5030600

****Note:** *Even element numbers are Paper elements and odd element numbers are Polyester elements.*





FS Series Big Boy Filter Silencer
Available Replacement Parts

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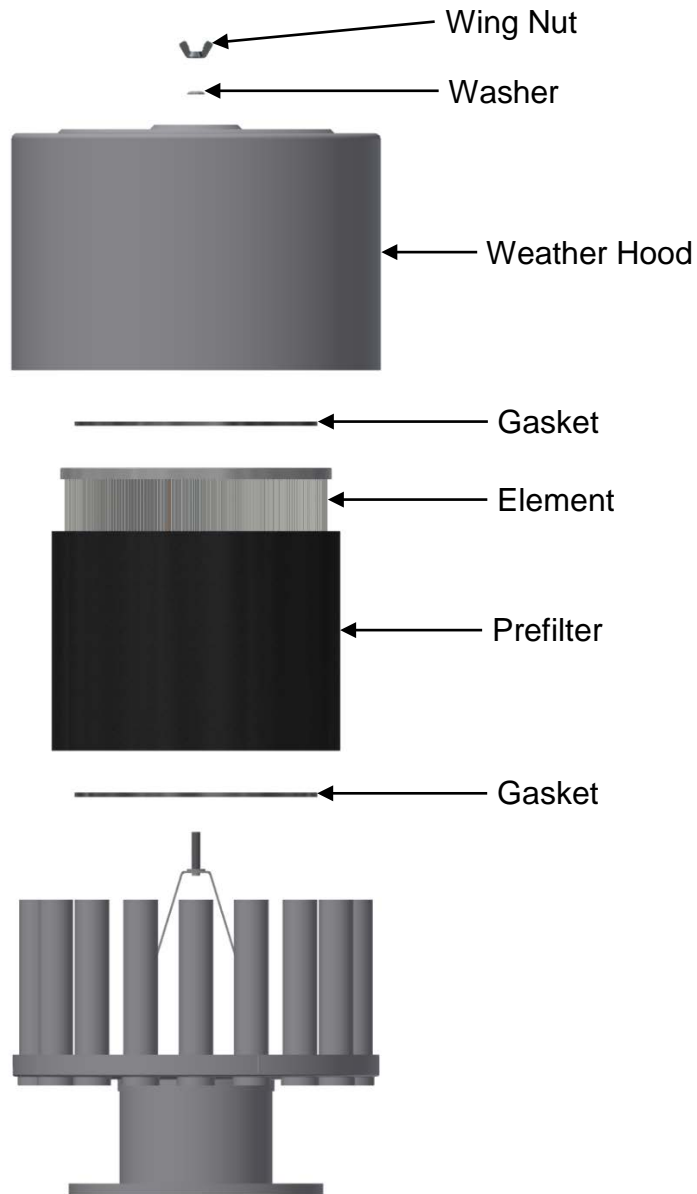
Available Replacement Part by Product Number

Product #	Element**	Prefilter	Gasket	Housing Top	Washer	Hex Nut	Element Top
FS-376P-XXX	376	9011200	9110400	201-1031500+01	5020200	5011401	1031100+01
FS-377P-XXX	377	9011200	9110400	201-1031500+01	5020200	5011401	1031100+01
FS-384P-XXX	384	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-385P-XXX	385	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-484P-XXX	484	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-485P-XXX	485	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-384P(2)-XXX	384(2)	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-685P-XXX	685	9011500	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-484P(2)-XXX	484(2)	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
FS-485P(2)-XXX	485 (2)	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01

***Note: Even element numbers are Paper elements and odd element numbers are Polyester elements.*



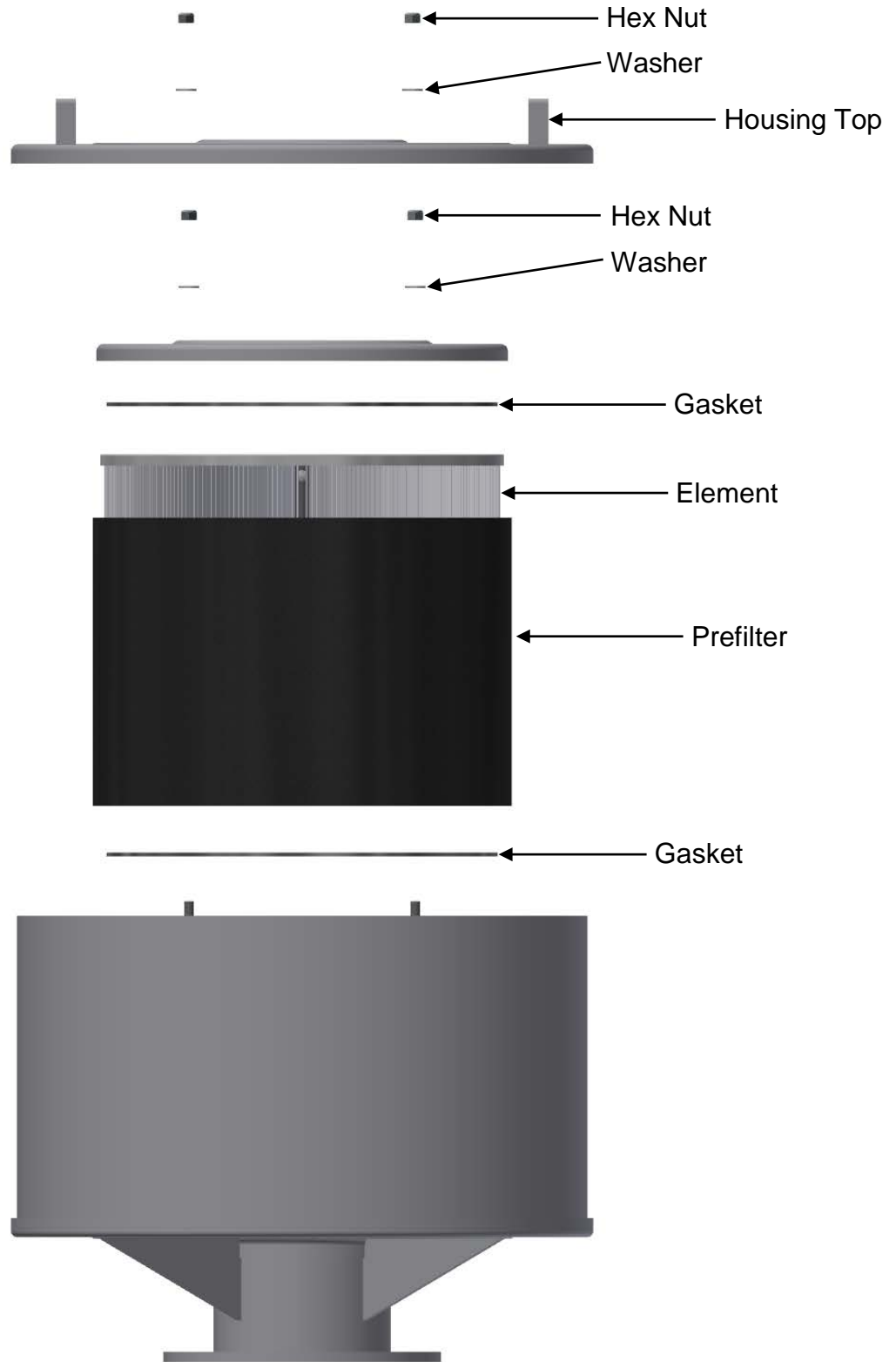
4. QB SERIES



QB Series Compact Filter Silencer
Available Replacement Parts

Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Weather Hood	Washer	Wing Nut
QB-230P-XXX	230	9010700	N/A	1051000-1+01	5020150	5030600
QB-231P-XXX	231	9010700	N/A	1051000-1+01	5020150	5030600

**Note: Even element numbers are Paper elements and odd element numbers are Polyester elements.



QB Series Big Boy Filter Silencer
Available Replacement Parts

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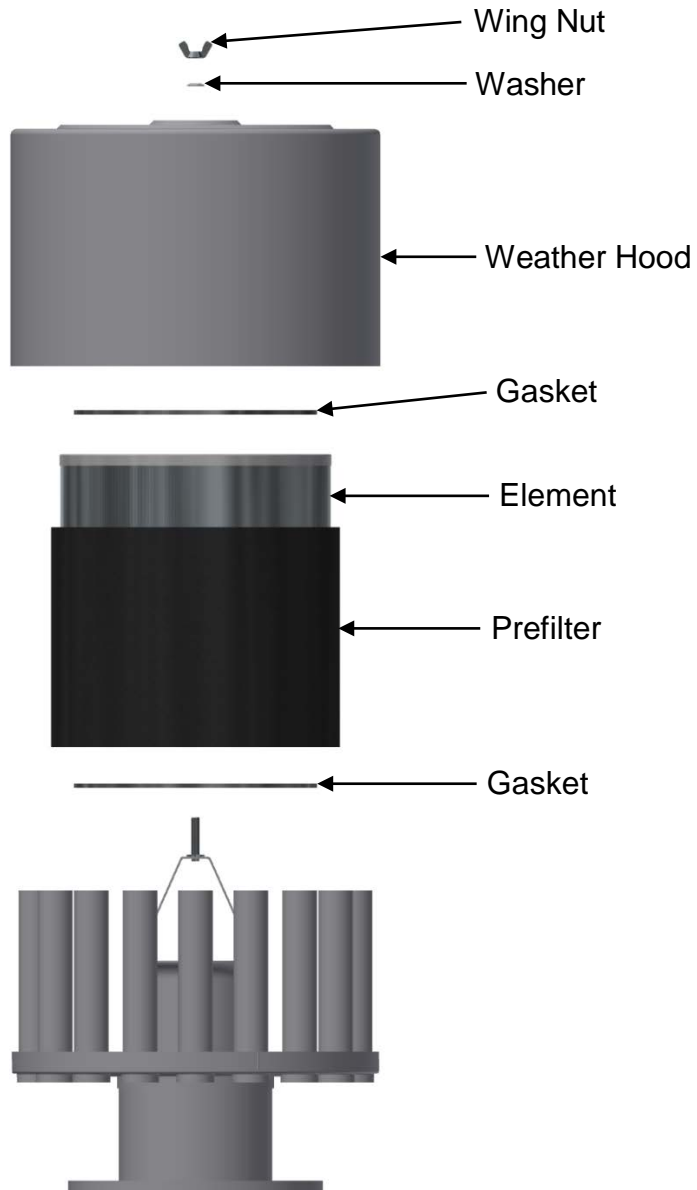
Available Replacement Part by Product Number

Product #	Element**	Prefilter	Gasket	Housing Top	Washer	Hex Nut	Element Top
QB-376P-XXX	376	9011200	9110400	201-1031500+01	5020200	5011401	1031100+01
QB-377P-XXX	377	9011200	9110400	201-1031500+01	5020200	5011401	1031100+01
QB-384P-XXX	384	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-385P-XXX	385	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-484P-XXX	484	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-485P-XXX	485	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-685P-XXX	685	9011500	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-384P(2)-XXX	384(2)	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-484P(2)-XXX	484(2)	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
QB-485P(2)-XXX	485(2)	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01

***Note: Even element numbers are Paper elements and odd element numbers are Polyester elements.*



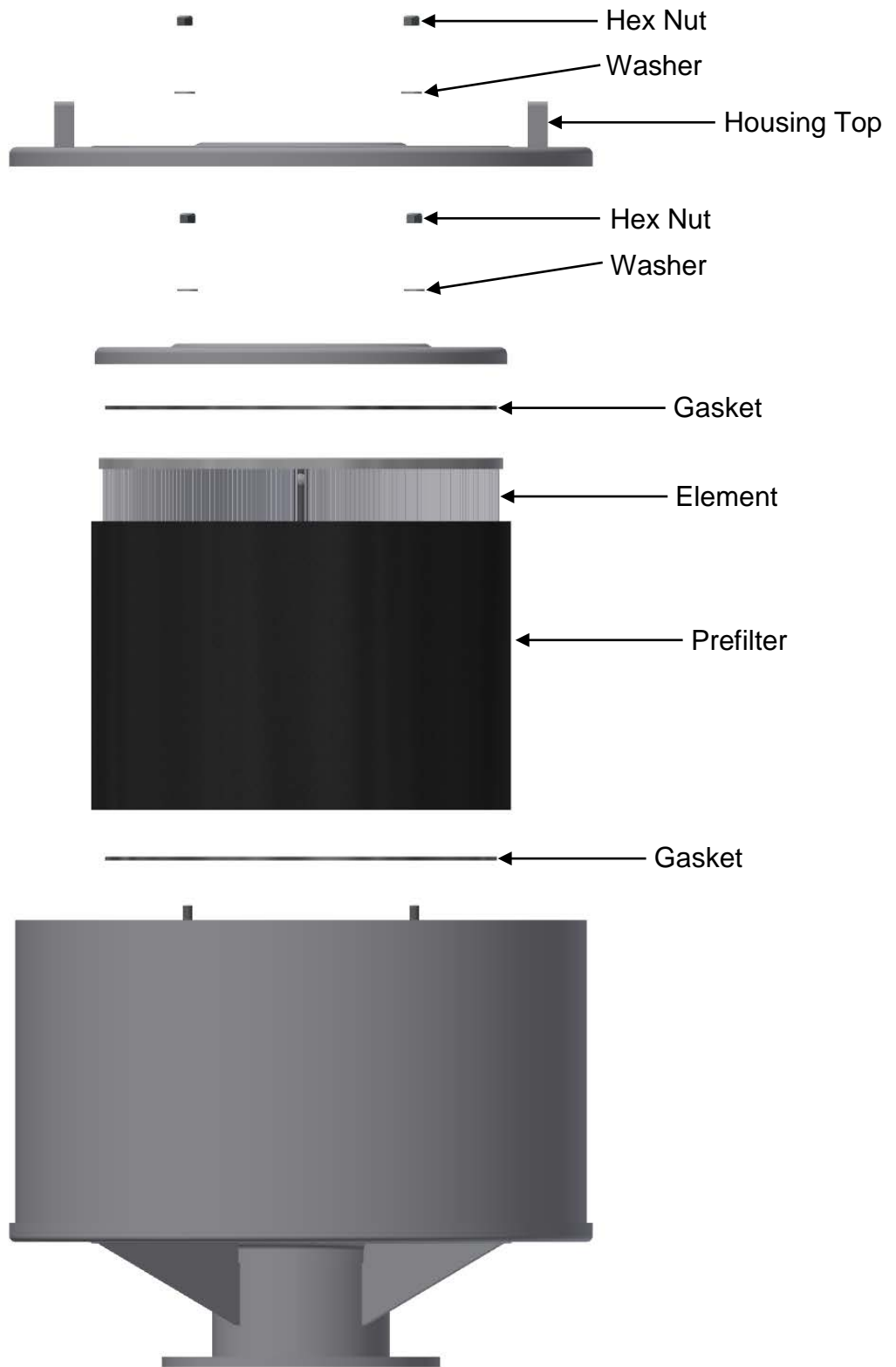
5. 2G SERIES



2G Series Compact Filter Silencer
Available Replacement Parts

Available Replacement Part by Product Number						
Product #	Element**	Prefilter	Gasket	Weather Hood	Washer	Wing Nut
2G-274P-XXX	274	9011000	9110200	1051200-1+01	5020150	5030600
2G-275P-XXX	275	9011000	9110200	1051200-1+01	5020150	5030600

**Note: *Even element numbers are Paper elements and odd element numbers are Polyester elements.*



2G Series Big Boy Filter Silencer
 Available Replacement Parts

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Available Replacement Part by Product Number

Product #	Element**	Prefilter	Gasket	Housing Top	Washer	Hex Nut	Element Top
2G-376P-XXX	376	9011200	9110400	201-1031500+01	5020200	5011401	1031100+01
2G-377P-XXX	377	9011200	9110400	201-1031500+01	5020200	5011401	1031100+01
2G-384P-XXX	384	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
2G-385P-XXX	385	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01
2G-484P-XXX	484	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
2G-485P-XXX	485	9011400	9110500	200-1031600+01	5020200	5011401	1031300+01
2G-685P-XXX	685	9011500	9110500	200-1031600+01	5020200	5011401	1031300+01
2G-384P(2)-XXX	384(2)	9011300	9110500	200-1031600+01	5020200	5011401	1031300+01

***Note: Even element numbers are Paper elements and odd element numbers are Polyester elements.*

