

# SIZING GUIDELINES FOR AMIAD AUTOMATIC SCREEN FILTERS

## Introduction:

The main parameter for automatic filter selection and sizing is the **Filtration Velocity**. In principal, the finer the filtration rating and higher the TSS loading, a lower velocity should be selected. In addition, the maximum flow per filter unit may be limited by the geometry of the filter element and the inlet/outlet size of the filter.

**Definition of Filtration Velocity:** Filtration velocity determines the flow per a given filtration area and is usually represented by the following units:

- Meter per hour (m/h)
- Cubic meter per hour per square meter (m<sup>3</sup>/h/m<sup>2</sup>)
- Gallon per minute per square inch (gpm/in<sup>2</sup>)

**How to use the matrix:** The below matrix presents the recommended velocity based on filtration degree, water quality and filter model. Please note that the water quality definitions are generic and should be used as a guideline only. It is always preferable to rely on actual analysis, piloting and experience with similar cases.

### Example:

Required flow	1500 m <sup>3</sup> /h
Required filtration degree	30 micron
Water quality	Average
Recommended velocity	150 m/hr
Required filtration area	$\frac{1500 \text{ m}^3/\text{h}}{150 \text{ m/h}} = 10 \text{ m}^2$

### Optional solutions:

- 10 X 8" EBS10K
- 6 or 7 X 10" EBS15K
- 3 X 14" OMEGA 36K

## SAF / EBS SERIES

		Filtration Degree (microns)											
		10	20	30	40	50	80	100	130	200	300	500-800	
Water Quality	GOOD	m <sup>3</sup> /h per m <sup>2</sup>	80	100	200	250	350	400	470	550	620	700	800
		gpm per In <sup>2</sup>	0.23	0.28	0.57	0.71	0.99	1.14	1.34	1.56	1.76	1.99	2.27
	AVERAGE	m <sup>3</sup> /h per m <sup>2</sup>	Please consult with the Amiad experts	60	150	200	280	350	430	500	550	650	700
		gpm per In <sup>2</sup>		0.17	0.43	0.57	0.80	0.99	1.22	1.42	1.56	1.85	1.99
	POOR	m <sup>3</sup> /h per m <sup>2</sup>		150	280	350	430	480	550	650			
		gpm per In <sup>2</sup>		0.43	0.80	0.99	1.22	1.36	1.56	1.85			
	VERY POOR	m <sup>3</sup> /h per m <sup>2</sup>		175	220	270	300	340	400				
		gpm per In <sup>2</sup>		0.50	0.63	0.77	0.85	1.00	1.14				

<sup>1</sup> ±10%, depending on conditions and design

**Note:** Reduce velocity by 30% for molded weavewire screens  
Above calculations assume 2-3 flush cycles per hour

### OMEGA SERIES

		Filtration Degree (microns)											
		10	20	30	40	50	80	100	130	200	300	500-800	
Water Quality	GOOD	m <sup>3</sup> /h per m <sup>2</sup>	80	100	200	250	350	400	400	400	400	400	400
		gpm per ln <sup>2</sup>	0.23	0.28	0.57	0.71	0.99	1.14	1.14	1.14	1.14	1.14	1.14
	AVERAGE	m <sup>3</sup> /h per m <sup>2</sup>	Please consult with the Amiad experts	60	150	200	280	350	400	400	400	400	400
		gpm per ln <sup>2</sup>		0.17	0.43	0.57	0.80	0.99	1.14	1.14	1.14	1.14	1.14
	POOR	m <sup>3</sup> /h per m <sup>2</sup>		150	280	350	400	400	400	400	400		
		gpm per ln <sup>2</sup>		0.43	0.80	0.99	1.14	1.14	1.14	1.14	1.14		
	VERY POOR	m <sup>3</sup> /h per m <sup>2</sup>		175	220	270	300	340	400				
		gpm per ln <sup>2</sup>		0.50	0.63	0.77	0.85	1.00	1.14				

<sup>1</sup> ±10%, depending on conditions and design

**Note:** Above calculations assume 2-3 flush cycles per hour

### MINI SIGMA / SIGMA PRO SERIES

		Filtration Degree (microns)							
		50	80	100	130	200	300	500	
Water Quality	GOOD	m <sup>3</sup> /h per m <sup>2</sup>	250	250	300	350	350	350	350
		gpm per ln <sup>2</sup>	0.71	0.71	0.85	0.99	0.99	0.99	0.99
	AVERAGE	m <sup>3</sup> /h per m <sup>2</sup>	150	200	270	300	320	330	340
		gpm per ln <sup>2</sup>	0.43	0.57	0.77	0.85	0.91	0.94	0.97
	POOR	m <sup>3</sup> /h per m <sup>2</sup>	100	150	180	200	280	290	300
		gpm per ln <sup>2</sup>	0.28	0.43	0.51	0.57	0.80	0.82	0.85
	VERY POOR	m <sup>3</sup> /h per m <sup>2</sup>	Please consult with the Amiad experts	90	110	120	170	180	186
		gpm per ln <sup>2</sup>		0.26	0.31	0.34	0.48	0.51	0.53

<sup>1</sup> ±10%, depending on conditions and design

**Note:** Above calculations assume 2-3 flush cycles per hour

**WATER QUALITY**

PARAMETER	 GOOD	 AVERAGE	 POOR	 VERY POOR
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**Particles Load**

<b>Turbidity (NTU)</b>	<3	3-10	10-30	>30NTU for 20µm- 70µm >100NTU for 100µm -400µm
<b>Total suspended solids (mg/L)</b>	<5	5-10	10-30	>30
Sand (mg/L)	<1	<2	<2	>3
Zooplankton >50um (#/m <sup>3</sup> )	<2K	2K-20K	20K-200K	>200K
Phytoplankton				
As chlorophyll (µg/L)	<3	<10	<30	>30
As organisms 10-50um (#/L)	<500	<1,000	>1,000	>1,000
<b>Bacteria / Fungi / Yeast</b>	None	Present	Growing	Growing

**Others**

<b>Temperature (°C)<sup>1</sup></b>	5-40	10-30	10-30	10-30
<b>pH<sup>2</sup></b>	6-8.5	6-8.5	6-8.5	6-8.5
<b>Hardness (as mg/L CaCO<sub>3</sub>)</b>	<200	<250	<300	>300
<b>Iron (mg/L)</b>	<0.1	0.1-0.3	<0.3	>0.3
<b>Manganese (mg/L)</b>	<0.02	0.02-0.1	<0.1	>0.1
<b>BOD (mg/L)</b>	<5	<10	<20	>20
<b>O&amp;G (mg/L)<sup>3</sup></b>	None	None	<0.5	>0.5
<b>Typical water sources</b>	Drinking water	Clear surface water	Surface water	Surface water
	Industrial service water	Tertiary treated wastewater	Secondary treated wastewater	Secondary treated wastewater
	Closed loop cooling water	Secondary treated wastewater	Well water	Process water
	Well water	Industrial water	Process water	Seawater open intake – hot climate <sup>4</sup>
	Beach well	Well water	Seawater open intake – cold climate <sup>4</sup>	Produced water
		Seawater open intake – cold climate <sup>4</sup>	Cooling tower	Harbor water
		Cooling tower	Industrial effluents	Industrial effluents
		Rainwater harvesting	Rainwater harvesting	Intensive aquaculture
		Ballast water	Ballast water	Flood water
				Mining effluents
			Mining process water	

<sup>1</sup> Temperature: If water temperature is out of 10° -30° C range, please consult your Amiad contact person

<sup>2</sup> pH: if the pH value is outside of the above range (seawater up to 8.5), please consult your Amiad contact person

<sup>3</sup> O&G: requires material adaptations

<sup>4</sup> Seawater: requires material adaptations and biofouling prevention (disinfection)

**Note:** TDS and chloride concentrations do not affect sizing, but are required to define the filter materials