

# Whirled Sand Media Filter **WSMF**

Patent Pending

Sand media filters operate by separating the suspended material in unfiltered water as it flows through a bed of media in a pressurized tank. Ball Tech Energy's whirled sand media filters have been developed especially for water filtration in contaminated water applications where sand grains adhere to each other and cause filter clogging. In such applications, simple backwashing of the grains has proven ineffective.

In Ball Tech Energy's patented filter, every single sand grain is washed as a single unit. Replacing the sand in the filter, as is done in commonplace filters, becomes unnecessary.

Ball Tech Energy's whirled sand media filters is designed to filter water in the following applications:

- **Cooling towers:** filtration of drifting particles, scale residue and silica.
- **Reverses Osmosis:** pre-filtration.
- **Ornamentation fish pools:** filtration of fish excretion and algae.
- **Swimming pools:** filtration of contaminants received from the air and from swimmers.
- **Industrial factories:** filtration of paper, textile and other industries processes water.

## Filter Operation

1. A pump pumps the contaminated water and directs it to the upper part of the filter. The water flows along a tangent to the filter's rim and is homogenously dispersed throughout the entire sand area. After seeping through the sand, the water leaves the filter at its lower part, all the contaminants having been trapped in the filter media.

2. A differential pressure gauge measures the pressure difference between the filter's water entry and exit points. When this pressure difference reaches a level of 7 meters (any other setting is possible), the washing process commences.

3. Once the sand washing command is received, the electrically controlled municipal or other water source supply valve opens, while the no-return valve installed on the contaminated water supply line closes and another valve at the bottom of the filter opens. Municipal water pumped toward the filter drags the sand and the trapped contaminants from the filter bottom part, separates the contaminants from the sand and leads them to the filter's upper part. At this point, the circumventing flow (cyclone principle) causes the heavy sand to sink and the contaminants flows outward toward the sewage.



## WSMF filters advantages:

- Save about 95% of common known media filters back washing water.
- Total water requirements for complete washing: Is up to 5% of the amount needed with any other sand media filter.
- Filter's media does not coalesce into clusters; therefore the filter does not clog.
- It's not necessary to replace or refresh the sand.



## General Specifications:

Model	Flow Range		Filtration Surface Area		Inlet/Outlet inch	Pump kw	3x400V Amp.	Sand Weight		Operation Weight	
	m³/h	U.S. gpm	m²	ft²				Kg	lbs.	Kg	lbs.
WSMF-24"	7	31	0.3	3.2	1-1/2"	3	7.1	250	551	660	1455
WSMF-30"	11	48	0.5	5.4	1-1/2"	3	7.1	400	881	1070	2359
WSMF-36"	16	70	0.7	7.5	2"	3	7.1	600	1323	1540	3395
WSMF-48"	30	132	1.2	12.9	3"	7.5	16.5	1050	2315	2650	5842
WSMF-60"	50	220	1.8	19.6	3"	11	21	1600	3527	4100	9039

- The standard filter is designed to operate under pressures of up to 10bar.
- Filter testing pressure is 16bar.
- Maximal working temperature is 80°C.
- Pump's power supply: 380V, 3 phases.
- 10µ filtration quality achieved at:  
Filter's minimum flow rate is about 95% efficiency.  
Filter's maximum flow rate is about 90% efficiency.  
(as the flow rate goes down the filtration quality is better).

## Dimensions:

Model	Filters Tank ø		Length		Width		Height		Weight	
	mm	inch	mm	inch	mm	inch	mm	inch	Kg	lbs.
WSMF-24"	610	24"	1200	47	1250	49	1880	74	250	550
WSMF-30"	762	30"	1390	55	1524	60	2090	82	330	726
WSMF-36"	915	36"	1590	59	1677	66	2090	82	500	110
WSMF-48"	1220	48"	1890	74	2035	80	2380	94	800	1760
WSMF-60"	1524	60"	2260	89	2400	94	2380	94	1300	2860

- Washing of contaminated sand may be accomplished using the municipal water supply or water that has been filtered.
- Ball Tech Energy's filter can be installed as a single unit or a series of parallel-operating filters.
- The filter may be washed manually or automatically control by computer.

