

# Arkal Sand Separator

## Operation, Service & Maintenance Manual



**Sand Separators Hydrocyclone Batteries.**  
**by [www.irrigationglobal.com](http://www.irrigationglobal.com)**

## **Introduction**

### **General**

Arkal Filtration Systems congratulates you on purchasing the 2" sand separator. All Arkal Filtration Systems are easy to install, use and service and do not require special skills to operate them.

For proper operation and maintenance of the system please follow the instructions manual

## **Safety Instructions**

Prior to installation or handling of the filter, please read the Installation and Operation Instructions carefully.

1. Confirm filter draining prior to service and / or maintenance.
2. Take precautions while lifting, transporting or installing the filter.
3. Installation of the filter should be performed so as to avoid direct water contact with the electronic control unit.
4. Confirm that filter weight, when full, does not exceed support construction limitations.
6. Prior to installation confirm that line pressure does not exceed filter's operational pressure rating (10 bar).
7. Please note, that during normal operation the filter enters into backwash mode automatically, without prior warning.
8. Use only original parts when servicing the filter.
9. Arkal cannot accept responsibility for any changes or modifications to the equipment.

### **Special Note**

Before opening the filter clamp, make sure that there is no system pressure in the filter.

**Hydrocyclone water Filtration Batteries.  
by [www.irrigationglobal.com](http://www.irrigationglobal.com)**

## Sand Separation Technology

### The Separation Process:

- The water stream enters the cyclone at a relatively high velocity via the inlet pipe, which is positioned, tangentially to the body of the cyclone.
- The shape of the cone creates a vortex of water.
- The resulting centrifugal force pushes the sand and other solids of a high specific gravity, out of the main flow stream.
- The low flow speed, next to the cyclone walls, cannot carry the heavy particles and allows them to drop by gravity to the collecting tank below, while the clean water rises up in a spiral motion to the outlet port.
- Evacuation of the dirt collected by the chamber is achieved by opening a control valve, normally activated by a controller usually triggered by time or set volume.

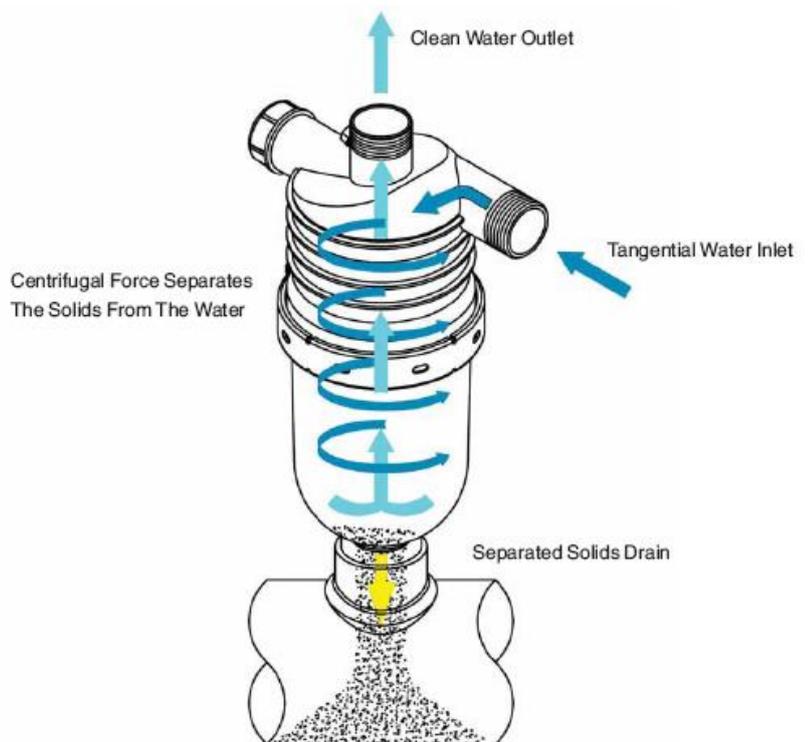
## Sand Separator Technology

Hydrocyclones operate effectively and efficiently under a set flow rate. Constancy of flow rate and adaptability of design enhance efficiency further.

When flushed regularly, cyclones require minimal maintenance.

The Hydrocyclone is a function specific product, designed for the removal of sand and therefore comprising an invaluable element in any total filtration system where sand is an issue.

Although the Hydrocyclone will remove / separate any particles with a higher specific gravity (SG) than water ( $1\text{g/cm}^3$  or  $9.345\text{ lb/ft}^3$ ), maximum benefits are gained with an optimal SG ratio of 1.1:1, where the sand SG is 40% greater than the water SG (i.e.  $1.4\text{g/cm}^3$  or  $11.683\text{ lb/ft}^3$ ).



**Sand Separators for Water Filtration Batteries.**  
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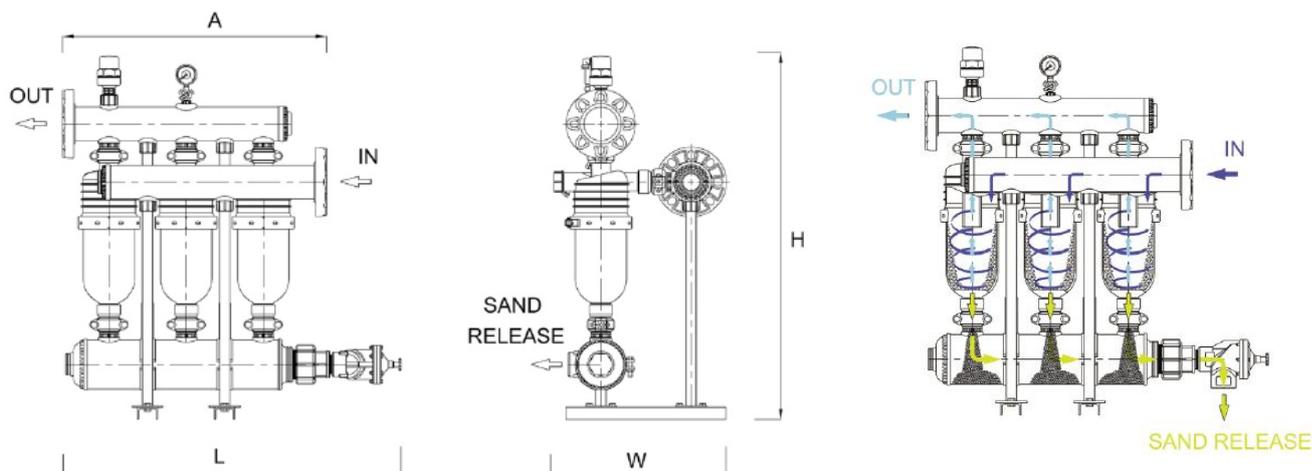
## Sand Separator Batteries

### Mode of Operation

1. Raw water flows through the inlet manifold and is distributed tangentially into the 2" Sand Separator.
2. The tangential inlet causes centrifugal forces, which in turn cause separation of the heavy sand particles from the water, throwing the sand particles toward the walls of the Sand Separator, where the particles settle down to the sand manifold.
3. The clean water flows up to the outlet manifolds for consumer use.

### Flush Mode

1. The controller transmits a pulse (per time).
2. The electrical pulse is transmitted to the solenoid sending a pressure pulse to the hydraulic valve on the sand collector draining valve.
3. The signal is transmitted to the sand collector's draining valve. This valve opens and then, from the collector, releases the sandy water to the drain.
4. The flushing proceeds to is taking approximately 20 second.



### Battery Installation

1. Pay careful attention that the inlet and outlet are correctly installed (see arrows on the manifold).
2. Connect backwash waste line to the drain.

### Control System Installation

1. Refer to the manufacturer's handbook before installing the controller.
2. Ensure that the voltage of unit solenoids and controller are correct (all solar units must have latching solenoids).
3. Set the controller to a 20 second flush a setting may require changing to suit local watering conditions.
4. Set the flush time: 3 - 4 hour intervals between flush is recommended.

**Hydrocyclones for:  
Water Sand separation from water.  
by [www.irrigationglobal.com](http://www.irrigationglobal.com)**

## Technical Data

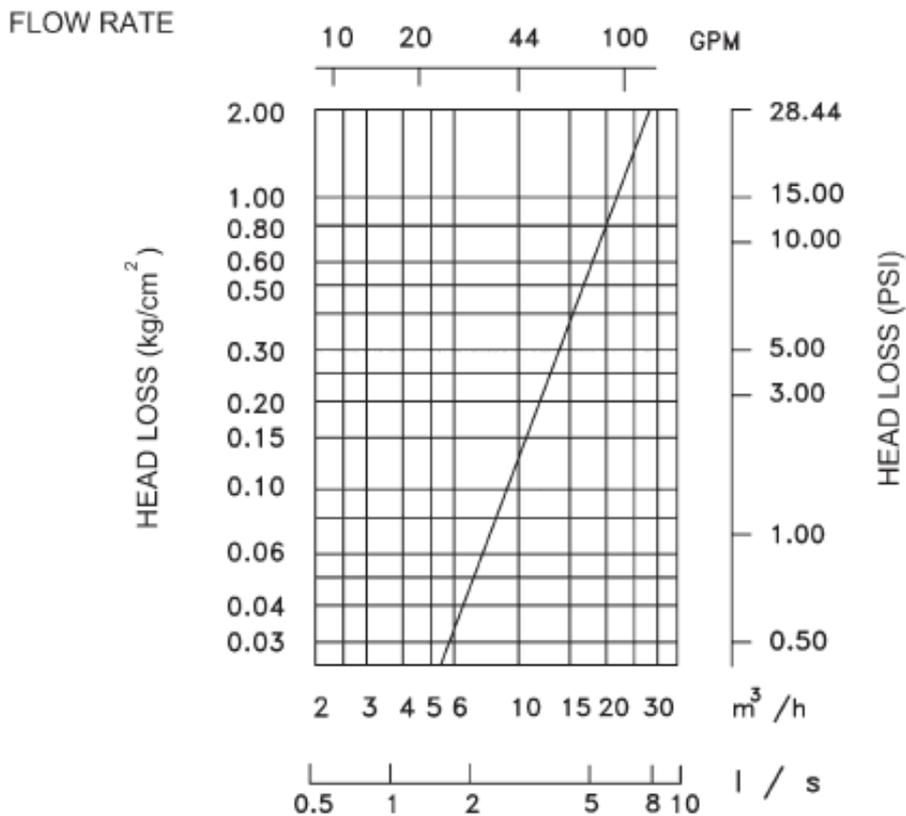
### 2" Sand Separator

	Metric	US
Connection diameter	50 mm	2 inch
Maximum pressure	10 bar	145 psi
Maximum temp.	70°C	149° F

### Separation Efficiency / Flow Rate

	Particle size larger than (micron):			m <sup>3</sup> /h	gpm
	150	100	50		
% Efficiency	90	85	82	15	66
	95	90	85	20	88
	98	95	90	25	110

### Headloss Chart



**Sand Separators for Water Filtration Batteries.**  
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## Technical Data

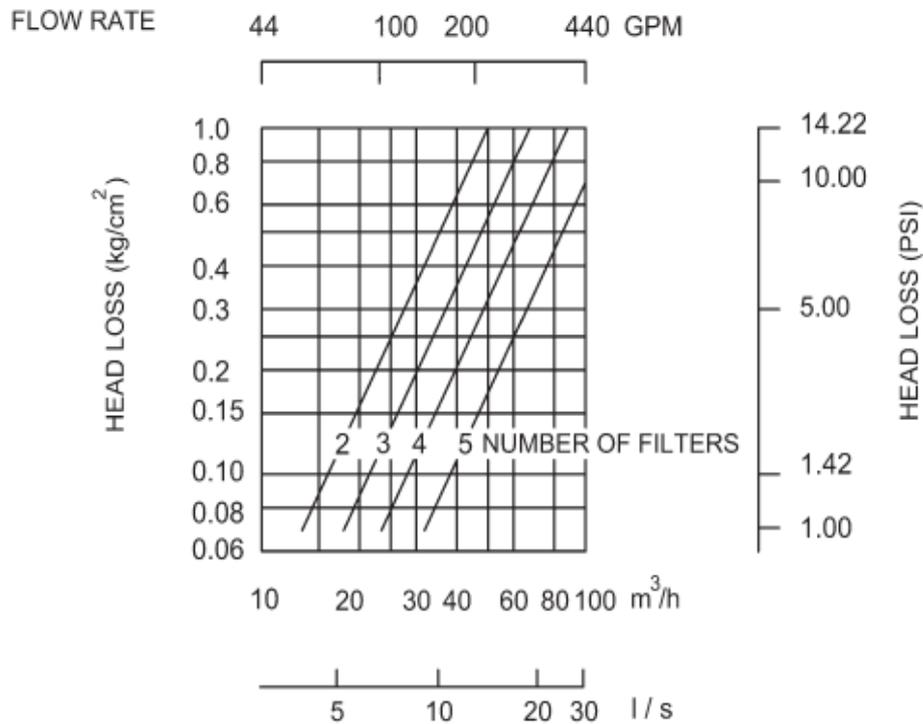
### 2" Sand Separator Batteries

	Metric				US			
	HYD-2	HYD-3	HYD-4	HYD-5	HYD-2	HYD-3	HYD-4	HYD-5
Connection diameter	110mm	110mm	160mm	160mm	4 inch	4 inch	6 inch	6 inch
Maximum pressure	10 bar				145 psi			
Maximum temp.	70°C				149° F			

### Separation Efficiency / Flow Rate

% Efficiency	Particle size larger than (micron):			m <sup>3</sup> /h				gpm			
	150	100	50	HYD-2	HYD-3	HYD-4	HYD-5	HYD-2	HYD-3	HYD-4	HYD-5
90	85	82	30	45	60	75	132	198	264	330	
95	90	85	40	60	80	100	176	264	352	440	
98	95	90	50	75	100	125	220	330	440	550	

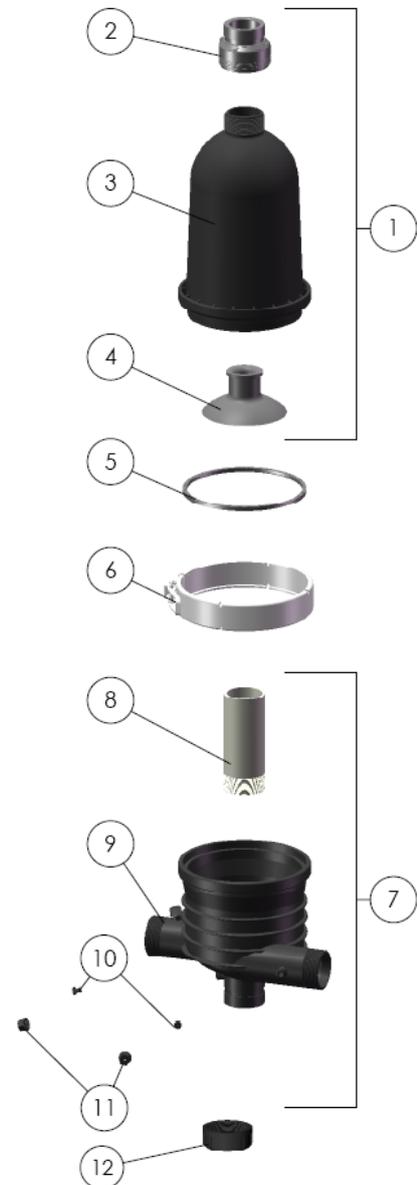
### Headloss Chart



**Sand Separators Orders from:**  
[www.irrigationglobal.com](http://www.irrigationglobal.com)

## Spare Part Single Unit for Battery

No.	Description	Cat. No.	Materials
1	Filter cover complex	2202 0027	
2	2" adapter vic./thr.	2253 4016	
3	Filter cover	2501 0222	RPA
4	Erosion preventer	2200 0022	EPDM
5	Cover seal	5005 0002	EPDM
6	Clamp	5042 0030	SS
7	Filter body complex	2218 0003	
8	2" nipple	5020 0051	PVC
9	Filter body	2200 2219	RPA
10	Gauge ports seal	5006 0004	EPDM
11	Gauge ports nut	2511 0103	RPP </td
12	2" cap	2511 0200	RPA



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