

# *Centra-flo<sup>TM</sup>*

*Gravity Sand Filter*

*“Upflow”*

*When Performance Counts*



*“There are many different reasons for purchasing a filter, but after all is said and done the only reason that really counts is **performance**”.*

The Centra-flo Filter has been designed with one thing in mind “**performance**”. In virtually every application that involves granular media filtration, the Centra-flo gravity sand filter is the **BEST** choice for the removal of suspended and colloidal solids. Designed as an upflow dynamic bed filter, the Centra-flo, provides a continuous supply of filtered water without interruptions for backwash cleaning cycles.

### Superior, Consistent Performance

The combination of the upflow water and the deep bed enables the Centra-flo to offer the best performance available in upflow filter designs. High quality filtrate can be achieved at varying flow rates depending on influent feed solids loading.

### Low Pressure Drop

Upflow filter designs typically require two to three feet of driving head upstream of the filter. This design allows the majority of the captured solids to remain in the lower portion of the filter bed and removed from the filter very quickly. Consistent low headloss is normal for the Centra-flo. A continuously cleaning washbox utilizes **filtered** water to clean the media before it returns to the top of the filter bed. One meter and two meter filter beds are available with very little difference in head loss.

### Low O & M Costs

Operation and maintenance costs are minimized. The Centra-flo upflow filter has **NO** moving parts in the filter. There are **NO** screens, level controllers or valves to maintain. The only air requirement is the airlift pump. The air consumption typically ranges from 1 to 4 scfm at 40 psi per airlift. Scheduled operator attention and service is all that is required.

ments in the industry. Standard tank materials are FRP (fiberglass reinforced plastics). Alternative materials available are carbon steel with superior protective coating systems, as well as stainless steel (Type 304, 304L, 316, 316L). Heat tracing and insulated tanks are available for outdoor applications in cold climates along with Seismic 4 designed tanks. Concrete basin designs are available for higher flow applications with the concrete being provided by others and all internals provided by Applied Process Technology, Inc.

### This is how it works!

Influent enters the center of the filter through a central feed chamber. The central feed chamber has a series of radial arms to evenly distribute the influent flow to the media bed near the bottom of the filter. As the water flows upward through the filter media suspended and colloidal solids are removed. Filtrate exits the filter near the top and flows over a fixed weir plate that maintains a constant level. The solids that are captured in the filter media are drawn downward into a recessed chamber located below the lower cone by the suction of the airlift pump. The high energy, turbulent upward flow inside the airlift provides a scrubbing action that effectively separates the sand and the captured solids before discharging them in the washbox at the top of the filter.

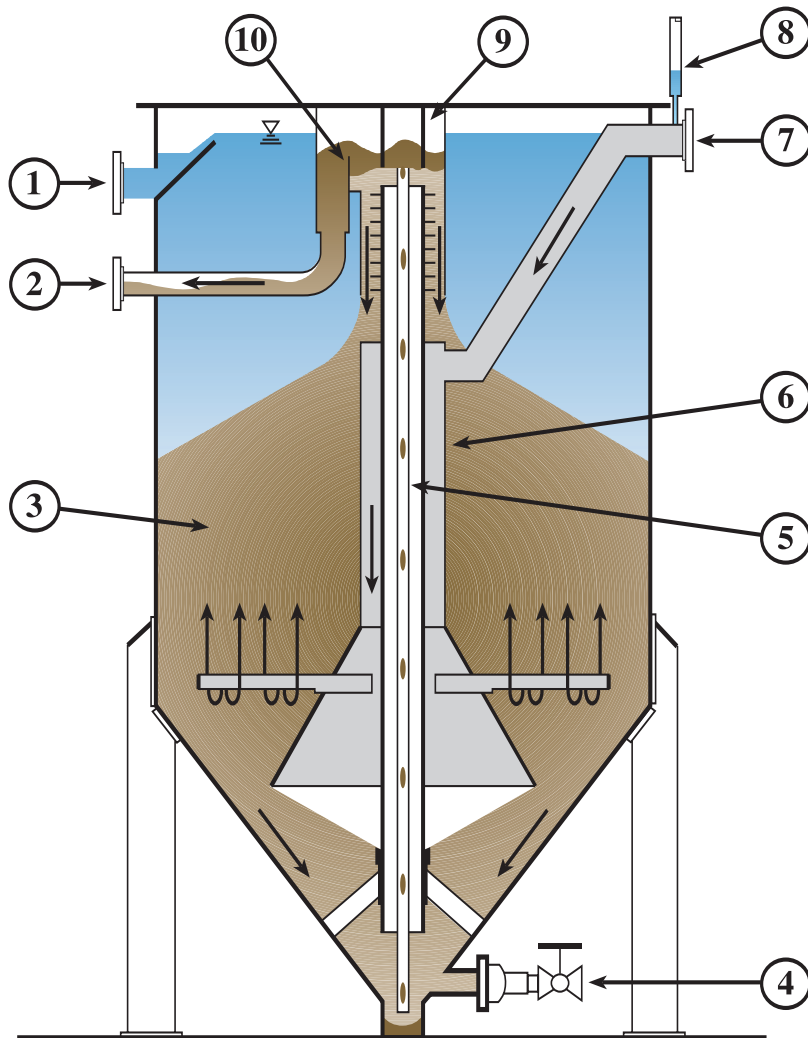
The washbox is a baffled chamber that allows for counter-current washing and gravity separation of the filter media and the captured solids. Media cleaning is accomplished utilizing **filtered** water from the upper chamber of the filter. Regenerated filter media is returned to the top of the filter bed as it falls by gravity from the counter-current washer. An adjustable V-notch weir directs the reject flow out of the filter carrying concentrated captured solids to a suitable disposal point.

### High Quality Construction

The Centra-flo meets the strictest construction require-

FEATURES	BENEFITS
<ul style="list-style-type: none"> <li>• Upflow, Continuous Operation</li> </ul>	<ul style="list-style-type: none"> <li>• No shutdown for backwash cycles;</li> <li>• No ancillary equipment requirements;</li> <li>• No flow control valves</li> </ul>
<ul style="list-style-type: none"> <li>• No Internal Moving Parts</li> <li>• Low Pressure Drop</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces operator attention and maintenance</li> <li>• Gravity or Pump fed with pressure drop typically less than 24 during normal operation</li> <li>• Reduced power consumption</li> </ul>
<ul style="list-style-type: none"> <li>• Single Media</li> </ul>	<ul style="list-style-type: none"> <li>• No screens or underdrain systems</li> </ul>
<ul style="list-style-type: none"> <li>• High Loading Capacities</li> </ul>	<ul style="list-style-type: none"> <li>• Can accommodate upstream upsets</li> </ul>
<ul style="list-style-type: none"> <li>• Continuous Backwash</li> </ul>	<ul style="list-style-type: none"> <li>• Steady continuous reject stream eliminates upsets</li> <li>• No reject pumps or tanks are typically required</li> </ul>

# Applied Process Technology Centra-flo™ Gravity Sand Filter



- 1 Filtrate
- 2 Reject
- 3 High Quality Silica Media
- 4 Drain
- 5 Airlift
- 6 Central Feed Chamber
- 7 Influent
- 8 Headloss Sight Gauge
- 9 Splash Guard
- 10 Adjustable V-Notch Weir

Other Patents Pending  
Patent No. 5,454,959

## Available Centra-flo™ Filter Sizes

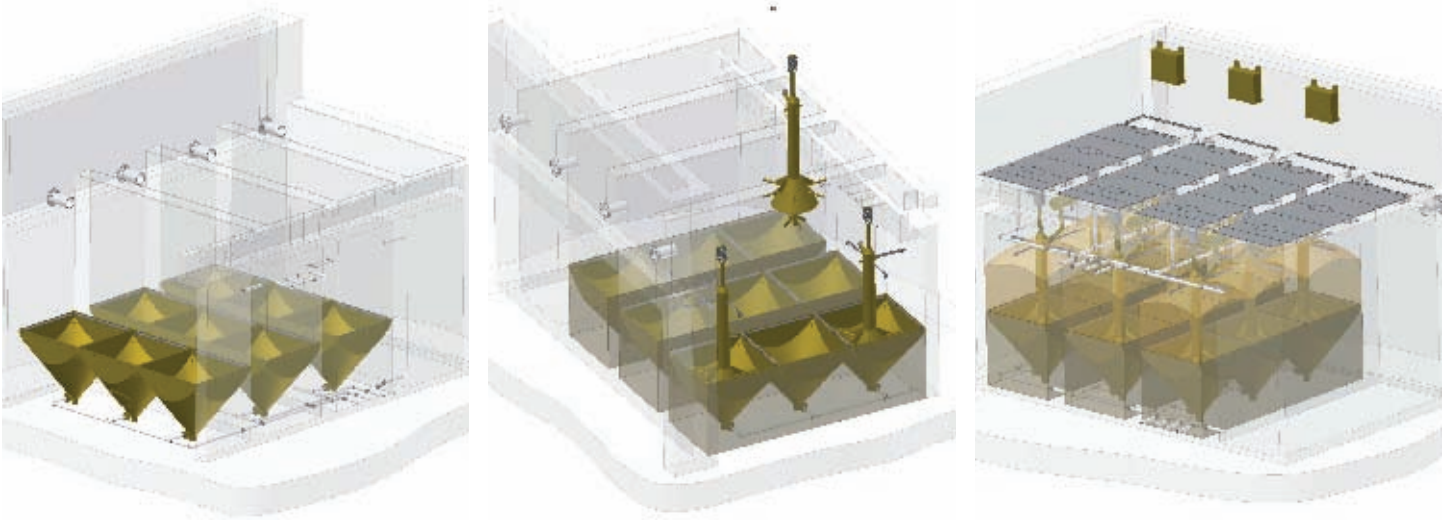
### Circular Package Models

Model No. (FRP, CS, SS)	Area ft <sup>2</sup>	Diameter ft	Height ft	Throughput GPM	Reject Rate (GPM)	Pressure Drop (in.)	Bed Depth (in.)	Air Consumption (SCFM)
CF-7 UF	7	3	10'-1"	10-35	3-4	6-24	40-80	1-2
CF-12 UF	12	4	10'-8"	15-60	3-4	6-24	40-80	1-2
CF-19 UF	19	5	11'-5"	30-95	5-6	6-24	40-80	1-2
CF-25 UF	25	6	12'-4"	42-140	5-6	6-24	40-80	2-4
CF-38 UF	38	7	13'-4"	60-190	6-8	6-24	40-80	2-4
CF-50 UF	50	8	14'-0"	75-250	6-8	6-24	40-80	2-4
CF-64 UF	64	9	14'-8"	100-320	8-10	6-24	40-80	2-4
CF-78 UF	78	10	15'-8"	120-390	8-10	6-24	40-80	2-4
CF-113 UF	113	12	17'-4"	150-500	8-10	6-24	40-80	2-4

### Rectangular Models

Model No.	Area ft <sup>2</sup>	WxL ft	Height ft	Modules	Throughput GPM	Reject Rate (GPM)	Pressure Drop (in.)	Bed Depth (in.)	Air Consumption (scfm)
CF-100 UF (Steel/Stainless Steel)	100	10x10	14'-6"	4	150-500	20-24	6-24	40-80	2-4
CF-150 UF (Steel/Stainless Steel)	150	10x15	14'-6"	6	225-750	30-36	6-24	40-80	2-4
CF-200 UF (Steel/Stainless Steel)	200	10x20	14'-6"	8	300-1000	40-48	6-24	40-80	2-4
CF-100 UF (Concrete)*	100	7.1x14.2	17'-6"	2	150-500	12-6	6-24	40-80	2-4
CF-200 UF (Concrete)*	200	14.2x14.2	17'-6"	4	800-1000	24-32	6-24	40-80	2-4

\*Unlimited Combinations Available-Consult Factory



Typical FRP inserts into concrete cells. System shown above is 3 modules per cell with 3 cells (4th to be completed later). Flows for this system are 4,800 3/day or 896 US gpm.

Applications include

MUNICIPAL	INDUSTRIAL
<ul style="list-style-type: none"> <li>• Water Reclamation <b>(CA Title 22 Approved)</b></li> <li>• Tertiary Filtration</li> <li>• Algae Removal - Lagoons</li> <li>• Phosphorus Removal</li> <li>• Potable Water Filtration</li> <li>• Denitrification</li> </ul>	<ul style="list-style-type: none"> <li>• Metal Hydroxides</li> <li>• Mill Scale</li> <li>• Pre-RO Direct Filtration</li> <li>• Laundry Waste</li> <li>• Brine Waste</li> <li>• Pulp &amp; Paper Process Water</li> <li>• Surface Water</li> <li>• Oil/Emulsion Waste</li> <li>• Cooling Towers</li> <li>• Incinerator Blowdown</li> <li>• Mining</li> </ul>

With performance capabilities of:

Application	Loading Rates (gpm/sq ft)	Influent Solids (TSS mg/l)	Filtrate (TSS mg/l)
Tertiary Filtration	3-5	20-100	1-10
Algae Removal	2-4	20-150	1-10
Pre-RO Direct Filtration	2-5	>15 SDI (2.0 NTU)	<3.5 SDI (0.11 NTU)
Surface Water Direct Filtration	3-7	10 to 200 NTU	<1 NTU
Metal Hydroxides	3-7	20-100	1-5
Phosphorus Removal	3-7	20-100	1 to 3 (TSS), <0.01 P
Mill Scale	3-7	20-150	2-10
Denitrification	1-3	10 to 30 TSS up to 50 mg/l Nitrate	<5 Nitrate <5 TSS

Equipment described herein is protected by U.S. Patent #5,454,959; additional patents may be pending.



## Applied Process Technology, Inc.

35 Wellington Lane  
 Conroe, Texas 77304  
 936-588-3458 888-920-4082  
 Fax 936-588-3299  
 www.centra-flo.com  
 info@centra-flo.com



A Blue Water Technologies, Inc. Company  
 www.blueh2o.net