

Filtration Systems



*Innovative solutions
to tough filtration
problems.*

Table of Contents

Single and Duo Filters3

ErGo™ Filtration System4

MegaFlo™ Backwash System5

Filter Media6

RotoFlex™ Resource Recovery Strainer7

Gravity Strainer8

Para-Flow™ Parabolic Screen9

Petax™ Filtration System.....10

V-Force™ System11



Single and Duo Filters

In-line Filters

Kadant in-line filters can be provided in either a single or duplex arrangement. A single in-line filter is normally used in applications where the flow can be interrupted, or the filter can be bypassed when the filter element is serviced. Duo filters are typically used when continuous filtration is required. They can be operated with either one or two filter housings on-line. The inlet and outlet orientation allows both the single and duo in-line filters to be easily, quickly, and cost-effectively installed in a pipe run.

Model	Pipe Connection ¹	Filter Element Size (D x L)	Area (sq. in.)	Maximum Flow (gpm/lpm) ²	Design Pressure (psi)	Minimum Installation Area (L x W x H)
340	3/4"	1.625" x 4.75"	22	15/60	300, 1000	6" x 4" x 14"
490	1"	2" x 12"	75	30/115	300, 1000	7" x 9" x 24"
770A	2"	2" x 12"	75	40/151	300, 1000	8" x 12" x 24"
770B	2"	2" x 24"	150	80/303	300, 1000	8" x 12" x 36"
770C	2"	2" x 36"	225	120/454	300, 1000	8" x 12" x 48"
HI-Flo™ Single	2"	3.25" x 40"	408 ³	200/760	300, 1000	10" x 15" x 58"
MegaFlo™ Single	2"	3.25" x 40"	408 ³	200/760	300, 1000	8" x 12" x 58"
340 Duo	3/4"	1.625" x 4.75"	44	30/115	300, 1000	20" x 14" x 18"
490 Duo	1"	2" x 12"	150	60/230	300, 1000	32" x 14" x 24"
770A Duo	2"	2" x 12"	150	80/303	300, 1000	40" x 20" x 24"
770B Duo	2"	2" x 24"	300	160/606	300, 1000	40" x 20" x 36"
770C Duo	2"	2" x 36"	450	240/908	300, 1000	40" x 20" x 48"
HI-Flo Duo	2"	3.25" x 40"	816 ³	400/1520	300, 1000	40" x 34" x 58"
MegaFlo Duo	2"	3.25" x 40"	816 ³	400/1520	300, 1000	40" x 34" x 58"

¹ NPT connection is standard. Socket weld and lap joint flange connections are available.

² Flow is based on the inlet and outlet connection size. Actual flow will be dependent upon the type of filter media used and influent contaminant loading.

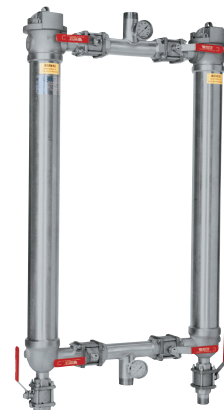
³ Use of Tri-Screen filter elements will increase filtration area from 408 in² to 565 in² per barrel. Tri-Screen filter elements have a maximum hydraulic capacity of 120 gpm.



490



490 Duo



MegaFlo Duo

Overview



Features

- 1/4-turn safety cap
- Baffled flow design
- Pressure relief safety cap
- Filter element centering pin
- Positive seal o-rings
- Inlet and outlet gauge ports

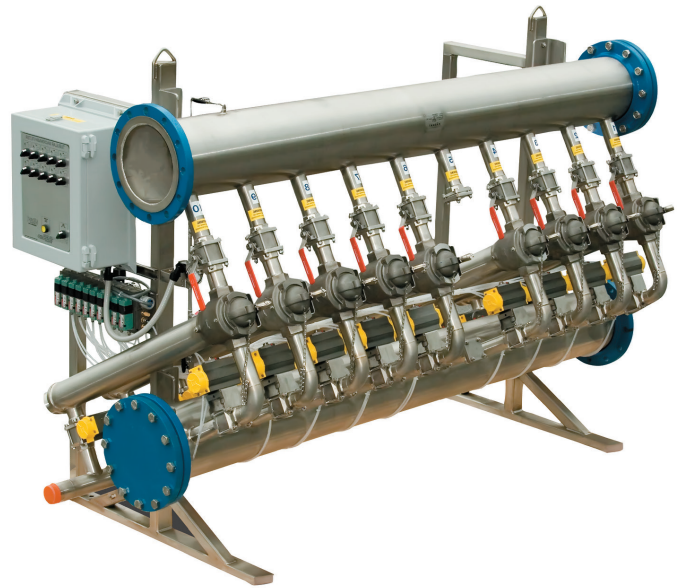
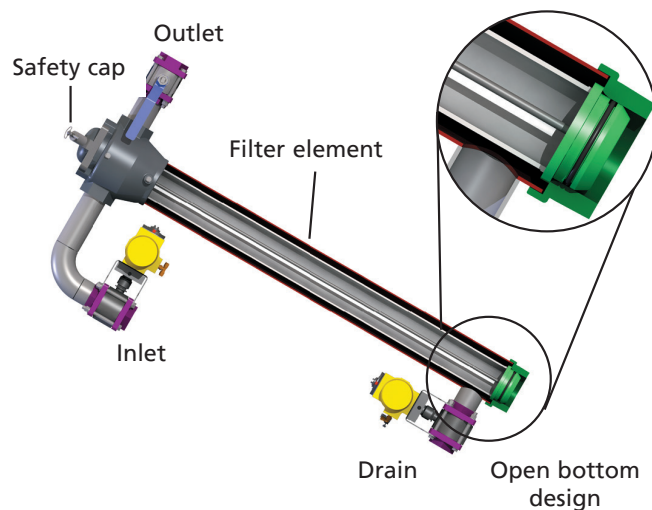
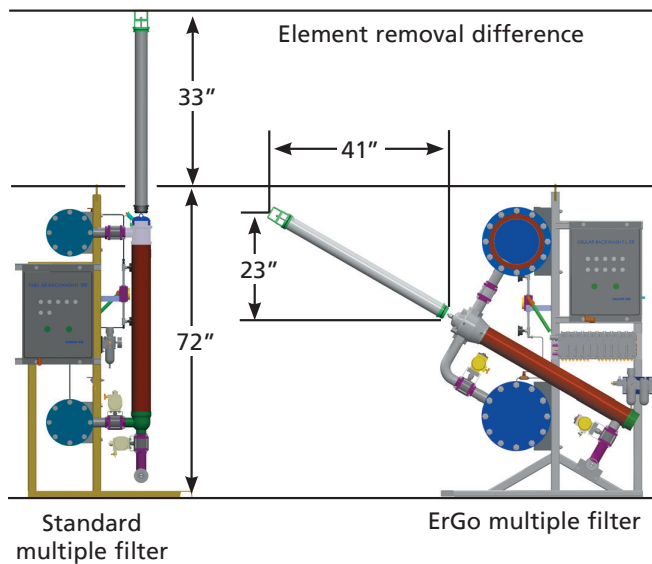


Benefits

- Low maintenance
- Easy access to filter media
- Low cost installations
- Wide variety of filter media for most applications

ErGo™ Filtration System

The ErGo filtration system is an automatic backwashing system that can be used to remove contaminants from a variety of applications including process water and fresh water. End results include the protection of shower nozzles, process equipment, or contaminant removal improving product quality. The “bottomless” barrel design provides easy element removal and easy clean out. The ergonomically engineered system allows easy and safe access when changing filter elements.



Overview



Features

- 30° filter barrel mounting
- Bottomless filter barrel design
- Backwash uses filtered process water
- Reusable, cleanable filter media
- 1/4-turn safety cap with pressure relief



Benefits

- Ergonomic design improves element removal safety
- Installation in low clearance areas
- Bottomless filter barrel allows easy clean-out
- Bottom “push-out” screen removal eases maintenance
- Pressure relief cap provides operator safety



Applications

- Fresh water
- Recycling of process water
- Dyes and additives
- Mechanical seal protection
- Chemicals

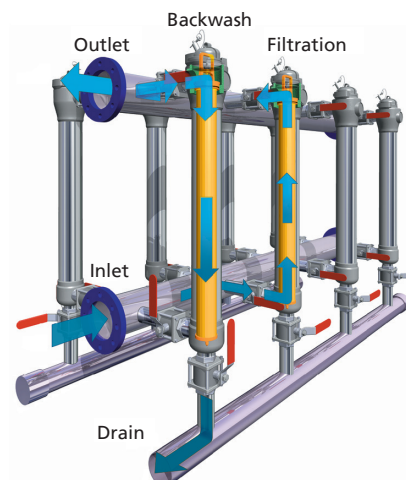
MegaFlo™ Backwash System

Internal backwash systems

Flow enters through the bottom inlet header and is distributed equally through each filter barrel. As contaminants build on the exterior filter screen, the differential pressure increases and backflushing is typically initiated at 12 to 15 psid. During backflush, one filter barrel is removed from service at a time by closing the inlet and opening the drain valve. Clean filtrate flows from the outlet header through the filter barrel to the drain. Each barrel is backwashed for 4 to 8 seconds. After all barrels have been backwashed, the system differential returns to 1 to 7 psid.

Internal Backwash Considerations

- 40 psig minimum inlet pressure required
- Clean system pressure loss is typically 1 to 7 psid, backflushing is initiated at 12 psid differential
- Outlet flow will decrease 50 to 150 gpm for 4 to 8 seconds per barrel
- Backwash flow 100 to 150 gpm per barrel



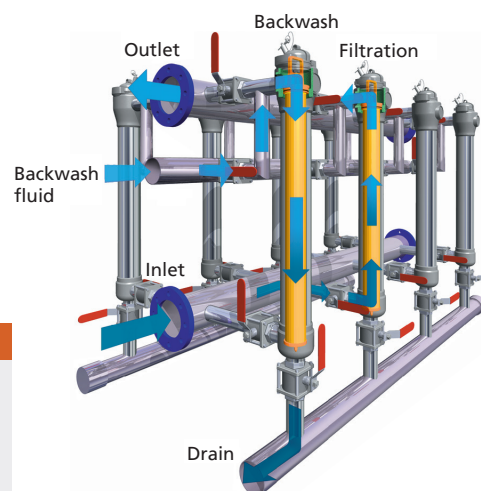
Internal backwash

External backwash systems

The system operates identically to the internal backwash system in the filtration mode. An additional header is added at the top of the unit to introduce a secondary source of clean backflush fluid. When the differential pressure reaches 10 to 20 psid, the filter system must be backwashed. The inlet and outlet valves are closed and the drain and backwash supply header valves are opened. The outside source of clean liquid flushes the contaminants to drain. Each barrel is backwashed sequentially for 4 to 8 seconds and the system returns to the clean 1 to 7 psid.

External Backwash Considerations

- No minimum inlet pressure required for backflush
- Virtually no outlet flow fluctuations during backwash
- For backwash, a clean fluid is required at 60 psig or greater
- Normally used where the process liquid is expensive or viscous



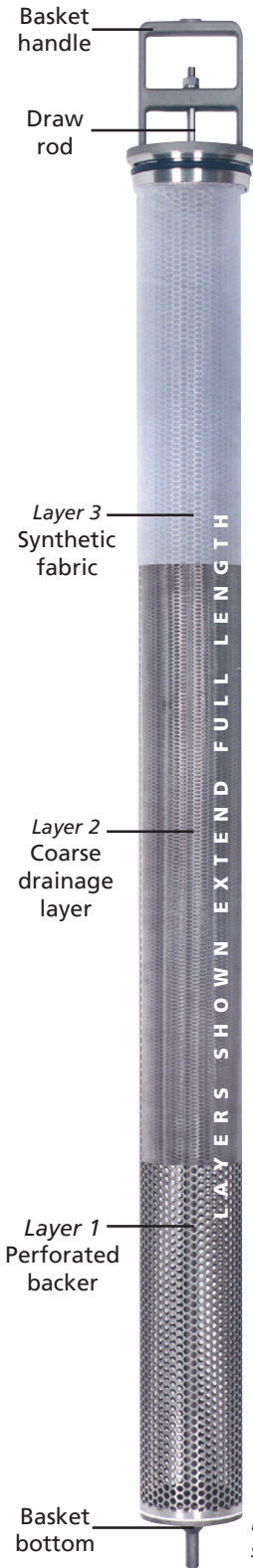
External backwash

		Internal Backwash Filters				External Filters			
		Dual Row Barrels MegaFlo IBD		Single Row Barrels MegaFlo IBS		Dual Row Barrels MegaFlo EBD		Single Row Barrels MegaFlo EBS	
Model:									
Pressure:		285, 740, 1000 psi		285, 740, 1000 psi		285, 740, 1000 psi		285, 740, 1000 psi	
Inlet/Outlet Valves:		2" 2-way		2" 2-way		2" 2-way		2" 2-way	
Standard Flange Sizes:		3" to 14"		3" to 8"		3" to 14"		3" to 8"	
Largest Unit Max Flow (gpm/lpm):		5,000/18,930		2,500/9,465		5,000/18,930		2,500/9,465	
Filter Elements:		3.25" x 40"		3.25" x 40"		3.25" x 40"		3.25" x 40"	
Filtration Area*:		408 in ² /barrel		408 in ² /barrel		408 in ² /barrel		408 in ² /barrel	
Width:		46"		38"		61"		35"	
Width with Service Step:		68"		45"		83"		50"	
Height:		67"		72"		74"		74"	
Service Height:		105"		105"		105"		105"	
Number of Filter Barrels and Length:		6	39"	2	27"	6	39"	2	27"
		8	49"	3	39"	8	49"	3	39"
		10	59"	4	49"	10	59"	4	49"
		12	69"	5	59"	12	69"	5	59"
		14	79"	6	69"	14	79"	6	69"
		16	89"	7	79"	16	89"	7	79"
		18	99"	8	89"	18	99"	8	89"
		20	109"	9	99"	20	109"	9	99"
		–	–	10	109"	–	–	10	109"

*Use of Tri-Screen filter elements will increase filtration area from 408 in² to 565 in² per barrel. Tri-Screen filter elements have a maximum hydraulic capacity of 120 gpm.

Filter Media

Kadant provides basket assemblies with rugged, reusable filter elements that can be removed and replaced in minutes to minimize the time a filter housing is out of service.



Diffusion Bonded filter elements are highly efficient, extremely durable wire mesh screens that can withstand many high-pressure washes without the need for replacement. They are manufactured with multiple layers of 316 stainless steel wire mesh that are supported by a perforated element. All layers are sintered at above 2000°F (1095°C) in a controlled atmosphere to allow the molecules to migrate (diffuse) across the contact points and recrystallize. This forms a strong, integrated structure where all contact points of the structures are bonded together.

To reduce spare parts, basket handles, basket bottoms, and draw rods are reusable.

Filter basket with synthetic fabric screen

Wire Mesh filter screens are wrapped tightly around and welded to a perforated stainless steel backer screen. For 150 mesh and finer filter elements, a coarse mesh drainage layer is placed between the fine mesh and the perforated backer screen for structural support, to disperse the flow and assure full utilization of the screen surface, and to eliminate the dead spots that would otherwise be created.

Synthetic Fabric filter screens are available in different materials that include nylon and polyester. As with the wire mesh, a coarse 20 or 60 mesh drainage layer is attached to the perforated backer. The filter cloth is a sewn tube and the ends are tucked inside the bottom and top of the perforated element. The gasketed basket handle and basket bottom firmly clamp the fabric in place preventing bypass of contaminants.

Spiral Wound Slotted Wedge Wire is an extremely rugged filter media capable of withstanding very high differential pressures. It is especially suited for filtering fibers or gelatinous particles that have a tendency to "staple" themselves into the openings of the filter screens, making manual cleaning difficult.

Perforated Stainless Steel can be used as filter media alone for the removal of coarse particles, or as the support structure for wire mesh or synthetic type filter elements. The rolled steel straight seam design provides an element with exceptional crush resistance and more open area compared with tubes made using spiral wrap construction.

Particle Retention		Approximate Mesh Equivalent	Wedge Wire	Wire Mesh	Diffusion Bonded	Synthetic	Perforated Backup Only
Microns	Inches						
2	0.0001				○		
5	0.0002				○	○	
10	0.0004				○	○	
15	0.0006					○	
20	0.0008				○		
25	0.0010		□			○	
32	0.0013	700			○		
36	0.0014	400				○	
44	0.0017	325		□	○		
50	0.0020		□			○	
60	0.0024	250		□	○		
75	0.0030	200	□	□	○	○	
100	0.0039	150	○	□		○	
104	0.0041				○		
140	0.0055				○		
150	0.0059	100	□	□		○	
180	0.0071	80	○	□			
250	0.0098	60	□	□		○	
355	0.0140	45	□				
425	0.0167	40		□			
500	0.0197	35	○				
600	0.0236	30	○				
787	0.0310		○				
841	0.0331	20		□			
1600	0.0630	12	○				○
4750	0.1870	4					□

□ – normally stocked elements

○ – consult factory for availability

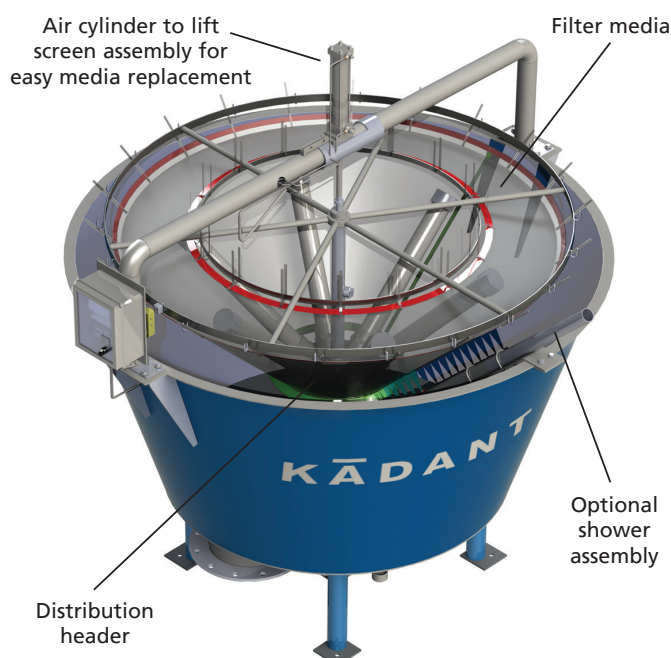
RotoFlex™ Resource Recovery Strainer

How It Works

The fluid to be filtered is supplied to a distribution header that feeds six stationary distribution header arms mounted on an angle parallel to the screen. A series of uniquely designed slots on each header delivers the feed at low pressure (less than 6 psig/1.4 bar) uniformly around the screen surface area. The impact force from the distribution slots combined with the precisely angled flow results in rotation of the screen assembly. Water that passes through the filtration medium collects and drains from the bottom of the unit. The retained solid material slides down the angled screen to the center where it exits the system to a user supplied collection tank.

Patented Filter Media Cleaning

The RotoFlex resource recovery strainer uses a unique method of filter media cleaning to keep the filter medium open and to flush contaminants from the surface. The conical media hangs freely from the upper support ring and is not attached or in contact with any part of the strainer below the ring. As the feed flow from the distribution headers impact the media and the media rotates, the synthetic mesh flexes back and forth, shedding the fiber and debris without the aid of a cleaning shower or scraping device. The feed flow helps wash the material to the center collection chamber for reuse or disposal.



RotoFlex Filter Media Life

Traditional backwashing filters and strainers use a secondary backer screen to support the primary filter media used for solids removal. Drawbacks include both reduced capacity and filter media wear at the point of contact between the two layers. The RotoFlex filter media free-hanging backerless design eliminates both issues, maximizing throughput and media life. In addition, debris sheds from the filter media without the need of a shower or water backflush. Energy applied to the media during the cleaning process is often a contributor to filter media wear. Elimination of the continuous shower will improve the media life and minimize the filter media change-out frequency.

Capacity

The maximum flow capacity of the RotoFlex resource recovery strainer is approximately 1500 gpm (5678 lpm). However, the maximum flow achieved for a given application will be dependent on the filter media, nature of solids removed (fiber freeness), and the total amount of suspended solids in the feed water.

Overview



Features

- Backerless filter media design
- Automatic upset recovery
- No external power for screen rotation
- Patented filter media cleaning system
- Optional intermittent cleaning shower
- Replace filter media in minutes



Benefits

- Recovery of water, heat, chemical, and fiber
- No electrical motors or continuous shower water required
- Continuous operation through system upset conditions
- High volume capacity



Applications

- DAF filtrate
- Clearleg save-all water
- Overflow cylinder vat water
- Vacuum pump seal water
- Felt hair removal from press section
- Fiber recovery from u-drains

Gravity Strainer



Model 4000 Series

Water to be filtered is piped into and channeled around the periphery of the tank. It flows upward and over a weir assembly for even distribution over a fine screen (75 to 355 micron or 40 to 200 mesh). The water is filtered leaving fibers and solids on the screen. Clean water is collected in the strainer's bottom and flows from the unit. A continually rotating shower above the screen washes the rejects toward the center opening and the reject pipe for discharge. They are especially effective separating difficult fibrous material from process water streams.

Gravity Strainer Model	Flow Capacity Range *		Nominal Diameter		Nominal Height**		Inlet/Reject Connection		Accept Connection		Gross Weight Dry - Wet		Shower Flow at 40 psi ***	
	gpm	lpm	inch	cm	inch	cm	inch	cm	inch	cm	lbs	kg	gpm	lpm
4005	96-610	365-2310	61	155	59	150	6	15	10	25	800-4500	363-2040	63	238
4015	163-1037	615-3925	73	185	69	176	8	20	12	30	975-7150	442-3243	90	341
4025	241-1537	910-5820	85	215	72	183	10	25	14	35	1300-9000	590-4082	108	409
4035	338-2153	1280-8150	97	245	75	190	12	30	16	40	1425-11050	646-5011	135	511
4045	511-3257	1935-12330	115	290	78	198	14	35	18	45	1760-16500	798-7483	162	613

Overview



Features

- High flow rates with relatively high solids loading
- Gravity feed capability can eliminate pumps
- Continuous media cleaning with rotating showers
- Rotating shower is only moving part
- Corrosion-free fiberglass or stainless steel construction



Benefits

- Lower cost per gallon processed
- Minimal power cost and low maintenance
- Maximum throughput, minimal downtime, high efficiency
- No fresh water requirements
- BTU savings by reuse of warm process water

* Capacity can vary depending on inlet loading and screen mesh.

** Height of support legs can vary to suit application.

*** Shower water is usually accept water from the gravity strainer supplied at 25 to 40 psig.

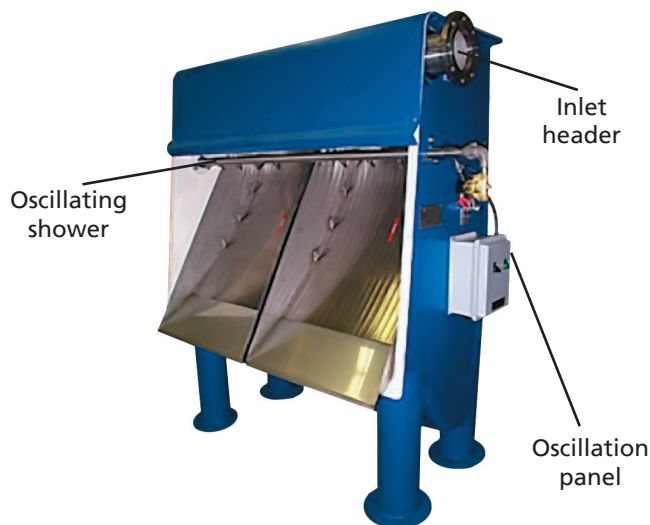
These figures are given only for information. For application specific details and recommendations, contact Kadant.



Para-Flow™ Parabolic Screen

Solids Separation System

The patented parabolic screening surface provides a change in the angular momentum and varying slot opening for maximum capacity and highest operating efficiency. The slot opening is the smallest where the fluid is most dilute and the change in angular momentum is greatest. Flow capacity up to 300 gpm (1,135 lpm) per screen and loadings up to 2.5% inlet consistency.



Overview



Features

- Single, double, or triple screen designs
- FRP housing and 316 stainless steel slotted media
- Optional oscillating showers
- Wide variety of slotted media available



Benefits

- Maximize recovery of expensive fiber
- High operating efficiency at a low cost/gpm
- Minimal maintenance and space requirement
- Initial stage of filtration to "scalp" large contaminants



Applications

- Solids separation
- Thickening
- Process water recycling
- Fiber scalping

Model		Height	Weight	Depth	Screen Length	Inlet	Outlet	Average Shower Flow	Weight (lbs/kgs)	
									Shipping	Operating
PF1	inch mm	92.5 2350	48.0 1220	45.5 1155	67.25 1708	5.0 127	8.0 203	1.1 gpm 4 lpm	400 182	1500 686
PF2	inch mm	92.5 2350	74.0 1880	45.5 1155	67.25 1708	6.0 152	12.0 305	2.2 gpm 8 lpm	800 364	3000 1370
PF3	inch mm	92.5 2350	107.0 2718	45.5 1155	67.25 1708	6.0 152	14.0 355	3.3 gpm 12 lpm	1200 546	4500 2057

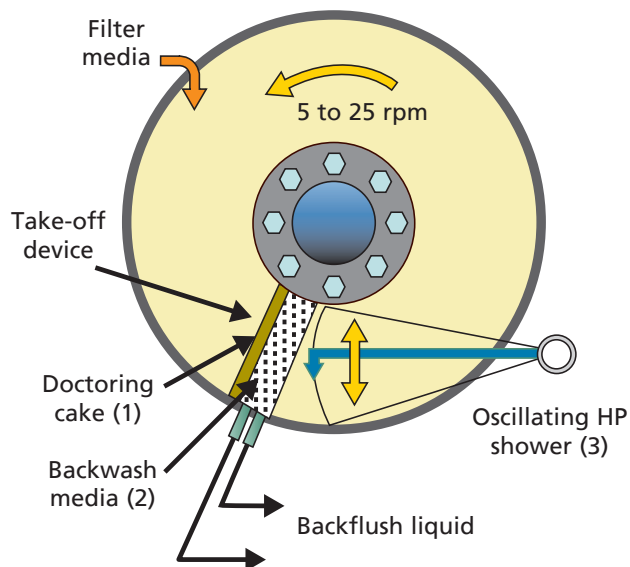
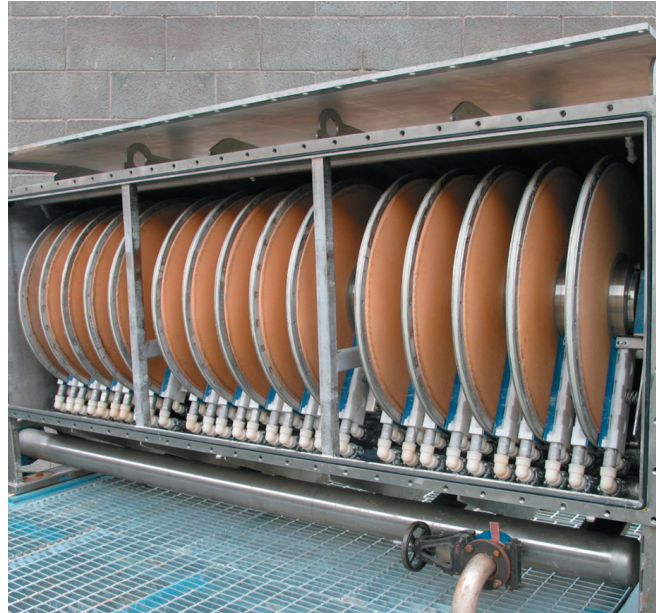
Single Slot Opening	0.007"	0.010"	0.015"	0.020"	0.030"	0.040"	0.060"	Special Order
Two-Slot Opening	25% 0.007" and 75% 0.010"				25% 0.010" and 75% 0.020"			Special Order
Three-Slot Opening	20% 0.007" and 20% 0.010" and 60% 0.020" (Dilute Applications)							
	20% 0.010" and 20% 0.020" and 60% 0.040" (Rough Applications)							

Petax™ Filtration System

The Petax filtration system delivers the benefits of water recycling without compromising process performance.

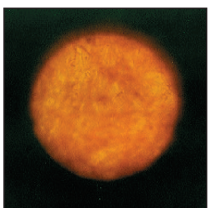
How does the Petax filtration system work?

- Vessel is full of process water and operates at low-pressure less than 2.5 psig (0.1 to 0.3 bar)
- Disks are completely submerged and slowly rotate
- Rotation speed increases to maintain low vessel pressure controlled by transducer monitoring pressure
- Clean filtrate passes through the media to central hollow shaft
- Disks are continuously cleaned in three stages
 1. Filter cake is doctored off and pumped away (if necessary)
 2. Clean filtrate is pulled back through media removing debris
 3. Oscillating high-pressure, submerged shower cleans the media



Unique engineered filter material

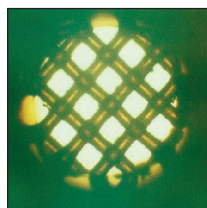
(viewed through a 1 mm nozzle)



Petax



0.010 wedge wire



100 mesh

Overview



Features

- Patented filtering technology
- Three-stage media cleaning system
- Unique engineered filter medium
- Filtrate quality less than 20 ppm
- Particle removal less than 20 micron in size
- No chemicals or flocculants required



Benefits

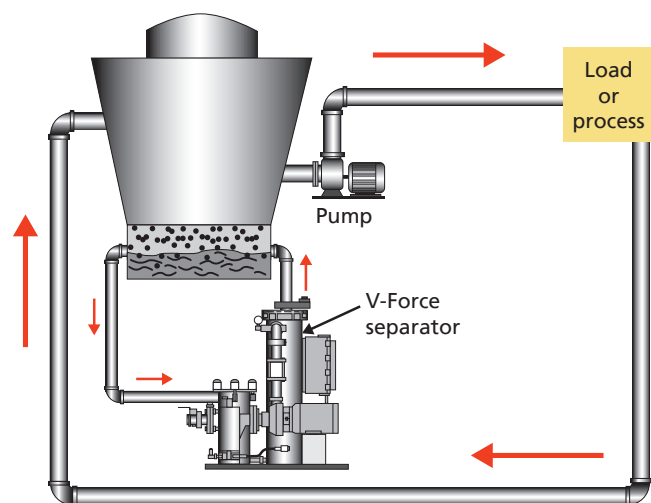
- Reduce water and treatment costs
- Heat savings
- Fiber savings
- Reduce municipal treatment plant charges (less fiber and water sent to clarifier)
- Chemical savings
- Eliminate plugged nozzles and improve machine cleanliness
- Less contaminant in water circuits provides opportunity to recycle

V-Force™ System

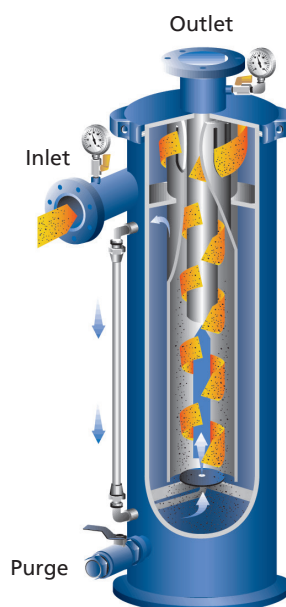


Solids separation system

Exclusive internal acceleration creates maximum performance to achieve maximum protection of fluid handling systems from unwanted solids. Its advanced and patented design, building upon the performance Kadant is known for, now also removes 50% more of the finer solids (less than 40 microns), resulting in higher aggregate solids removal. Independently tested. Proven superior for today's demanding filtration requirements. For settleable solids with specific gravity of 1.7 or greater.



Basin cleaning protection



Overview



Features

- No moving parts to wear out
- No screen or filter element to clean or replace
- No backwashing water loss
- Low, steady pressure loss
- Continuous, uninterrupted operation



Benefits

- Low maintenance
- Low operating costs
- Easily handles upsets
- High flow solids separation
- Minimal purge volume
- Quick return on investment



Applications

- Removal of sand from rivers and lakes
- Cooling towers
- Pump protection
- Steel mill water recycling
- Spray nozzle protection



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Kadant is a global supplier of high-value, critical components and engineered systems used in process industries worldwide.

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