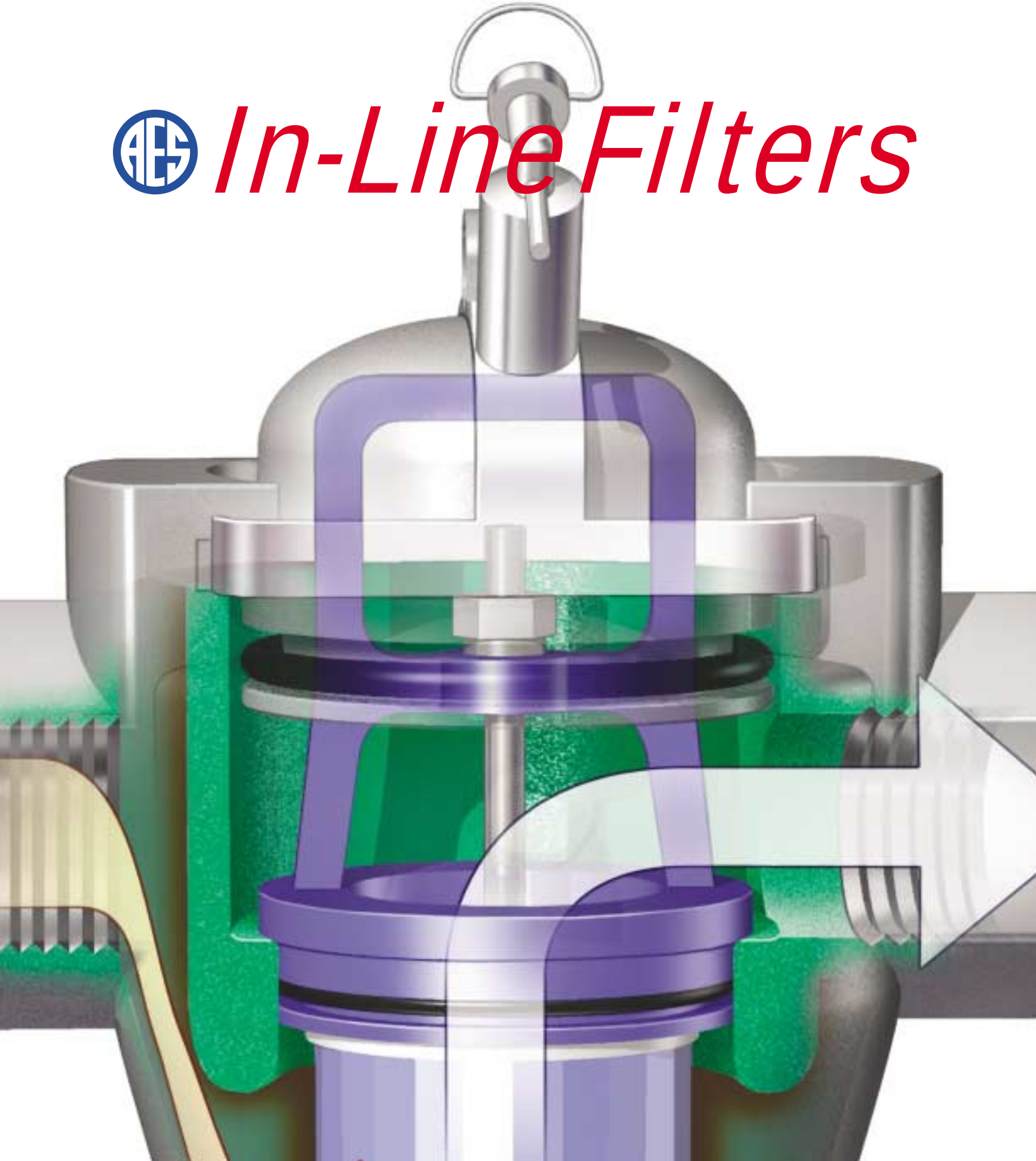
KĀDANT
A E S

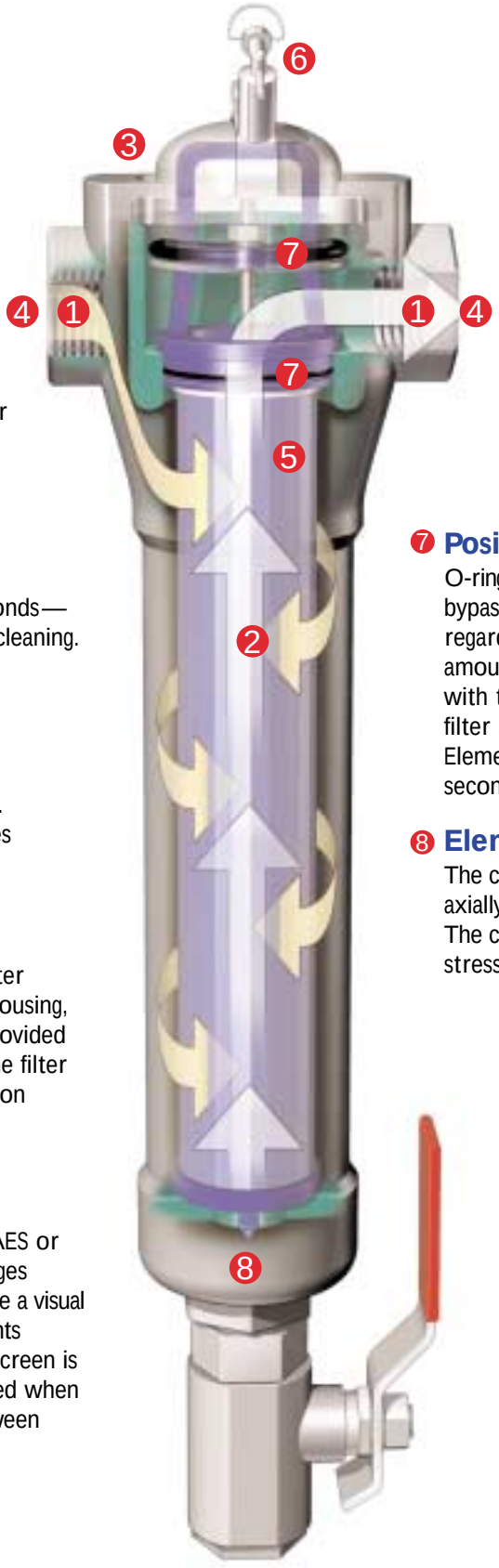
AN ACCENT ON INNOVATION

In-Line Filters



In-Line Filters

Kadant AES in-line filters have been favored by process engineers and maintenance personnel for over 30 years. The simple filter design allows screens to be serviced quickly and efficiently. With an installed base of more than 20,000 filters, Kadant AES has the experience required to solve tough filtration problems.



❶ Process Fluid Flows

to the inlet at the top left and clean liquid exits through the outlet at the right. Debris is retained on the filter screen. When the differential pressure reaches 15-20 psig, the filter screen is typically serviced.

❷ Baffled Flow Design

The head casting routes the liquid to provide uniform dispersion over the filter medium resulting in even contaminant build-up, longer screen life and less frequent cleaning.

❸ Quarter-Turn Cap

provides access to filter elements in seconds—without tools—for easy inspection and cleaning.

❹ NPT, Socket Weld, or Flanged Connections

NPT threaded and plain end socket weld connections are the standard AES design. *Optional* ANSI 150#, 300# or 600# flanges are available.

❺ 2 or 3-Piece Filter Elements

(Optional) For facilities that use 2" diameter filter screens, and different length filter housing, one size filter baskets (2"x12") can be provided to minimize spare parts inventory. See the filter media section and filter model specification sections for additional details.

Pressure Gauges

(Optional) Whether provided by Kadant AES or installed by the end-user, gauges should be installed to provide a visual indication when filter elements require servicing. The filter screen is typically removed and cleaned when the ΔP across the filter is between 15-20 psig.

❻ Pressure Relief Safety Cap

(Optional) To maximize safe operation of the filter, a safety relief cap can be provided. A locking pin and O-rings secure the cap lock assembly to the integral pressure relief stem. Removal of the cap lock assembly provides visual evidence that pressure has been relieved and quarter-turn cap removal can safely proceed. (See back cover.)

❼ Positive Seal O-rings

O-rings maintain absolute seal integrity to prevent bypass. They will not take a compression set regardless of the frequency of opening or the amount of pressure applied. The O-rings stay with the filter cap and element allowing the filter screens to be serviced quickly and easily. Element change-out can be accomplished in seconds when a spare filter screen is available.

❽ Element Centering Pin

The centering pin guarantees the filter element is axially aligned even in non-vertical installations. The cap locks the element in position, eliminating stress and vibration problems.

Inlet/Outlet Gauge Ports

Threaded NPT pressure gauge ports are standard on both the front and backside of all in-line filters (except the 340). This allows the pressure gauges to be installed in a visible location regardless of the filter's orientation.

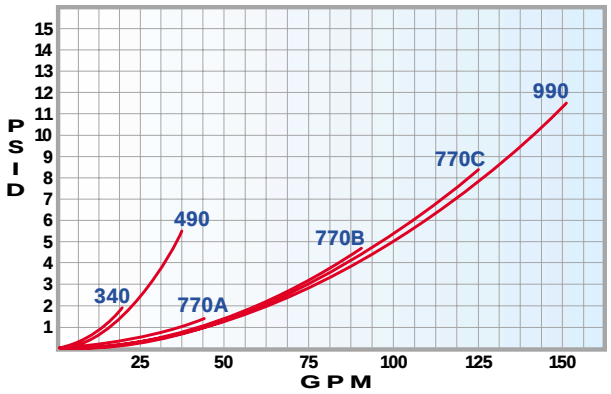
In-Line Single and Duo Filters

Kadant AES 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 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 1 or 2 filter housings on-line. Because of the inlet/ outlet orientation, both the single and duo in-line filters can be easily, quickly and cost effectively installed in a horizontal run of pipe.

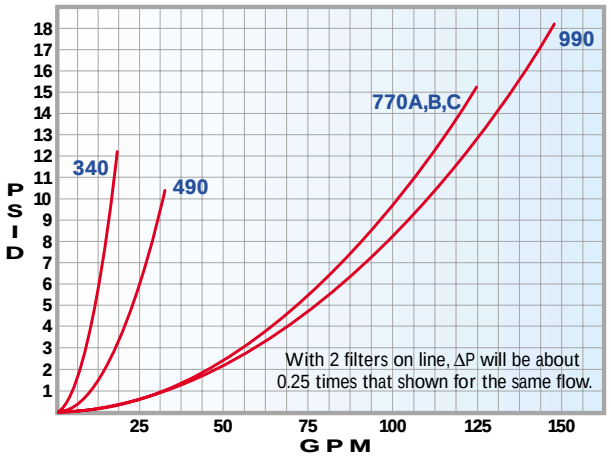
490 DUO

490

Single Filters
Differential Pressure (PSID) vs. Flow (GPM)



Duo Filters - One Filter On Line
Differential Pressure (PSID) vs. Flow (GPM)



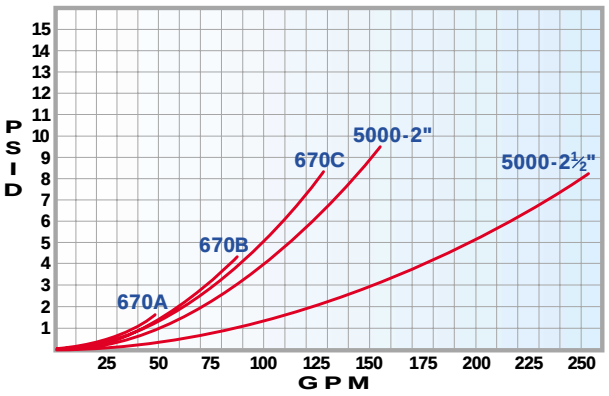
Model	[1]Pipe Connection	Filter Element Size (D x L)	Area (in.[2])	[2]Maximum Flow (gpm)	Can Use 2" x 12" Segments	Number of 2" x 12" Segments	Design Pressure (psi)	Minimum Installation Area (L" x W" x H")
340	3/4"	1 5/8" x 4 3/4"	22	15	N	NA	300, 1000	6 x 4 x 14
490	1"	2" x 12"	75	30	Y	1	300, 1000	7 x 9 x 26
770A	2"	2" x 12"	75	40	Y	1	300, 1000	8 x 12 x 24
770B	2"	2" x 24"	150	80	Y	2	300, 1000	8 x 12 x 36
770C	2"	2" x 36"	225	120	Y	3	300, 1000	8 x 12 x 48
990	2"	3 1/4" x 40"	408	150	N	NA	300	10 x 15 x 60
340 DUO	3/4"	1 5/8" x 4 3/4"	44	30	N	NA	300, 1000	20 x 14 x 18
490 DUO	1"	2" x 12"	150	60	Y	2	300, 1000	32 x 14 x 26
770A DUO	2"	2" x 12"	150	80	Y	2	300, 1000	40 x 20 x 24
770B DUO	2"	2" x 24"	300	160	Y	4	300, 1000	40 x 20 x 36
770C DUO	2"	2" x 36"	450	240	Y	6	300, 1000	40 x 20 x 48
990 DUO	2"	3 1/4" x 40"	816	300	N	NA	300	40 x 24 x 60

[1] NPT connection is standard; socket weld and lap joint flange connections 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.

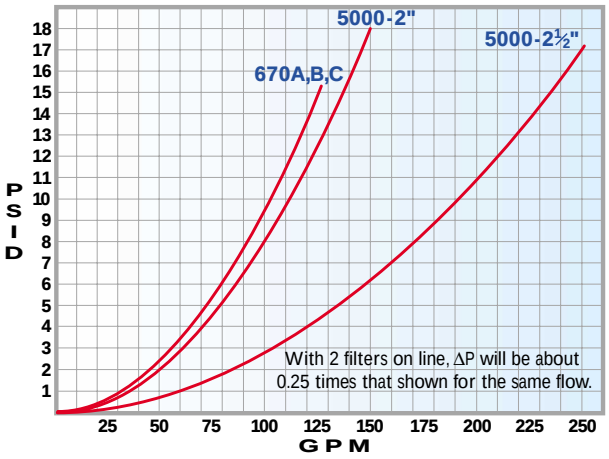
Bottom Entry Single and Duo Filters

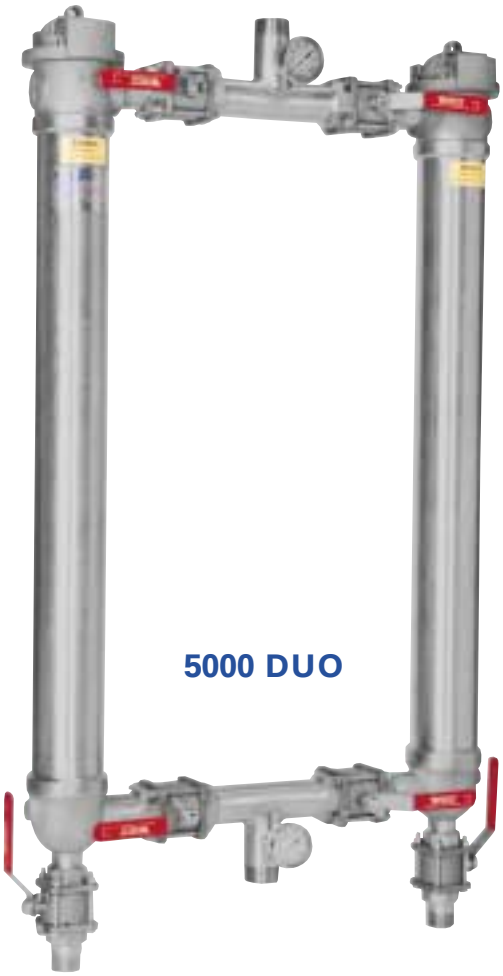
Kadant AES bottom entry filters are commonly used in vertical piping system installations, or in applications such as slurries where flow from the bottom to the top will help mix the fluid and prevent particles from settling. Fluid enters through a connection near the bottom of the filter housing and clean liquid exits at the top. Like the in-line filter system, the fluid flows from the outside to the inside of the filter screen, depositing debris on the exterior of the filter elements.

Single Filters
Differential Pressure (PSID) vs. Flow (GPM)



Duo Filters - One Filter On Line
Differential Pressure (PSID) vs. Flow (GPM)



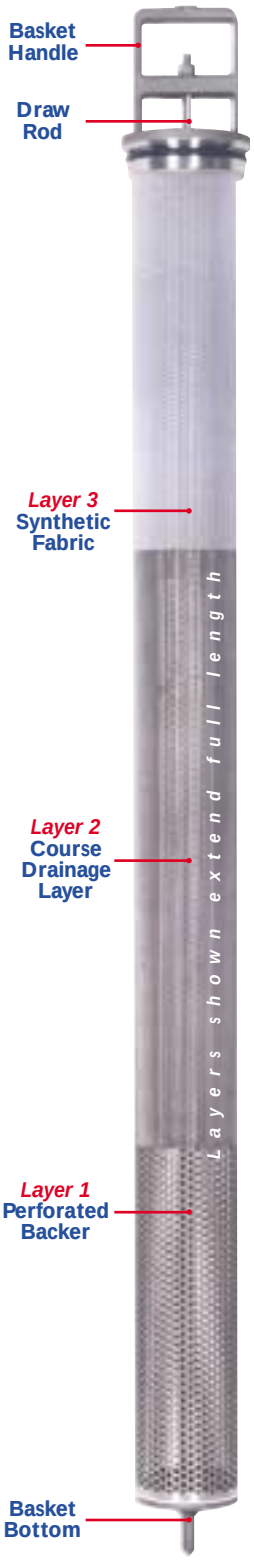


Model	[1]Pipe Connection	Filter Element Size (D x L)	Area (in.²)	[2]Maximum Flow (gpm)	Can Use 2" x 12" Segments	Number of 2" x 12" Segments	Design Pressure (psi)	Minimum Installation Area (L" x W" x H")
670A	2"	2" x 12"	75	40	Y	1	300, 1000	8 x 12 x 26
670B	2"	2" x 24"	150	80	Y	2	300, 1000	8 x 12 x 38
670C	2"	2" x 36"	225	120	Y	3	300, 1000	8 x 12 x 50
5000HP	2"	3 1/4" x 40"	408	150	N	NA	1000	8 x 12 x 58
5000LP	2", 2.5"	3 1/4" x 40"	408	150	N	NA	300	8 x 12 x 58
670A DUO	2"	2" x 12"	150	80	Y	2	300, 1000	32 x 14 x 32
670B DUO	2"	2" x 24"	300	160	Y	4	300, 1000	32 x 14 x 44
670C DUO	2"	2" x 36"	450	240	Y	6	300, 1000	32 x 14 x 54
5000HP DUO	2"	3 1/4" x 40"	816	300	N	NA	1000	40 x 34 x 58
5000LP DUO	2", 2.5"	3 1/4" x 40"	816	300	N	NA	300	40 x 32 x 58

[1] 2" plain end for socket weld connection standard on single units.
2" NPT standard on duo's; lap joint flange connections available on all models.
[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.

Filter Elements

With easy maintenance in mind, Kandant AES basket assemblies are equipped with rugged reusable filter elements that can be removed and replaced in seconds, minimizing the time a filter housing is out of service. To reduce required spare parts, the basket handle, basket bottom, and draw rod are reusable and normally do not require replacement. Stackable 2"x12" filter elements can be purchased for use in the 490, 670/770A, 670/770B and 670/770C single and duo filters to further minimize required on-hand spare parts.



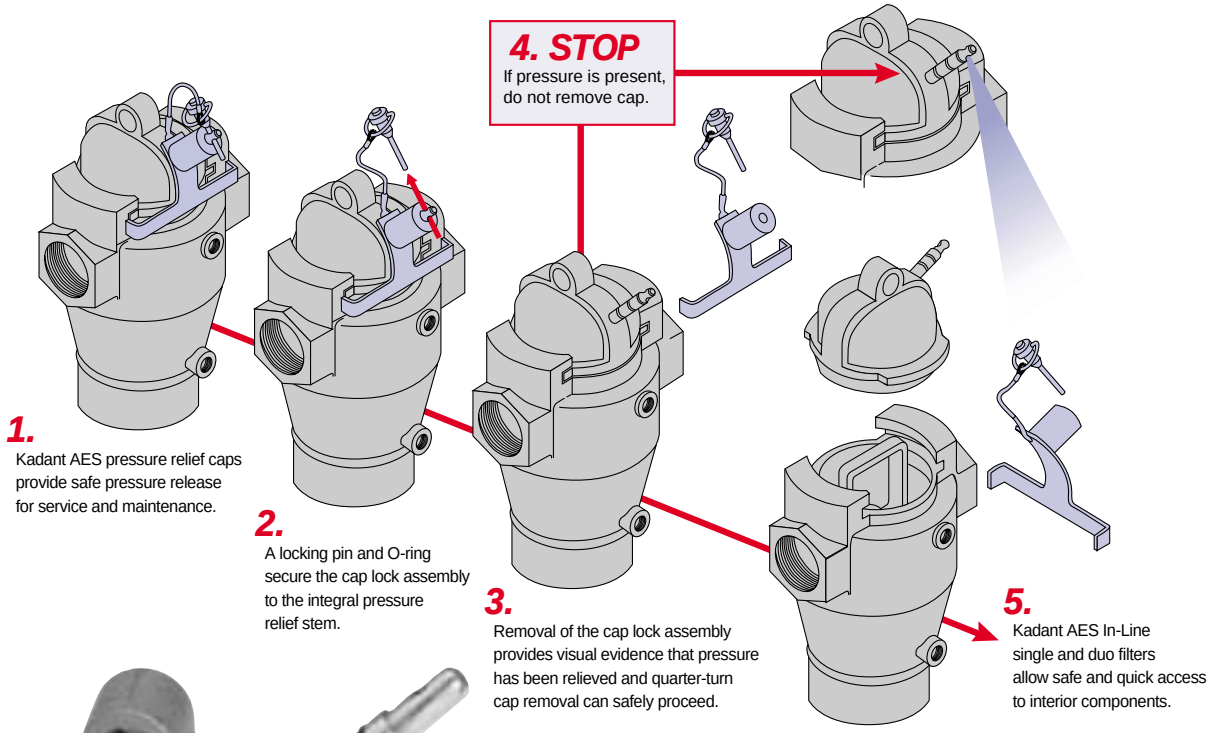
1. **Perforated stainless steel** can be used as filter media alone for the removal of course particles, or as the support structure for wire mesh or synthetic type filter elements. The rolled steel straight seam design provides an element with exceptional crush resistance and more open area compared with tubes made using spiral wrap construction.
2. **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 course 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.
3. **Synthetic fabric** filter screens are available in different materials that include nylon and polyester. As with the wire mesh, a course 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.
4. **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.
5. **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 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.

670 with Synthetic Fabric Screen | 670 Multiple Screen Assembly | 670 Single Screen Assembly | 490 Wedge Wire Assembly

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

X - normally stocked elements O - consult factory for availability

Kadant AES in-line filter systems are available with optional pressure relief caps providing quick and safe access to interior filter components during routine service and maintenance.



Filtration has been a core specialty at Kadant AES since the company's inception. Our design innovations and manufacturing excellence continually set performance standards within the industry. We are a world leader in supplying filtration systems that continually enhance a wide range of process applications. Contact a Kadant AES Sales or Filtration Application Engineer for detailed information and a complete solution to meet the demands of your specific process.

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