

SAND – WATER SEPARATION

Sand Eliminator



Anyone who pumps liquid for any purpose (irrigation, industrial, or private and public water systems) knows their greatest enemy is sand, silt, grit or other solids.

These elements reduce efficiency of equipment by plugging and clogging sprinklers, drip emitters, valves and spray nozzles.

They also cost time and money in repairs, replacement parts, downtime, wasted energy, and a loss of productivity.

Decreased efficiency is also a major problem as equipment gradually clogs up or wears out, lowering productivity until replacement occurs.

Eliminators are used for the removal of unwanted, heavier solids in all processes.

Are used:

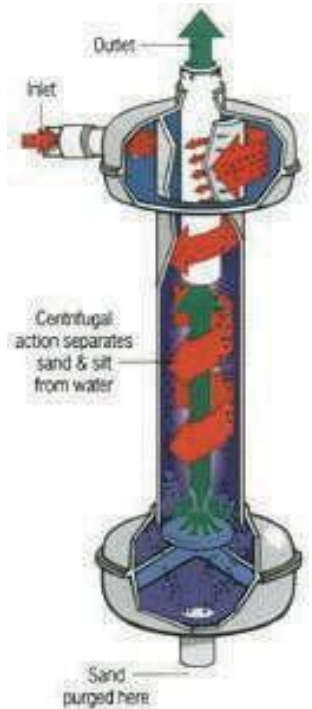
- As a pre-filter prior to finer filtration improves efficiency and minimizes liquid loss.
- For effective protection for heat exchangers against fouling.
- For removing solids that clog spray nozzles and other small orifices.
- For the removal of solids from liquids in your industrial process and allow reuse of the liquid. to prevent Solids Accumulation in Sumps and Basins
- To separate part of your process cooling system minimizes accumulation of solids that typically settle in sumps and basins.
- For Comfort Cooling Filtration



Operating principle

The Sand Eliminator (designed for easy installation) removes 98% of 200 mesh or larger sand, grit, and other solids heavier than the liquid, before entering expensive equipment. Liquid/solids enters the unit tangential, which creates a centrifugal flow a SHI top inlet construction accelerates the centrifugal flow.

The tangential inlet and the special construction in the top dome of the eliminator give an optimal centrifugal action, required to achieve efficient and continuous separation. Centrifugal force moves particles to the sides of the eliminator chamber the solids slowly drop along the sides to the quiet collection chamber. Centrifugal force separates sand, rust, scale, metal and other bothersome solids from liquid- and process streams. The cleaned liquid is drawn up through the vortex and leaves the eliminator by the top outlet. Solids are either periodically or continuously purged from the collection chamber. It can now be dispersed to equipment without causing clogging, plugging or wear. Solids are concentrated for easy and efficient removal, with limited liquid loss. Eliminators have constant and low-pressure loss; no moving or replaceable parts; no back flushing; easy installation and no maintenance.

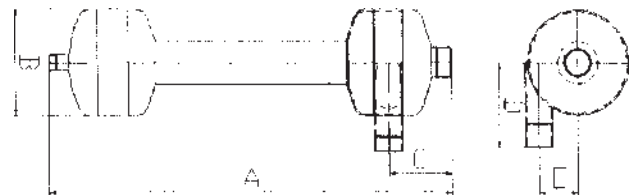
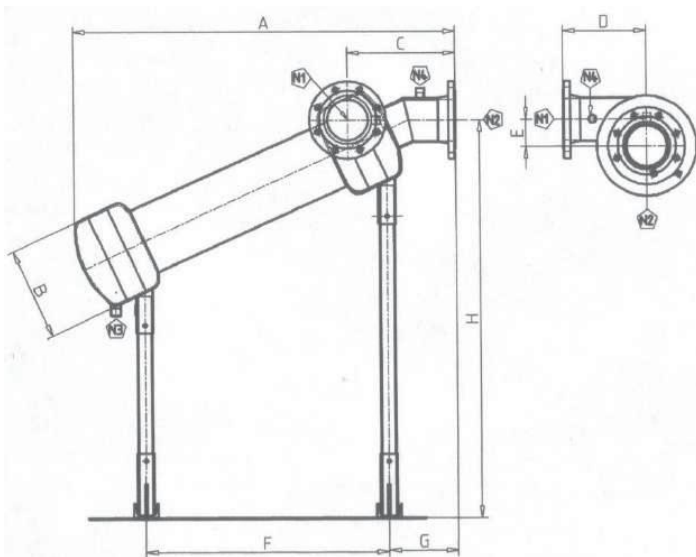


Applications

- Source water intake
- Washing operations
- Firefighting systems
- Coolant filtration
- De-sanding
- Pump protection
- Pre filtration
- Waste water upgrading

Benefits

- Low pressure drop
- No moving parts
- Continuous filtering
- No filter media
- Environmental friendly
- Easy installation
- Low maintenance costs
- High Efficiency
- Closed system
- Automatic purging possible



Installation

Installation of the In-Line eliminators is very simple. The eliminators can be placed both *in-line* and *side-line*. The large eliminators are in 25° placing to limit required installation height.



How Does It Work

- Liquid enters the unit tangential, which creates a centrifugal flow.
- A special top inlet construction accelerates the centrifugal flow
- Centrifugal force moves particles to the sides of the eliminator chamber
- Solids slowly drop along the sides to the quiet collection chamber
- Cleaned liquid is drawn up through the vortex and leaves the eliminator by the top outlet
- Solids are either periodically or continuously purged from the collection chamber

Centrifugal Action

- **LOW COST FILTER:** The eliminators offer low cost filtration in relation to volume m³/hr
- **NO SPARE PARTS:** There are no moving parts or parts that need replacing
- **EFFICIENCY:** In relation to specific gravity of solids often exceeds 40 µ filtration in circulation systems
- **ENGINEERING:** Eliminators can be installed in line or side stream in existing installations
- **MAINTENANCE ONLY:** Control of purge valve



Applications of Eliminators

REMOVAL OF UNWANTED SOLIDS OUT OF PROCESS STREAMS

SOURCE WATER INTAKE

Deep wells, surface water, lakes, rivers, seawater, fire protection systems in oil jetties / refineries injection water pre-filtration in oil production.

CIRCULATION PROCESSES

Before cooling towers; air-conditioning systems and heat exchangers, before oil water eliminators, before membrane filters – MF - UF – RO, before and after sand filters, before cartridge and bag filters protection of spray nozzles in all operations, protection of pumps.

COOLING TOWERS & HEATING & VENTILATION SYSTEMS WASHING & TRANSPORT WATER

In vegetable production, in sugar beets washing and transport, in potato processing, in mussels / clams and oyster production and processing, in industrial car - vehicle washing operations, bottle & crate washing machines.

GAS WASHERS, PUMP PROTECTION, ALCALIC, LYE AND OTHER DEGREASING BATH

In automotive industry, in production of all metal bodies needing submerge painting, industrial part washing machines.

COOLANT FILTRATION

In all grinding operations, motor parts, axles, shafts, compressors.

DEMINEARALISED WATER

Electric discharge machining.

WASTE WATERS

Removal of sand out of sewage systems / overflow basins.

FOOD PRODUCTION

Separation/filtration of hot frying oil.

STEEL MILLS

Quench & cooling water.

RAFFINERIES & OIL PRODUCTION

Firefighting systems, mantle cooling of cracking installations, pipe line strainers, removal of sand & grit after three phase eliminators and before hydro cyclones, protection of motor driven centrifuges.

SUGAR INDUSTRY

Wash and transport water, lime milk filtration.

POWER PLANTS

Removal of cokes particles, cooling water filtration, cooling sump cleaning.

AIR PORTS

Pre filter to coalescers or finest kerosene filtration.

AUTOMOTIVE INDUSTRY

Degreasing bath, coolant filtration in all grinding (motor parts) production.



Eliminators are solids removal devices that rely on centrifugal force and the specific gravity of solids for efficient operation. The tangential inlet and the special spinfex construction in the top dome of the eliminator guarantee the optimal centrifugal action, required to achieve efficient and continuous separation.

Eliminators are used for the removal of unwanted, heavier solids in all processes.

Centrifugal force separates sand, rust, scale, metal and other bothersome solids from liquid- and process streams. Solids are concentrated for easy and efficient removal, with limited water loss. Eliminators have constant and low- pressure loss; no moving or replaceable parts; no back flushing; easy installation and no maintenance. The eliminators are designed to operate within a range of 0.2 to 0.8 bar pressure drop across the unit.

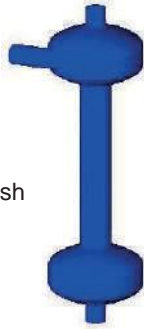
Automatic pinch valves (subject to change / selection)

Pinch Valves are commonly used for heavier and abrasive solid loads in industrial applications. Pinch valves are available in a variety of materials and membranes to suit most needs.

Our standard program offers pinch valves in the following selection:

Part	:	materials	
Body	:	aluminium	Connections : cast aluminium
Membranes	:	Natural rubber (anti abrasive & food grade), Neoprene; EPDM; Viton; Hypalon ; Nitril; Butyl; Eco	
Sizes	:	DN 20 - DN 25 - DN 32 - DN 40 - DN 50	
Max. pressure	:	operating at 6 bar, control pressure 8 bar	

SE-1-M Types:
Capacity 1 - 65 m³ / hr
In / out let From 3/8" to 3"
Connections BSP threads up to 2"
 > 2" Din flanges
Material Carbon steel
 Outside epoxy coated
Options Stainless steel 316 L, glass pearl finish
 Internal access & coating
 Removable dome
 Flanges
 Coded construction
 Integrated legs



SE-7-M Types:
Capacity 65 - 3000 m³ / hr
In / out let Din flanges (ANSI upon request)
 4" to 20" DIN Flanges



Carbon steel
 Outside epoxy coated
 Stainless steel 316 L, glass pearl finish
 90° Configuration (25° standard)
 1 or 2 Inspection openings
 Removable dome
 Coded construction
 Flanged purge connection
 Integrated legs

IO types:
Capacity 65 - 3000 m³ / hr
Connections 4" to 20" DIN Flanges
Material Carbon steel
 Outside epoxy coated
Standard 25° Configuration
 1 Inspection opening in bottom chamber
Options Stainless steel 316 L, glass pearl finish
 2nd Inspection opening in top chamber
 90° Configuration
 Coded construction
 Flanged purge connection



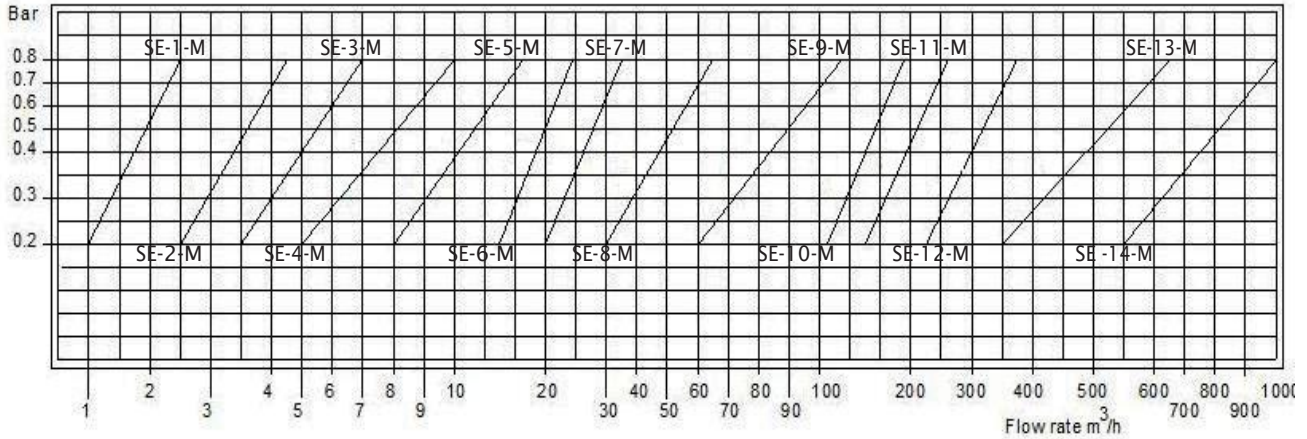
RD types:
Capacity 65 - 3000 m³ / hr
Connections 4" to 20" DIN Flanges
Material Carbon steel
 Outside epoxy coated
Standard 25° Configuration
 1 Inspection opening in bottom chamber
 Removable dome
 Stainless steel 316 L, glass pearl finish
 1 or 2 Inspection openings
 90° Configuration
 Coded construction
 Flanged purge connection
 Integrated legs



Separation efficiency - expected separation %						
Specific Gravity of solids	particle size of solids					
	70 μ		70 – 40 μ		< 40 μ	
kg/dm ³	single	circulation	single	circulation	single	circulation
7.8	98	98	90	94	65	84
4.2	93	98	75	92	51	72
2.4	92	97	70	91	38	65
1.9	75	93	27	55	8	31



PRESSURE DROP GRAPHIC



Type identification / material		Connections	Size	Purge	Capacity	Options	
Carbon steel	Stainless steel 316		INCH	INCH	M ³ /HR	Inspection opening IO – type	Removable dome RD – type
SE-1-M	SE-1-S	THREADED	3/8	3/8	0.6-1.0		
SE-2-M	SE-2-S		3/4	3/4	1-3		**
SE-3-M	SE-3-S		1	1	2-7		**
SE-4-M	SE-4-S		1 1/4	1	5-10		**
SE-5-M	SE-5-S		1 1/2	1	8-18		**
SE-6-M	SE-6-S		2	1	15-24		**
SE-7-M	SE-7-S	STANDARD FLANGE	2 1/2	1	20-35	*	**
SE-8-M	SE-8-S		3	1	30-60	*	**
SE-9-M	SE-9-S		4	1	60-125	*	**
SE-10-M	SE-10-S		5	1	110-190	*	**
SE-11-M	SE-11-S		6	1	155-260	*	**
SE-12-M	SE-12-S		8	2	225-375	*	**
SE-13-M	SE-13-S		10	2	350-650	*	**
SE-14-M	SE-14-S		12	2	550-1000	*	**

Other sizes up to 20-inch in-/outlet available – capacities up to 3000 m³

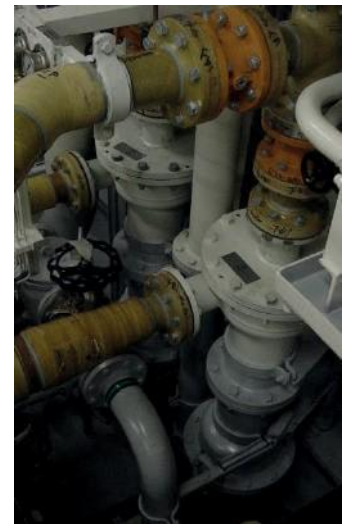
Dimensions in mm of vertical units

Carbon steel	Stainless steel 316	A	B	C	D	E	Volume/ltr.
SE-1-M	SE-1-S						
SE-2-M	SE-2-S	600	168	112	130	70	
SE-3-M	SE-3-S	690	168	112	130	67.5	
SE-4-M	SE-4-S	760	219	125	165	88	
SE-5-M	SE-5-S	760	219	130	170	85	
SE-6-M	SE-6-S	860	219	135	175	85	
SE-7-M	SE-7-S	880	219	155	195	77.5	
SE-8-M	SE-8-S	1040	244.5	168	215	70	
SE-9-M	SE-9-S	1110	300	200	260	100	
SE-10-M	SE-10-S	1270	300	225	270	87	
SE-11-M	SE-11-S	1640	450	225	345	150	
SE-12-M	SE-12-S	2220	508	355	435	175	
SE-13-M	SE-13-S	2770	650	470	545	200	
SE-14-M	SE-14-S	4470	780	660	610	240	

Various alloys and material selections available; Certified construction according to ASE, TUV, Stoomwezen, Lloyd available

Case: Boskalis dredging application

In cooperation with Merwede Shipyards, Ec&eLT engineered and supplied a number of gravity centrifugal eliminators to Koninklijke Boskalis Westminster N.V., sizes SE-8-M to the SE-14-M in an application to separate dredging slurry on their dredging ships. The inside of the eliminator is specially coated to resist the abrasive slurry.



If you would like more information about this product or application, please contact us!

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