

Water Treatment & Chemical Pro- cessing

Collectors



SCREEN SERVICES

Specialty screens and equipment for
industrial, petrochemical, mining, and
water treatment applications

Collector/Distributors fabricated with wedge wire are superior screens for retaining media in vessels of all types, i.e. ion exchangers, carbon towers, clay filters, sand filters, and numerous other liquid-solid retention applications.

In comparison with wire mesh and perforated metal, Wedge wire continuous slot screens have more open area, have very precise openings, are stronger and more durable, are virtually non-clogging and reduce media abrasion. Wire mesh and perforated pipe may be less expensive initially, but wedge wire screens offer easier installation and long-term operating and cost benefits.

Wedge wire screens have maximum design flexibility, can be constructed in a wide variety of shapes and sizes from a variety of corrosion resistant alloys such as type 304, 316, 316L, 321, and 410S stainless steels, as well as nickel alloys such as C-276. Any process or vessel requirements can be accommodated, such as vertical or horizontal vessels.

Wedge Wire Screens are All-Welded for Strength

Each intersection of rod and wire in a profile wire screen is welded. The strength achieved by this method offers several vital benefits:

- ▽ Reduced costs, since profile wire screens have a

- ▽ Greater resistance to stresses of differential pressure and temperature cycling.

Wedge wire has Precise Slot Sizes

Precise slot sizes are available to meet system requirements. Screens can be fabricated with slot openings from 0.025mm to 12.5mm in 0.025mm increments to dependably retain catalysts, resins, or filter sands of even very small size particles.

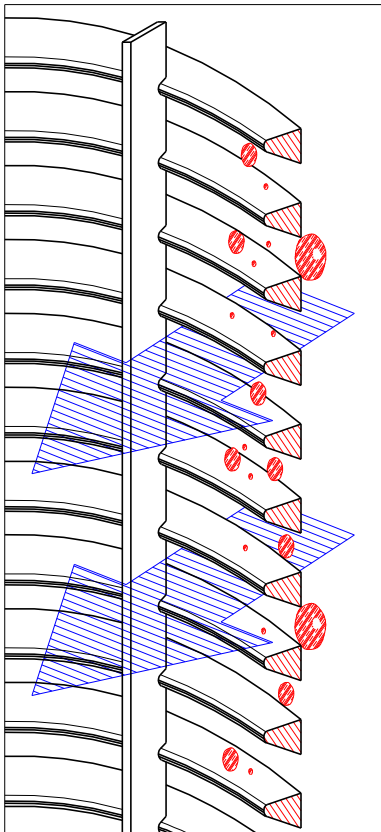
Wedge wire has Low Head Loss

The high open area of Wedge wire screen contributes to low head losses through the screen surface.

Wedge wire is Non-Clogging

Profile wire screens are fabricated by helically wrapping parallel support rods with a continuous V-shaped wire. The un-interrupted slot formed with this procedure allows only two-point contact of particles in the screen slot to minimise clogging. This means:

- ▽ Maximum effective flow area and operating efficiency is maintained.
- ▽ Costly downtime for cleaning plugged screens is minimised.



Slots widen inwardly to minimise clogging
very long life.

Wedge wire is Economical

Economy is achieved through the simple design, which results in a screen with low initial cost, minimum maintenance needs and simplified installation.

Reduced Installation Costs:

- ▽ Costly support media can be eliminated.
- ▽ Components are easily assembled.

Reduced Operating Costs:

- ▽ Non-clogging slot design results in low head loss for lower operating cost.
- ▽ Non-clogging slot design results in reduction of downtime caused by plugged screens.
- ▽ High strength and durability reduces chance of screen failure and loss of media.

Reduced Maintenance Costs:

- ▽ Due to the smooth surface and rigid construction, abrasion of media particles is eliminated, increasing the effective life of expensive media, resulting in longer intervals between cleaning cycles.
- ▽ Screens constructed with wedge wire have significantly greater durability than perforated metal and wire mesh, and usually last the entire life of the vessel.

Header Laterals

The header lateral design is used for horizontal vessels, larger diameter vertical vessels, and rectangular underdrains. This design provides the best distribution and makes the most effective use of media. Laterals should be spaced at less than 305mm centre-to-centre.



Hub Laterals

In small diameter vertical vessels the hub lateral design may be utilised for economy.



Distribution Underdrain Screens

Screen Services' wedge wire are a superior alternative to wire mesh on perforated pipe or other support structures. Wedge wire screens have distinct advantages.



- ▽ The unitised construction reduces cost. The collector (wedge wire screen surface) is combined with the internal distributor in a single integral unit.
- ▽ High open area increases efficiency.
- ▽ All-welded construction provides exceptional mechanical strength.
- ▽ Wedge wire design inherently minimises blinding and plugging. Since the screens stay cleaner, there is less pressure drop through the screen surface.
- ▽ A stable interface between the smooth, rigid screen surface and the treatment media reduces abrasion and breakdown of the media.

In earlier times gravity filter beds used perforated pipe or filter block underdrains. These required several layers of support gravel beneath the filter sand. These layers of support gravel reduced the volume available for filtering, and all too often backwashing

caused filter bed upset, mixing sand and gravel. This resulted in loss of sand through the outlet pipe, and loss of efficiency.

No Filter Bed Upset

Today, Screen Services' Distribution underdrain systems solve all these problems. The small slot size means no support media is required, and blinding and plugging are virtually eliminated by the special slot design. There is no possibility of bed upset, and the volume available for filtering is increased. Since the slot is continuous, the open area is large, and efficiency is increased.

Air Scour Versatility

Modern filter systems often use air scour in conjunction with water backwashing. distribution laterals are also effective and convenient for evenly distributing air throughout the filter bed.

Optimised Distribution

Distribution screens are constructed with the distribution hole pattern customised to the flow conditions of each individual application. This provides even flow distribution throughout the entire lateral array.

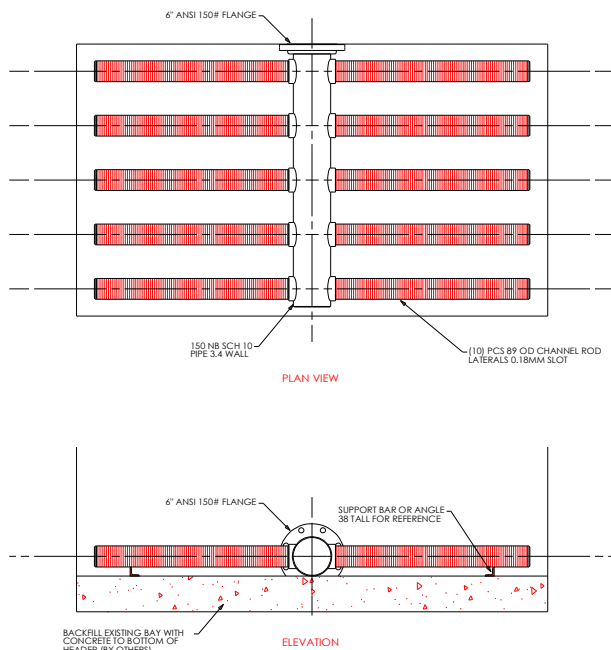
Pipe-base Laterals

For collection and distribution applications where additional strength is required, standard screens with heavy internal drilled pipes may be utilised. Internal support bars can also be added where extra beam strength is required.



Standard Screen Laterals

In collection-only systems where no backwash distribution is required, standard wedge wire screen laterals are very effective, and economical.



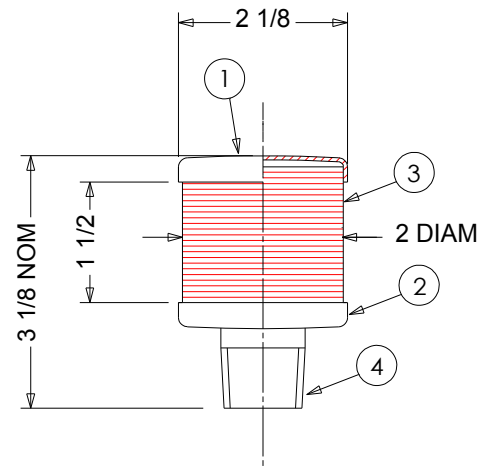
Screen Nozzles

Standard nozzles are used effectively in a variety of water treatment systems. They are economical, easily installed, and have several distinct design advantages:

- ▽ Excellent corrosion resistant type 316L stainless steel construction.
- ▽ Continuous slot design provides increased open area for better collection.
- ▽ Standard slot opening is 0.007" (0.18 mm), suitable for 40 to 50 mesh size media. Other slot sizes are also available.
- ▽ Wedge wire screen is highly resistant to plugging.
- ▽ Choice of either 3/4" NPT or 1" NPT fittings are available from stock. Other styles, such as tee-bolt mountings, and drop tubes are readily available.
- ▽ Less expensive than other screen of equal efficiency.



Nozzle Specifications			
Type		75N	100N
Fitting	Size	3/4" PS	1" PS
	Type	NPT	NPT
Screen Diameter		2"	2"
Screen Length		1 1/2"	1 1/2"
Overall Length		3 1/8"	3 1/8"
Spacing	Optimum	6"	6"
	Maximum	12"	12"
Nozzle Performance Data			
Maximum collection flow per nozzle (USgpm)		4	4
ΔP (psi at maximum collection flow)		< 1/4	< 1/4
Minimum backwash flow per nozzle (USgpm)		6 1/2	11 1/2
ΔP (psi at minimum backwash flow)		1 1/4	2 3/4
Collapse pressure (psi)		300	300
Burst pressure (psi)		200	200



Small underdrain collection systems may be built modularly from off-the-shelf components requiring minimal customization.

StaticCatch™ Resin Traps / In-line Strainers

In many systems, a failure can allow media to escape from the treatment vessel. Not only is the lost media expensive, damage to downstream pumping equipment can add to the expense.

Resin Traps using wedge wire screen placed in-line provide effective protection against media losses.

The screen element is easily removed for servicing or cleanout after a vessel upset; the access flange can be standard ANSI bolt-up or Victaulic® type, as preferred.

The screen is sealed at its open end by means of a floating seal ring, which is sandwiched between the mounting flanges during assembly into the pipeline. This ring is machined to a close tolerance to match the screen end ring, and so overcomes any alignment or centering problems inherent in many other types of filter.



Screen Services' Full Bore Inline Split Body Resin Trap is available in 50mm, 75mm and 100mm pipe sizes in 304ss and 316ss

Screen slot openings are typically 0.25mm (0.010") using #60 wire, providing over 14 percent free screen area. For heavier applications, (i.e. extreme line pressure) #69 Wedge wire can be used, which will provide 12.5 percent open area with 0.025mm slot openings.

Typical materials of construction would be type 304 or 316 stainless steel for the screen element, as well as the housing and connection flanges. For non-corrosive applications the housing and flanges could be carbon steel with epoxy coated interior. For very severe conditions, we suggest that high nickel alloy such as Hastelloy be considered throughout.



Custom dual-outlet trap with groove-lock closure

Reference Specifications

Slot Opening Equivalents									
INCHES	MM	MICRONS	STANDARD SIEVE	TYLER MESH	INCHES	MM	MICRONS	STANDARD SIEVE	TYLER MESH
.001	.025	25	—	—	.033	.850	850	20	20
.0015	.037	37	400	400	.039	1.00	1000	18	16
.002	.050	50	270	270	.047	1.18	1180	16	14
.003	.075	75	200	200	.049	1.25	1250	—	—
.004	.100	100	140	150	.056	1.41	1410	14	12
.005	.125	125	120	115	.059	1.50	1500	—	—
.006	.150	150	100	100	.066	1.68	1680	12	10
.007	.180	180	80	80	.069	1.75	1750	—	—
.008	.212	212	70	65	.079	2.00	2000	10	9
.010	.250	250	60	60	.089	2.25	2250	—	—
.012	.300	300	50	48	.094	2.38	2380	8	8
.014	.355	355	45	42	.098	2.50	2500	—	—
.017	.425	425	40	—	.108	2.75	2750	—	—
.020	.500	500	35	32	.111	2.80	2800	7	7
.023	.600	600	30	28	.118	3.00	3000	—	—
.028	.710	710	25	24	.132	3.35	3350	6	6
.030	.750	750	—	—	.157	4.00	4000	5	—

Wedge Wire Sharp Series					
Wedge Wire No.	Wire Width		Wire Height		Relief Angle
	In.	MM	In.	MM	
30	.030	.76	.051	1.30	13°
45	.045	1.15	.060	1.52	13°
60	.060	1.52	.100	2.54	13°
90	.090	2.29	.140	3.56	13°
120	.120	3.05	.185	4.70	13°
148	.148	3.76	.203	5.16	13°
158	.158	4.01	.232	5.89	13°
Wedge Wire Wear Series					
Wedge Wire No.	Wire Width		Wire Height		Relief Angle
	In.	MM	In.	MM	
69	.069	1.75	.185	4.70	6°
130	.130	3.30	.250	6.35	8°
195	.195	4.95	.363	9.22	5°