

Water Treatment & Chemical Processing

Screen Grids



SCREEN SERVICES

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

Grids fabricated using wedge wire are superior screens for retaining media in vessels of all types, i.e. molecular sieves, de-sulfurizers, sand filters, and hydro-treaters.

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 grating may be less expensive initially, but wedge wire screens offer easier installation and long-term operating and cost benefits.

Wedge wire grids 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, chordal or pie-shaped screen segments, with or without manway or other ports in the screens.

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 very long life.
- ▽ 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. Grids can be fabricated with slot openings from 0.025mm to 12.5mm in 0.025mm increments to dependably retain catalysts, resins, or molecular sieves of even very small size particles.

Wedge Wire has Low Head Loss

The head loss through a grid fabricated with Johnson Vee-Wire screen is much less than media losses.

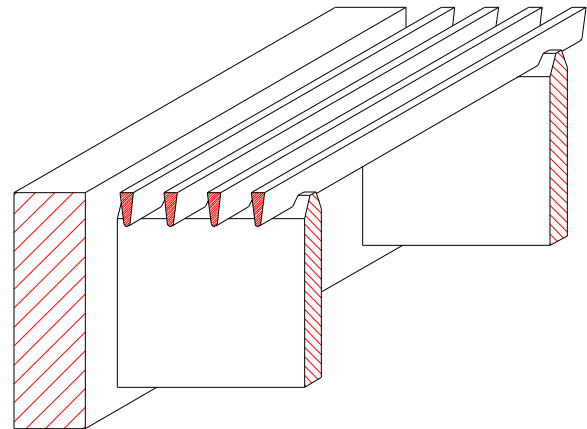
Wedge Wire is Non-Clogging

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.

Wedge Wire is Economical

Economy is achieved through the simple design, which results in a screen with low initial cost, mini-



mum maintenance needs and simplified installation.

Reduced Installation Costs:

- ▽ Grids can be constructed for high load capacities, reducing support beam requirements.
- ▽ Costly support media can be eliminated.
- ▽ Easily-joined sections fit through access ways.

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 fewer cleaning cycles.
- ▽ Grids constructed with wedge wire have significantly greater durability than wire mesh, and usually last the entire life of the vessel.

Support Grids

Support grids are recommended for new vessel construction. No extra support is required beyond the perimeter ledge and beams. Screen Services can design and build grids to support loads of 2050 kilopascals (300 psi).

Common screen hold-downs are L-bolts or Jack bolts.

If the grating remains serviceable, replacing the wire mesh with Vee-Wire is faster, more economical, and provides superior performance.

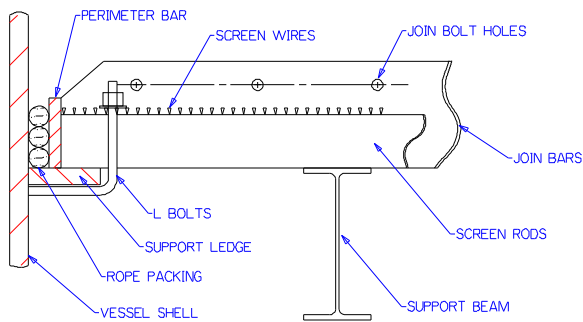
Common screen hold-downs are J-bolts and L-bolts.

Hold-Down Screens

Hold-down screens are used to separate media beds from inert balls, or to help maintain a level media top surface. These screens are of light construction and normally float on the media so do not require support or hold-downs, or perimeter sealing.

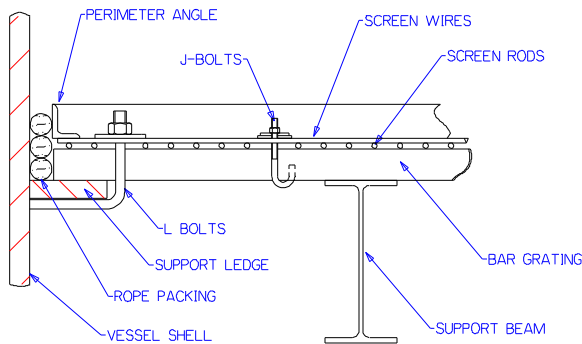
Extras

Included with Screen Services grids are all items necessary for installation, hold-down and join fasteners, and ceramic or graphite rope packing.



Overlay Screens

In many fixed bed systems, a common design practice calls for multiple layers of wire mesh on top of

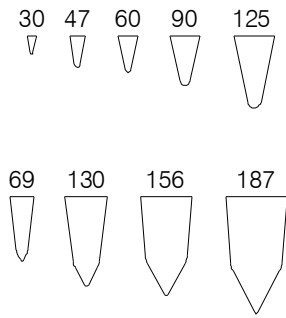


bar grating. The wire mesh must be frequently repaired or replaced, and causes media abrasion.

Specifications

Slot Opening Equivalents

| INCHES | MM | MICRONS | STANDARD SIEVE | TYLER MESH | INCHES | MM | MICRONS | STANDARD SIEVE | TYLER MESH |
|--------|------|---------|----------------|------------|--------|------|---------|----------------|------------|
| .001 | — | 25 | — | — | .033 | .850 | 850 | 20 | 20 |
| .0015 | — | 37 | 400 | 400 | .039 | 1.00 | 1000 | 18 | 16 |
| .002 | — | 50 | 270 | 270 | .047 | 1.18 | 1180 | 16 | 14 |
| .003 | — | 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 | — |



Wires shown approximately 2 times actual size.

| Wedge Wire Sharp Series | | | | | |
|--------------------------------|------------|------|-------------|------|--------------|
| Wedge Wire No. | Wire Width | | Wire Height | | Relief Angle |
| | In. | MM | In. | MM | |
| 30 | .030 | .76 | .080 | 2.03 | 10° |
| 47 | .047 | 1.19 | .098 | 2.49 | 10° |
| 60 | .060 | 1.52 | .100 | 2.54 | 13° |
| 90 | .090 | 2.29 | .150 | 3.81 | 13° |
| 125 | .125 | 3.18 | .200 | 5.08 | 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° |
| 156 | .156 | 3.96 | .275 | 6.99 | 5° |
| 187 | .187 | 4.75 | .325 | 8.26 | 5° |

Designing a Support Grid

From: _____
Company: _____
Phone: _____
Fax: _____

| | | | | | |
|--------------------|----------------------|----------------------|------------------------|---|----------------------|
| Vessel Number | <input type="text"/> | Down Flow or Up Flow | <input type="text"/> | | |
| Internal Materials | <input type="text"/> | Design Temperature | <input type="text"/> | | |
| Design Conditions | <input type="text"/> | + | <input type="text"/> | = | <input type="text"/> |
| | Total Bed Wt. | | Δ P Through Bed | | Total Design Load |

