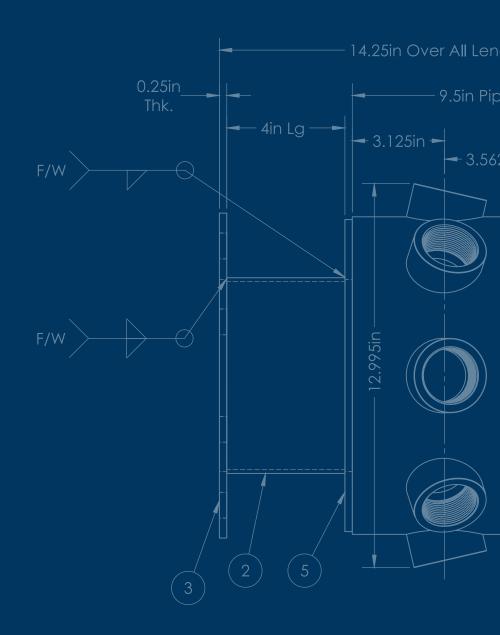




### INDUSTRY LEADERS IN CUSTOM WEDGE WIRE FABRICATION AND ENGINEERING

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## ABOUT FEDERAL SCREEN THE COMPANY

# FEDERAL SCREEN PRODUCTS IS A CUSTOM MANUFACTURER AND FABRICATOR OF WEDGE WIRE SCREEN THAT BELIEVES IN STRICT QUALITY ASSURANCE PRACTICES

With exact precision, Federal Screen literally measures its success on meeting rigid customer design expectations. Quality control is everyone's responsibility and is tested at numerous points during the product's manufacturing cycle to ensure customer satisfaction.

### **OUR COMPANY**

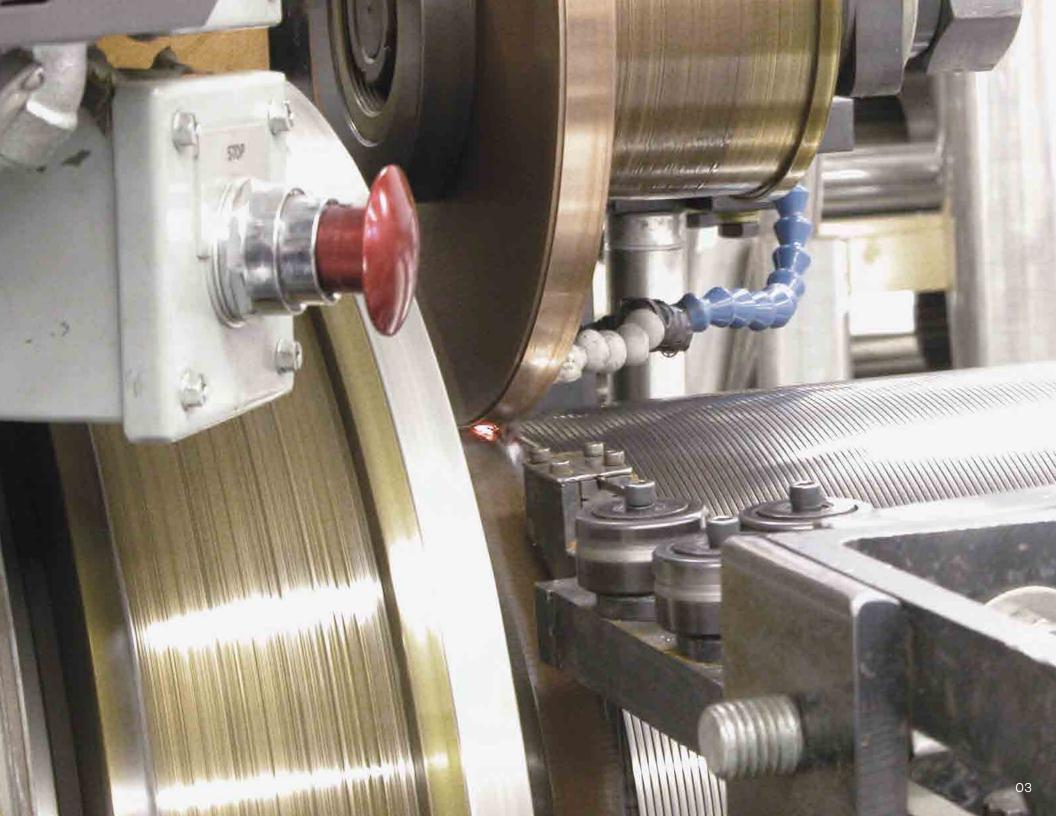
We have a solid quality management system and build strong customer relationships. Our operations are highly adaptable and remain reliable in times of change. We're early adopters of advanced strategies and technologies. We always strive to deliver the highest-quality products and customer service.

### **OUR EMPLOYEES**

Although we're proud of our products, services and technology, nothing matches the pride we have in our staff. By hiring only the most qualified individuals to serve on our team, Federal Screen ensures that staff are committed to our strict pledge, putting quality and satisfaction above all else.

### **PARTNERSHIPS AND SUPPLIERS**

We partner with the most professional international companies in order to guarantee we are provided with the most reliable resources on a timely basis. With this extensive group of global suppliers, we can ensure that we are able to work with our customers' specific material needs in a timely manner.





## ABOUT FEDERAL SCREEN WHAT SETS US APART

# WITH OVER 20 YEARS OF EXPERIENCE IN THE INDUSTRY, WE ARE FAMILIAR WITH ALL SPECIFIC CERTIFICATION STANDARDS AND THE MOST UP-TO-DATE TESTING PROTOCOLS

### **OUR EXPERTISE**

Our sales, engineering and production teams have the experience to manufacture your screen to the highest degree of excellence. All of our Wedge Wire Screen production machines are designed and built in-house to produce products that exceed industry standards.

### **FASTER TURNOVER TIMES**

We understand that reducing lead time is a critical factor when it comes to keeping costs low, from the quoting phase down to crating and shipping.

#### **OUR WORLDWIDE SERVICE**

Federal Screen Products offers services worldwide. We take on projects from anywhere in the world, and we'll arrange to have your product delivered.

### **OUR TECHNICIANS**

We have over 40 experienced technicians who are trained to meet ever-increasing standards and skill levels. We provide opportunities and advancement within our organization.

### **OUR CONSULTING SERVICES**

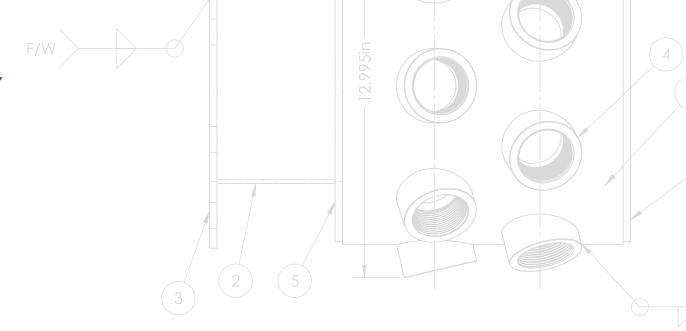
We provide consulting services for clients who are looking at improving, upgrading, retrofitting or altering their current filtration systems by taking advantage of Wedge Wire Screen.

We work alongside our clients and provide engineering services to ensure we offer the very best possible options for the project at hand.

### **SOCIAL RESPONSIBILITY**

The progression towards positive social, economic and environmental development is a matter that Federal Screen takes extremely seriously. We also pride ourselves on our contributions to the beneficial development of our employees and have achieved an above-industry standard in this matter.

## ABOUT FEDERAL SCREEN QUALITY POLICY



# ALL FABRICATED UNITS ARE INSPECTED TO ENSURE THAT EVERY PRODUCT PERFORMS TO DESIGN SPECIFICATIONS BEFORE LEAVING OUR FACILITY

Our ongoing efforts to strengthen Federal Screen's quality management system have enabled us to deliver high-value products and services.

# QUALITY CONTROL POLICIES ARE IN PLACE THROUGHOUT OUR MANUFACTURING PROCESS

Each and every product manufactured is inspected by our professionals in quality control at various steps in the production cycle. Inspection procedures and reports are constantly updated and improved to align with market expectations.

### ACTIVE VISION MEASURING/ SCREEN MEASURING SYSTEM

This is used mainly for testing Wedge Wireslot accuracy and CNC machined parts. Our high-definition measuring system offers high-quality zoom optics with interchangeable lenses; powerful, high-resolution, QVPAK 3-D-vision software; contact and non-contact measurement; and touch-probe, programmable LED stage and coaxial and four-quadrant ring lights.

### **PMI TESTING**

With Positive Material Identification (PMI), the alloy composition is analyzed and the identity of materials is determined.

If a material certificate is missing or you need to be certain about the type of material used, PMI as an NDT method is the best solution. PMI is used particularly for high-quality metals, like stainless steel, and other high-alloy metals.



# FEDERAL SCREEN'S PERSONNEL ABIDE BY BEST PRACTICES AND PROCEDURES

- Understanding current market expectations through communication with the customer
- Rapid alignment of our quality management system to best support industry needs and expectations
- Adopting and perfecting technological and strategic best practices
- Encouraging open communication between all personnel regarding products and operational efficiency
- Developing and engaging all employees for optimal performance

## CAPABILITIES

# WE CONSTANTLY AUTOMATE AND EXPAND OUR MANUFACTURING CAPABILITIES TO OFFER THE HIGHEST-QUALITY, EXPEDITED SERVICES

Keeping all work in-house allows us to offer accuracy and consistency. Federal Screen has the unique capability to build on our manufacturing processes, reviewing and adjusting key parts and focusing on the value inherent in our workflow.

#### **ENGINEERING**

The service we deliver is just as important as the products we manufacture. Our engineering team is able to expertly accommodate our customers' technical parameters to meet their exact needs. Over the years, we have built an efficient process of moving work through our office, getting the job to our engineering team as quickly as possible.

### **PRODUCT CUSTOMIZATION**

Customization starts in the first phase of production with our custom-built screen machines that have been designed to be dialed in to suit each customer's requirements. Once the screen is ready for fabrication, our knowledgeable and experienced technicians take over and complete the job on time and to the job's specifications.

#### **PACKAGING**

We take pride in our workmanship and take special care when it comes to making sure our product reaches our customers safe and sound. We ensure all items are clearly labelled and secured in custom-designed crates to prevent movement during transport.

### **DOCUMENTATION**

Some commonly requested documents that Federal Screen is happy to provide are welding procedure specifications, procedure qualification records (PQR), material test reports, traceability inspection reports, general arrangement drawings, and design and technical information, including calculations.

#### **WATER JET**

Our machine is capable of cutting a maximum 7" thick stainless steel plate and can accommodate a 6' by 12' sheet, all while cutting at 60,000 psi.

### **ADDITIONAL CAPABILITIES**

- Finished product will be pickled and passivated
- WPS and PQRs are available on request
- Rolling of material and screen
- Levelling, notching, bending, shearing, polishing and grinding



### **ABOUT WEDGE WIRE**

### TECHNICAL INFORMATION

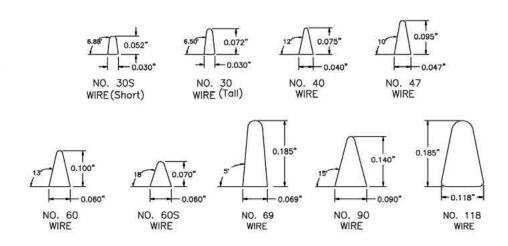
### PINPOINT CONTROL FOR HIGHLY ACCURATE FLOW DISTRIBUTION AND EFFECTIVE FILTRATION

Wedge Wire Screens are manufactured by resistance welding V-shaped wire onto support rods. Our Wedge Wire Screen begins with the highest-quality raw wire, which is then made into screen that is cut, shaped, fabricated into components and polished.

### **COMMON SUPPORT-WIRE SIZES**

#### RO.023" -0.050 -0.059" Natural-Ø0.177 R0.005 R0.008\* -0.039" 0.250" 0.197" 0.118" R0.010" R0.008 -0.118"-R0.023" -0.128"-NO. 177 Q 25 WIRE Q 35 NO. 130 WIRE WIRE WIRE 1.500" 1.250" R0.010" 1.000" 0.120 0.090" -0.030 30 FB 0.063" 0.063" --0.063" WIRE 16 Ga. x 1.25" 16 Ga. x 1.0" 16 Ga. x 1.5" FB WIRE

### **COMMON WRAP-WIRE SIZES**



### WEDGE WIRE SCREEN DIAMETERS

Screen diameters range from 0.750" to 38" and up in fabricated sections. Your specific tolerance and size requirements will be adhered to and will meet the required industry standards.

### **WEDGE WIRE PROFILES**



**EXTERNAL AXIAL** 



**STANDARD WOUND** 



**REVERSE FORMED** 



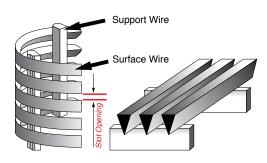
**REVERSE AXIAL** 

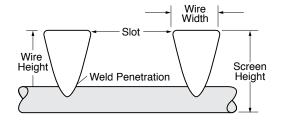


**INVERTED WRAP** 

### **CONSTRUCTION PROFILES**

We offer numerous combinations of profile wires and support rods. Wedge Wire Screen is created by wrapping a profile wire cylindrically around longitudinally placed support rods. The wide range of apertures between the wires and rods allows us to design a screen according to our customers' technical or structural specifications.



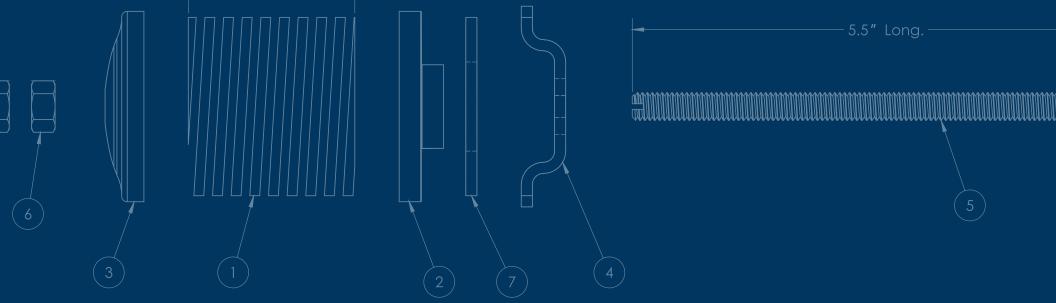


#### **WEDGE WIRE SLOT SIZES**

			ĺ
U.S. Mesh	Inches	Microns	Millimetres
3	.265	6730	6.73
3.5	.223	5660	5.66
4	.187	4760	4.76
5	.157	4000	4.00
6	.132	3360	3.36
7	.111	2830	2.83
8	.0937	2380	2.38
10	.0787	2000	2.00
12	.0661	1680	1.68
14	.0555	1410	1.41
16	.0469	1190	1.19
18	.0394	1000	1.00
20	.0331	841	.84
25	.0280	707	.71
30	.0232	595	.59
35	.0197	500	.50
40	.0165	420	.420
45	.0138	354	.354
50	.0117	297	.297
60	.0098	250	.250
70	.0083	210	.210
80	.0070	117	.177
100	.0059	149	.149
120	.0049	125	.125
140	.0041	105	.105
170	.0035	88	.088
200	.0029	74	.074
230	.0024	63	.063
270	.0021	53	.053
325	.0017	44	.044
400	.0015	37	.034







# SUPPLYING ALL MAJOR INDUSTRIES AND EQUIPMENT MANUFACTURERS FOR OVER TWO DECADES

### ALL OUR PRODUCTS ARE AVAILABLE IN THE FOLLOWING MATERIALS AND SPECIFICATIONS:

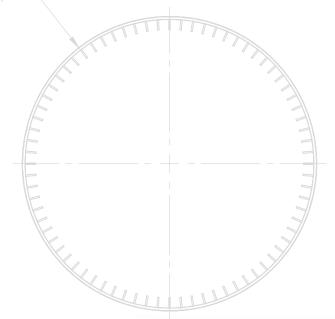
ĺ	MATERIALS:	WIRE PROFILES:	SLOT-SIZE RANGE:		
	304 / 304L	30	0.001"-0.625"		
	316 / 316L	40			
	321 / 321H	47			
	347 / 347H	60			
	410 / 410S	69			
	430	90			
	ALLOY 20	118			
	COPPER NICKEL	130			
	DUPLEX 2205	177			
	HASTELLOY <sup>®</sup> B3	Q25			
	HASTELLOY <sup>®</sup> C-276	Q35			
	MONEL 400				
	SUPER DUPLEX 2507				
	TITANIUM				

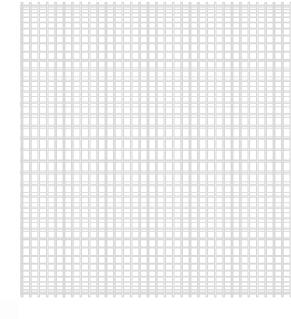
#### **BENEFITS OF WEDGE WIRE**

- Extended product life and increased efficiency
- Consistent slot size
- Capable of withstanding higher pressures than mesh or perforated plate
- Higher percentage of open area as compared to other materials
- Inherently clog resistant
- Ideal for self-cleaning applications in filters and strainers
- Very low pressure loss
- Durable in extreme conditions
- Low maintenance cost due to long lifespan
- Available in most high-nickel alloys for use in highly corrosive environments

 $\oslash$  24.5in OD Screer

### PLAIN SCREEN















### CONTINUOUS-SLOT DESIGN PROVIDES INCREASED OPEN AREA FOR BETTER FLOW

Wedge Wire Screen is designed to control various processing conditions, including volumetric flow rate, dimensional media retention, open area and fluid pressure capabilities.

### **V-SHAPED WIRE**

Wedge Wire Screens are manufactured by resistance welding the highest-quality, raw, V-shaped wire onto support rods. The screen is then cut, shaped, fabricated and polished. The continuous slot formed by the V-shaped surface wire ensures a two-point contact between particles and the slot, which minimizes clogging.

- Very low pressure loss
- Extended product life and increased durability
- Stronger and more durable
- Wide range of profile wires available to suit most applications
- Suited for applications that require support for heavy media
- High-precision slot sizes are available to meet your requirements
- For surface filtration, the V-shaped surface wires allow for easy cleaning by mechanical scraping or backflushing

### MEDIA RETENTION NOZZLES

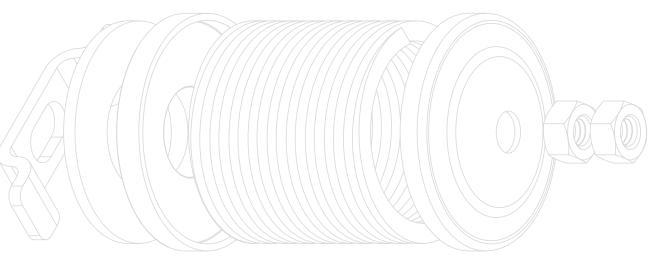
#### TYPES:

Standard

Economy

Toggle Bolt

Custom



### MANUFACTURED IN A VARIETY OF DESIGNS AND OFFERING COMPATIBILITY, DEPENDABILITY, PERFORMANCE AND LONG SERVICE LIFE

Nozzles are fabricated according to our customers' specific requirements. Typical nozzles can be threaded with a straight thread or a pipe thread, as required. Toggle bolt systems are also available. Manufactured to suit orifice plate designs, nozzles are not restricted by screen diameter, connection type, slot or length.

- Extremely strong
- More durable than other materials
- High percentage of open area
- Inherently clog resistant
- Various slot sizes available
- Minimal pressure drop
- Easily installed in false-bottom applications
- Long lifespan



### STANDARD NOZZLES

Structurally strong and fully welded, they're available in male- or female-threaded configurations. These nozzles are ideal media retention devices for use in false-bottom vessels.

### **ECONOMY NOZZLES**

Ideal media retention devices for use in false-bottom vessels, Wedge Wire Screen nozzles maximize open-area flow while maintaining a low profile. They're easy to install and have a long service life.

### **TOGGLE BOLT ASSEMBLIES**

Designed for ease of installation where access below the tube sheet or false bottom is restricted, available in various sizes to match specific tube-sheet holes.

### **CUSTOM NOZZLES**

Available with various connection types, these custom Wedge Wire nozzles can be fabricated in any configuration to meet your requirements and adhere to customer-designed specifications.



### VESSEL INTERNALS

#### TYPES:

Intake Distributors
Air Scour Assemblies
Header Systems
Hub Assemblies
Custom Designs
Support Assemblies



Available in both header-lateral and hub-lateral assemblies, Federal Screen's Wedge Wire Screen laterals and pipe-based laterals can be connected to distributor headers and spider hubs by standard NPT thread, fabricated flanges and ANSI connections, as well as fully welded assemblies.

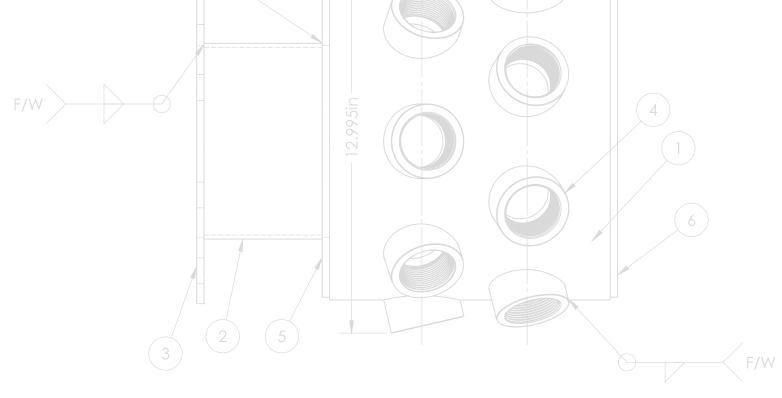
### AVAILABLE IN MULTIPLE CONFIGURATIONS

Wedge Wire Screen laterals and pipebased laterals can be connected to distributor and drain headers by fabricated custom bolt patterns, standard NPT thread, fabricated flanges, ANSI connections or welded as one assembly. Laterals are available in all standard pipe and tube diameters for both header-lateral and hub-lateral assemblies.

### FOR THE MOST DEMANDING APPLICATIONS

The combination of a unique internal support-rod structure and the flexibility in the materials available to be used in fabrication (stainless steel and many other alloys) makes Wedge Wire an easy choice when constructing an under-drain system.

- Continuous-slot design increases open area for better collection
- · Highly resistant to clogging
- Stronger and more durable than mesh screens
- Various fitting types and sizes available
- · Design flexibility
- High-precision slot sizes are available to meet your requirements
- Economical designs make them less expensive than other screens
- Resistant to extreme pressure and temperature variances as well as corrosion (depending on the material)











### **PIPE-BASED LATERALS**

Designed to evenly distribute flow over the entire screen area, pipe-based laterals are typically connected to distributors and under-drain headers by NPT or flanged fittings.

### **SCREEN-BASED LATERALS**

These laterals are typically connected to distributors and under-drain headers by NPT or flanged fittings.

### **HUB ASSEMBLIES**

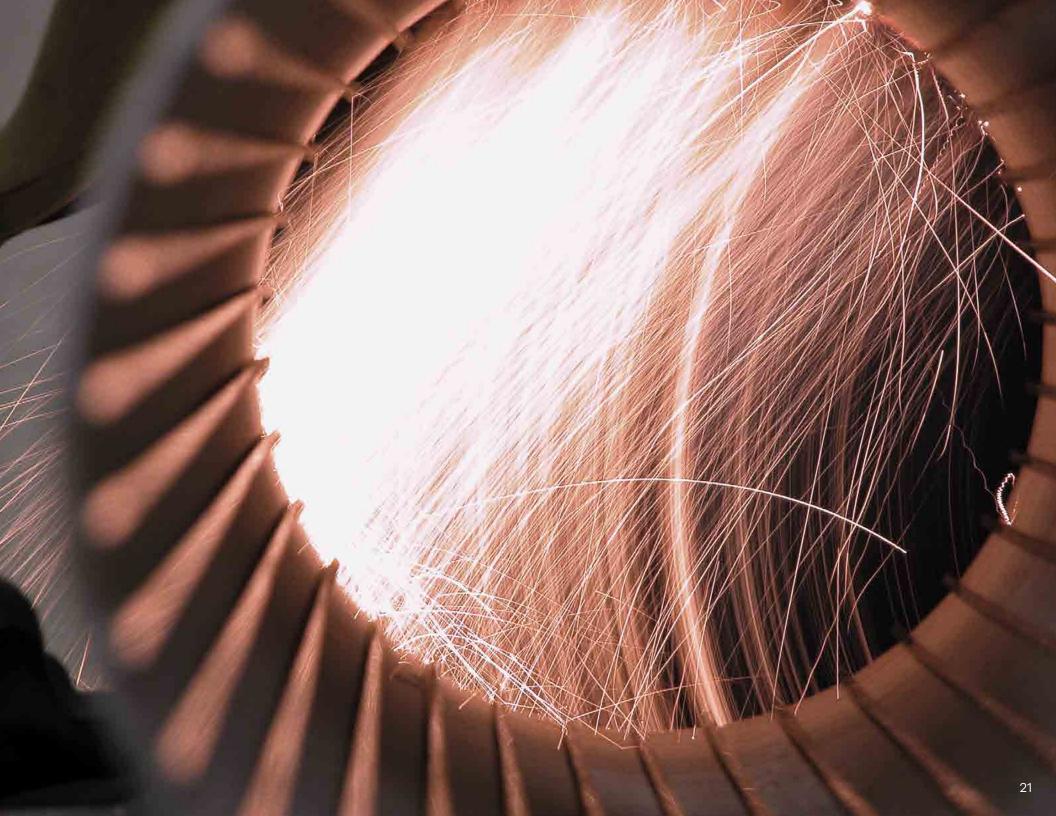
Each system is specifically designed for your application and serves both as a collector of down-flow service and a distributor of incoming backwash water.

### **HEADER SYSTEMS**

Various header systems are available to suit your specific vessel diameter, flow rate and media size. Federal Screen can fabricate a new system or replace an existing one. We can also help design your system to maximize optimal distribution throughout your media bed.







### STRAINER BASKETS

#### TYPES:

Y-Strainers
Self-cleaning Strainers
Automatic Backwashing Strainers
In-line Strainers
T-Strainers













Our unique strainer baskets, in combination with our specially selected Wedge Wire profiles, are fabricated for each specific application. Stringent manufacturing standards allow us to produce a top-quality product that is built to perform.

### **LONG LASTING**

The combination of high-quality materials, accurate slots and maximum open areas ensures optimum design for low-wear characteristics, resulting in longer service life.

### **MULTIPLE APPLICATIONS**

Our Wedge Wire baskets are a great option for applications where perforated baskets don't provide a sufficient open area and where mesh-weave baskets aren't suitable for the required pressure differential.

- Extended product life and increased efficiency
- Capable of withstanding higher pressures than mesh or perforated plate
- Higher percentage of open area compared to other materials
- Very low pressure loss
- Available in most high-nickel alloys for use in highly corrosive environments
- Ideal for self-cleaning applications in filters and strainers
- Inherently clog resistant
- Durable in extreme conditions
- Consistent slot size

### SUPPORT GRIDS

#### **TYPES:**

One-Piece Sectioned Self-supported Internal Supports

#### **OPTIONS:**

An additional support structure can be offered, depending on system requirements.







### **AVAILABLE IN ONE-PIECE OR SECTIONAL DESIGN**

Our support grids are available in a variety of framing options and designs, from one-piece construction to multiple sections. This allows for easy on-site assembly, retrofitting and transporting sections through existing manways. These self-supporting structures have exceptional resistance to collapsing and buckling, even in operations where screens must bear extremely high loads. Media support grids fabricated with Wedge Wire are a good choice when dealing with retaining media in vessels of all types.

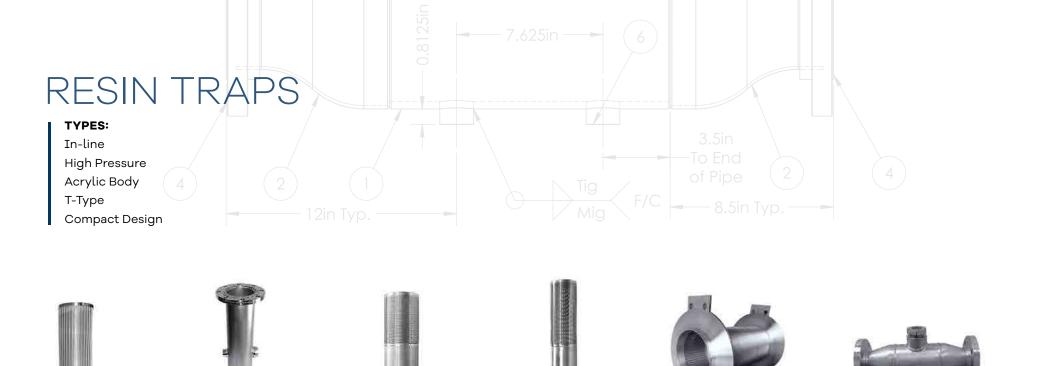
### **BETTER IN EVERY WAY**

Compared to wire mesh and perforated metal, Wedge Wire's continuous slots have more open area. Their consistent slots are more durable and virtually non-clogging to reduce media abrasion.

### **DESIGNED AND MANUFACTURED**

Our grids have great design flexibility and are constructed in a wide variety of shapes and sizes and from a variety of corrosion-resistant alloys. Specific processes and vessel requirements can be accommodated. For available corrosion-resistant materials, see material list.

- Continuous-slot design provides an increased open area
- The continuous slot formed by V-shaped surface wires ensures a two-point contact between the particles and the slot to minimize clogging
- Wide range of profile wires are available to suit most applications
- High-precision slot sizes are available to meet your requirements
- V-shaped surface wires allow for easy cleaning
- Very low pressure drop
- Additional supports are utilized to accommodate extreme load conditions
- Low maintenance



### PROVIDING SECURITY IN CASE OF CATASTROPHIC FAILURE OF YOUR MEDIA BEDS

Federal Screen offers custom styles to accommodate your existing spooling restrictions, flow rates, pressures and other needs. Acrylic and stainless steel housings are available.

### **EASY TO MAINTAIN**

Traps can be designed for easy element removal, if desired. Housings include ports for an optional pressure gauge and/or blowdown ball valve. Stainless steel housings include sight glasses.

### **EXTREME APPLICATIONS**

If your application is considered extreme, we will provide the engineering required to ensure that burst or collapse will not be an issue. Extra supports and non-typical wire combinations will be provided to ensure the best results.

- Continuous-slot design provides an increased open area
- Minimal pressure drop
- Strong and durable
- Sight glasses, pressure gauge and blowdown ports supplied
- Multiple custom housing designs to meet your specific requirements
- V-shaped surface wires allow for easy cleaning by backflushing
- Ensures against complete loss of media in the event of a catastrophic failure
- Great solution for protection of downstream equipment

### INTAKE SCREENS

TYPES:

T-Intake

Airburst Cleaning Systems

Drum

Shallow Water

River







**OPTIONS:** 







### AN ECONOMICAL AND RELIABLE SYSTEM FOR WILDLIFE PROTECTION AND DEBRIS REMOVAL FROM SURFACE WATER SUPPLIES

Intake screens are generally used to filter raw water extracted from surface supplies to eventually be used as cooling water, process water and other applications. Screens are 316(b) compliant with even flow over the entire surface.

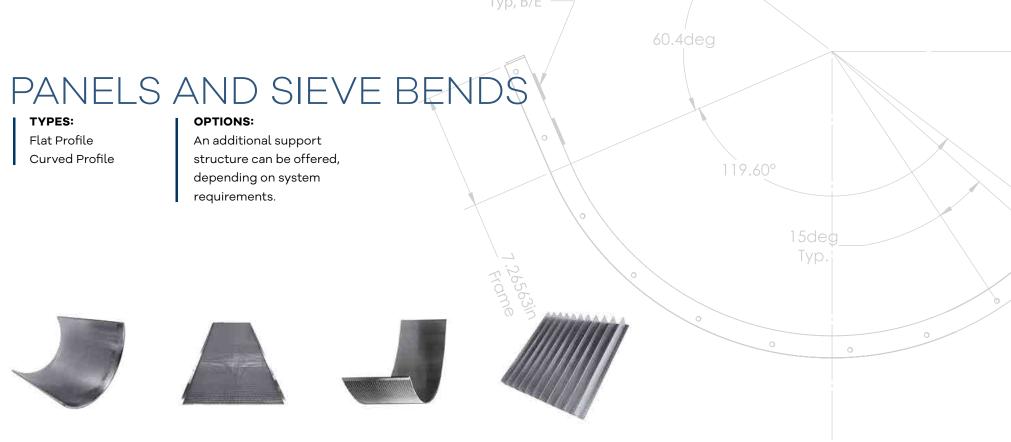
### **OPTIMUM PROTECTION FOR AQUATIC LIFE**

Our intake screens are designed to ensure a constant flow velocity to improve protection of wildlife while reducing costs. There are no moving parts that could break down or wear out, eliminating the need for replacement components and costly repairs.

### **AIRBURST SYSTEM**

Over time, as a result of biofouling, the outer screen surface may require periodic cleaning to keep the screen functioning properly. An airburst system can be included as part of the intake screen design, where clearing of accumulated debris from the screen surface is required.

- No moving parts
- Available in corrosion-resistant materials
- Reliable system for aquaculture protection
- V-shaped surface wires allow for easy cleaning
- Minimal pressure drop
- Flexibility of design for specific depths and locations
- Dependable water delivery
- Minimal clogging and maximum water flow
- Compliant with Section 316(b) of the Clean Water Act
- Airburst cleaning system available



### DEPENDABLE, STRONG AND EFFECTIVE

Federal Screen panels and sieve bends are ideal in many applications, such as starch processing and wet corn milling, and in mining industries.

### **SCREEN PANELS**

Federal Screen offers many combinations of wrap and support wires, as well as custom frame designs to suit various applications.

Wedge Wire Screen panels offer a higher percentage of open area and, therefore, a lower head loss, helping to increase efficiency, with a smaller footprint.

### **SIEVE BENDS**

With their simple yet effective design, sieve bends allow dewatering of product as it flows over the surface of the screen. The built-up waste migrates down the screen by gravity alone, or assisted by spray nozzles, and can then be easily collected in a bin for disposal.

Sieve bends are primarily used in dewatering applications, where flow rates are relatively low.

- Can be designed and custom made for a variety of applications in a wide range of industries
- Sieve bends provide greater capacity than flat wedge screens because of increased gravitational forces on material flowing against the curve
- Fabricated with strong and durable resistance welding
- Wide range of profile wires available
- For surface filtration, the V-shaped surface wires allow for easy cleaning by mechanical means
- Screen is inherently resistant to clogging by near-size particles
- Stainless steel construction ensures a long lifespan
- Screens can be replaced easily, reducing downtime

### WASTEWATER SCREENS









### **MBBR SYSTEM SCREENS**

MBBR technology employs thousands of polyethylene biofilm carriers operating in mixed motion within an aerated wastewater treatment basin. Each individual biocarrier increases productivity by providing protected surface areas to support the growth of heterotrophic and autotrophic bacteria within its cells. Federal Screen has been at the forefront of designing Wedge Wire Screen to help maximize flow rates as well as to prevent the biofilm carriers from escaping.

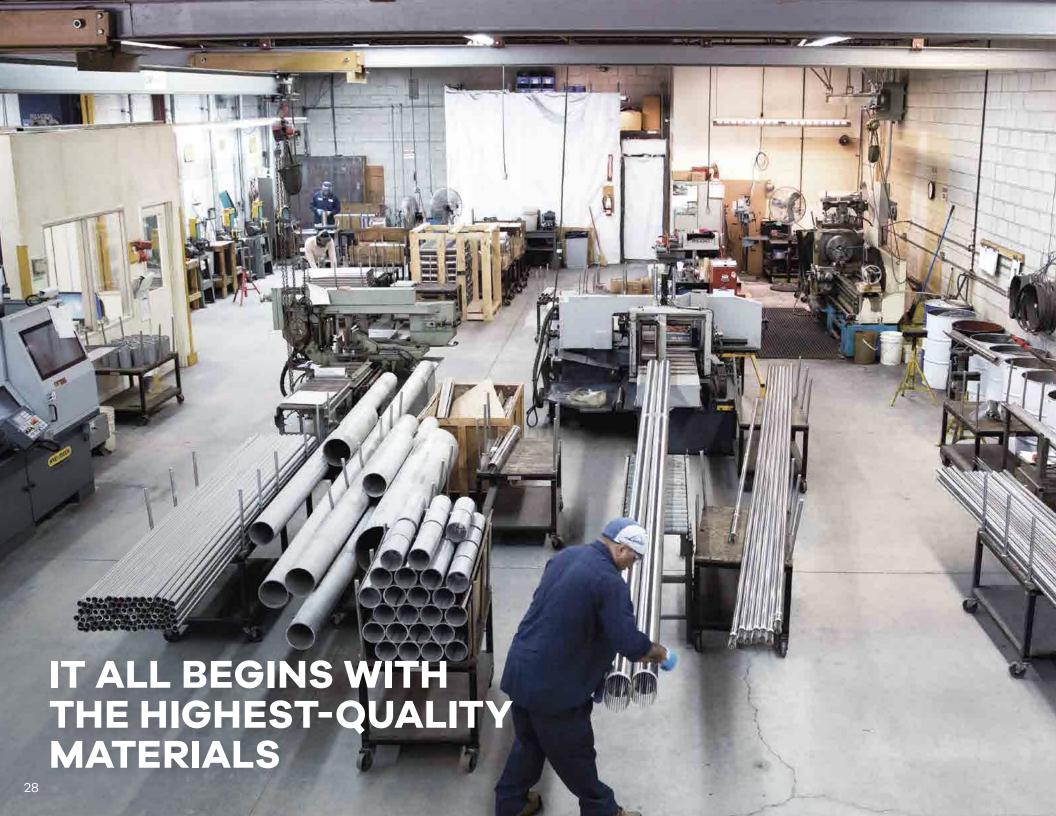
### **FINE SCREENS**

These are used to remove smaller particulate that create operation and maintenance problems. Fine screen openings are around the 0.06" to 0.25" range, and very fine screens can be fabricated with openings of 0.01" to 0.06". They can reduce suspended solids to levels near those achieved by primary clarification.

### **COARSE SCREENS**

These are used by many OEMs in equipment designed to remove large solids and debris from wastewater flows. Slot sizes are typically larger than the 0.025" range.

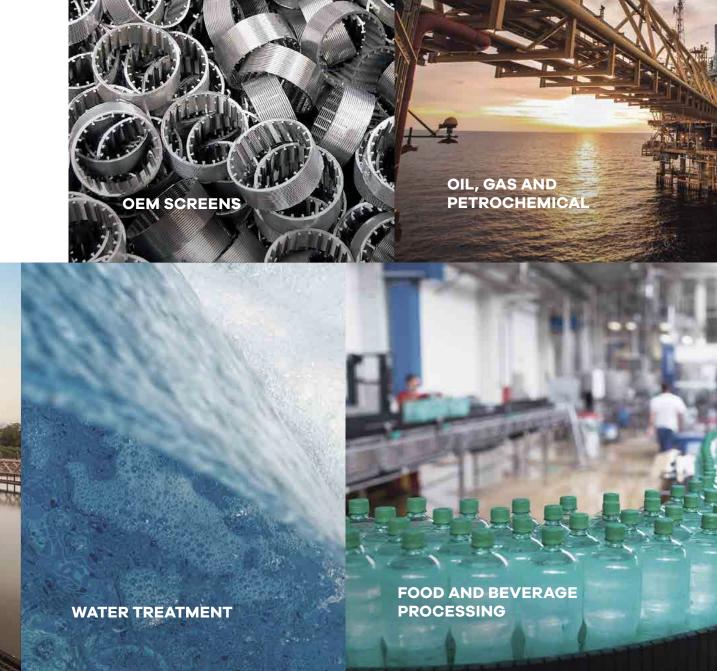
- Stronger and more durable due to resistance welding
- Wide range of profile wire is available to suit most systems
- High-precision slot sizes are available to meet your requirements
- For surface filtration, the V-shaped surface wires allow for easy cleaning by mechanical scraping or backflushing or with the use of spray heads
- Ease of replacement will reduce downtime
- Engineered to your specifications
- Robust for vertical wall applications
- No lower sprockets, bushings or guides
- Self-cleaning, when designed to the flow rate required





### **INDUSTRIES**

Our steady growth and success have been directly related to our efforts in continually engineering innovative and cost-effective solutions for major industries.







# FREQUENTLY ASKED QUESTIONS

### HOW DO YOU FIGURE OUT THE OPEN AREA OF SCREEN?

The open area ratio (OA) of Wedge Wire Screen is calculated using the following formula:

OPEN AREA (%) =

**SLOT SIZE X 100** 

**SLOT SIZE + WIRE WIDTH** 

### WHAT ARE THE STANDARD TOLERANCES FOR SCREEN?

Tolerance of slot size:

+/- .002"

#### **Fabrication:**

+/- 1/16" (2 PL DEC = 0.020", 3 PL DEC = 0.010")

#### **Angles:**

+/-1°

Specialty tolerances may be requested, especially on custom-machined items.

### **HOW MUCH DOES IT COST?**

All our products are custom manufactured, since there are limitless possible combinations of wire profile, slot size, material choice and length. Depending on the application, the cost per unit varies and must be calculated on a per-job basis.

### WHAT IS THE STANDARD SLOT SIZE?

There is no actual standard size. We handle a large range of applications on a day-to-day basis and each requires a very different slot size. Typically, for most applications, the slot size specified by the media supplier should be used.

### DOES WEDGE WIRE HAVE A LOW PRESSURE DROP?

The high open area of Wedge Wire Screen contributes to a low pressure drop through the screen surface.

### HOW IS WEDGE WIRE NON-CLOGGING?

Wedge Wire Screens are fabricated by cylindrically wrapping a continuous V-shaped wire around axial support rods. The uninterrupted slot formed allows for only two points of contact with particles on the screen surface to minimize clogging. This means that the maximum effective flow area and operating efficiency are maintained.

