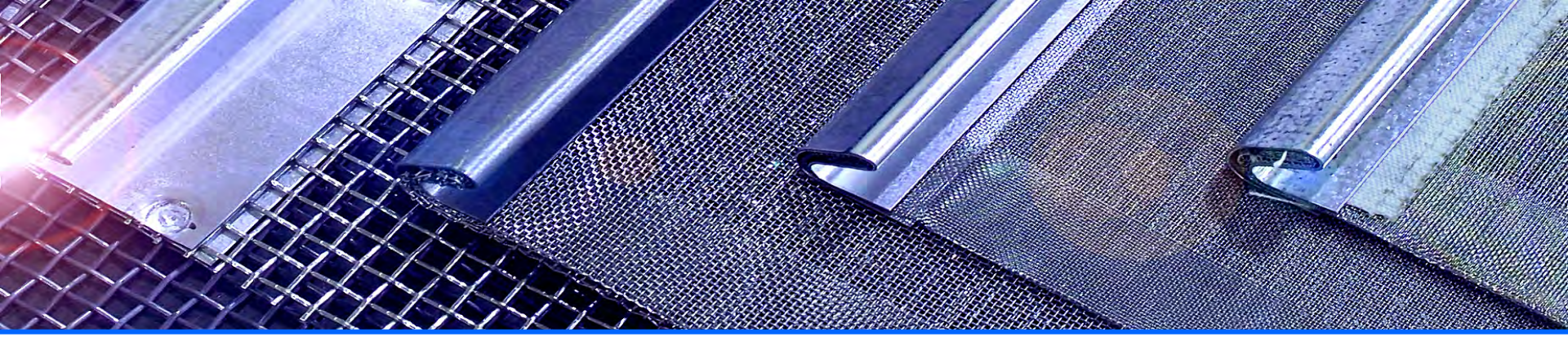

SCREEN BASICS, MAINTENANCE +TROUBLESHOOTING

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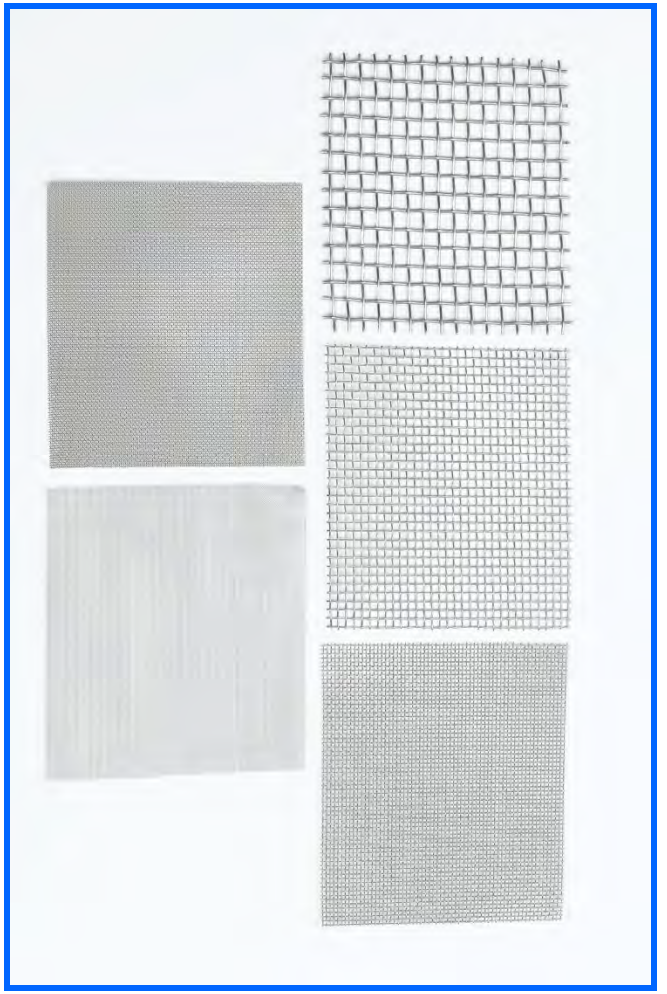
WIRE MESH BASICS

- aka “woven wire” or “wire cloth”
- Range from 1 to 635 mesh
- Typically in metal alloys
- Synthetics (polyester and nylon) offered in similar opening referred to as microns



MEASUREMENTS

- Mesh count
- Wire diameter
- Square opening (aperture)
- % of open area
- How to measure mesh vs. opening

Fig 1

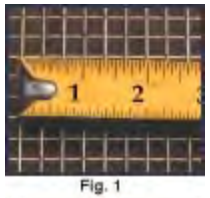


Fig. 1

Fig 2

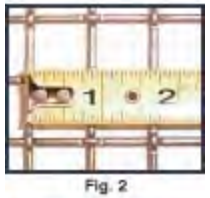


Fig. 2

Fig 3

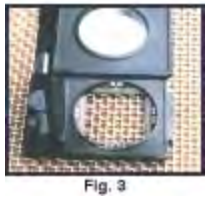


Fig. 3

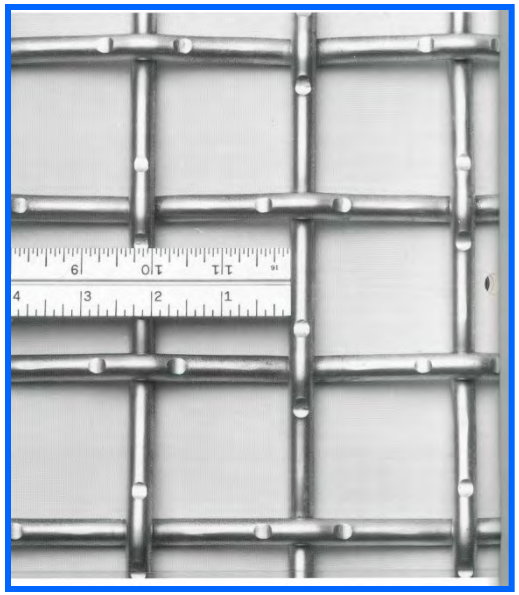


Fig 4

GRADES AND ALLOYS

- GRADES
  - Market Grade (standard): High strength for industrial uses. Heavy wire thickness. Stainless steel (most widely used), other alloys such as carbon steel also available.
  - Mill Grade: Medium wire thickness. Often used in flour milling and sifting or seed and feed sifting. Available in stainless and carbon steel.
  - Bolting Cloth: High capacity, high strength, Light wire thickness. Often used in food processing. Smooth, durable stainless steel
  - U.S. Sieve Series: Used in test sieves.

ALLOYS

- Stainless steel 300 series
- Stainless steel 400 series
- Other alloys
  - Nickel 200, Monel 400, Hastalloy Alloy A, B, C, Carpenter No. 20, Aluminum 5056 and 6061, Copper, Common and Phosphor Bronze, and Carbon Steel

VIBRATORY OR GYRATORY?

Refers to movement of the screener

(not the screen)

– Vibratory = shaking (vibrating)

– Gyratory = movement in a specific pattern (gyration in a circular motion)

WHICH SCREEN?

Depends on type of equipment

- Round separator screen (example Sweco, Kason, Midwestern)
- Hooked screen (ex. Tyler, FMC, Derrick, Midwestern, Andritz Sprout Bauer)
- Edged screens (ex. Rotex, Fred Pfening, Great Western)
- Ultrasonics (Telsonic, Compassonic)

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HOW TO ORDER SCREENS

- Specify opening (aperture) or mesh count, wire diameter and alloy required.
- Give finished dimensions (per industry standards)
- Make and model of machine (if known)
- Edging, hook alloy and profile (type of hook)
- Is there an overlap required?
- Special requirements

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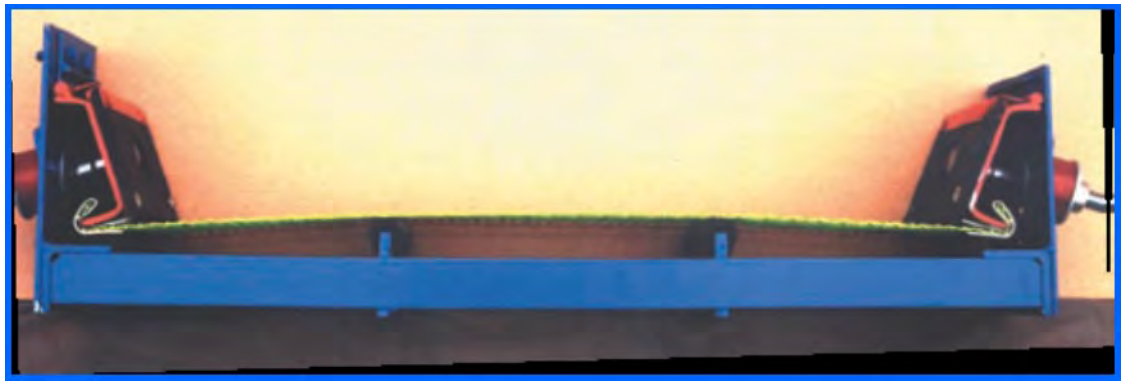
GUIDELINES FOR ORDERING

HOOKED SCREENS



Measure the inside width of the screen box and subtract 1-1/2” -2”

This supplies the “OCW” (outside clamping width) required for screen

Note: “ICW” (inside clamping width)

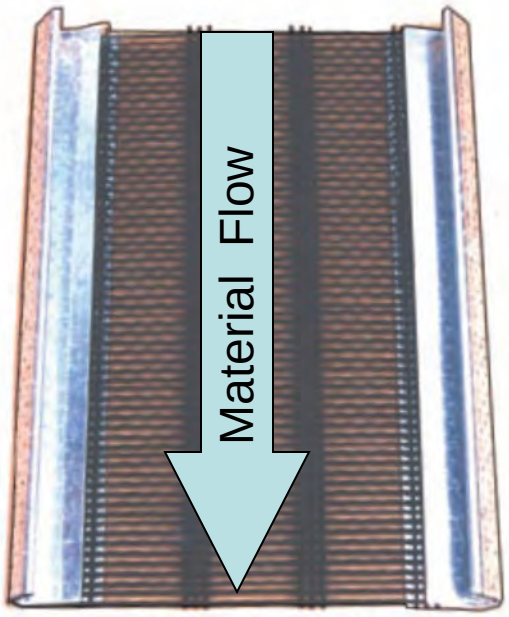
SLOT DIRECTION

- If a slotted opg is required, the direction of the slot should be specified in relation to the hook strips or product flow.
- Number of clusters should also be specified
- RA = “Right angle”
- SP = “Slots parallel”

MEASURING A SIDE TENSION SCREEN

Slots parallel to 47”

47” OCW



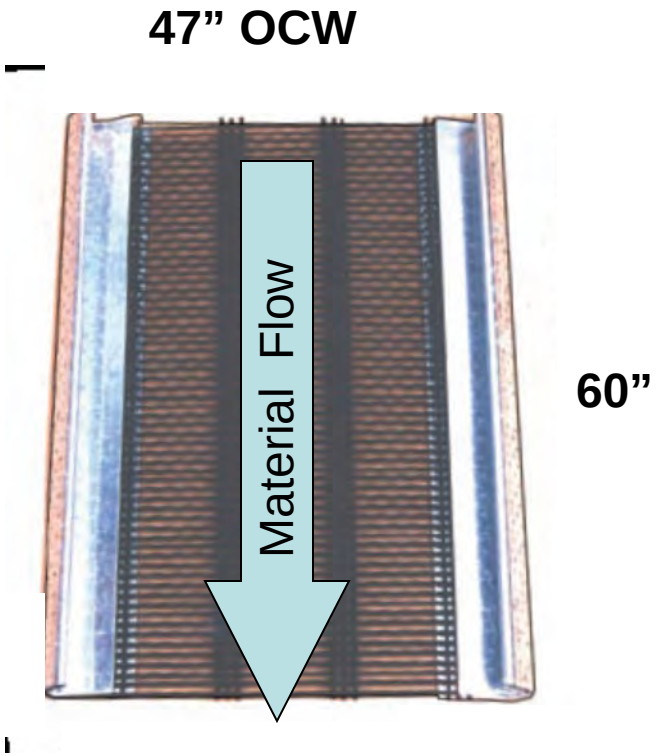
60”

AKA:

- Slots RA
- Slots right angle to flow
- Slots against flow
- Slots right angle to hooks

Terminology changes for end tension screens

MEASURING A SIDE TENSION SCREEN



Slots parallel to 60”

AKA:

- Slots SP
- Slots parallel to flow
- Slots with flow
- Slots parallel to hooks

Terminology changes for end tension screens

LAP REQUIRED?

Fig 1

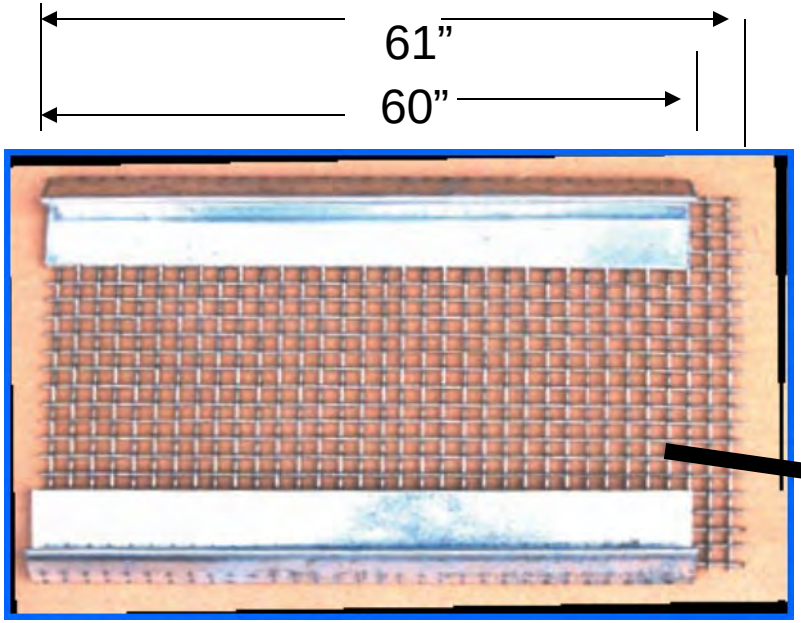
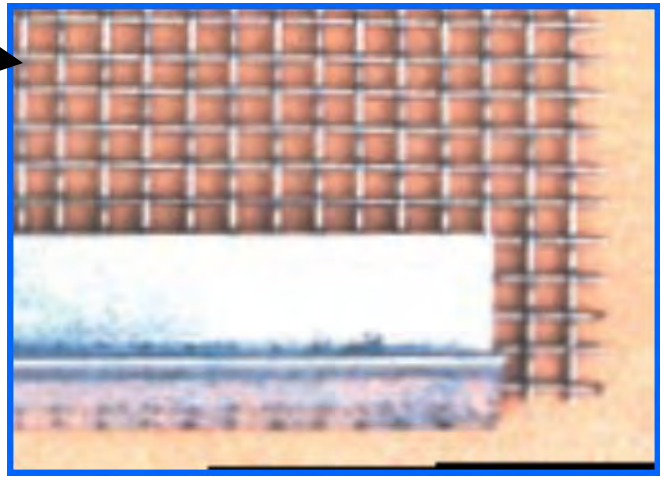


Fig 2



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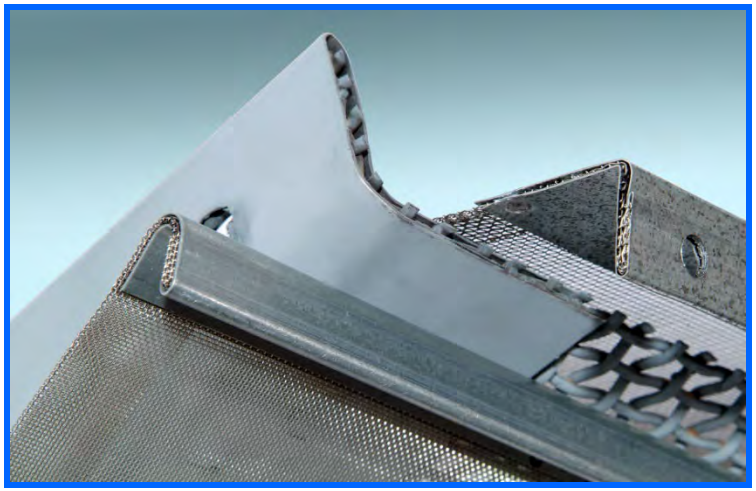
HOOK SCREENS

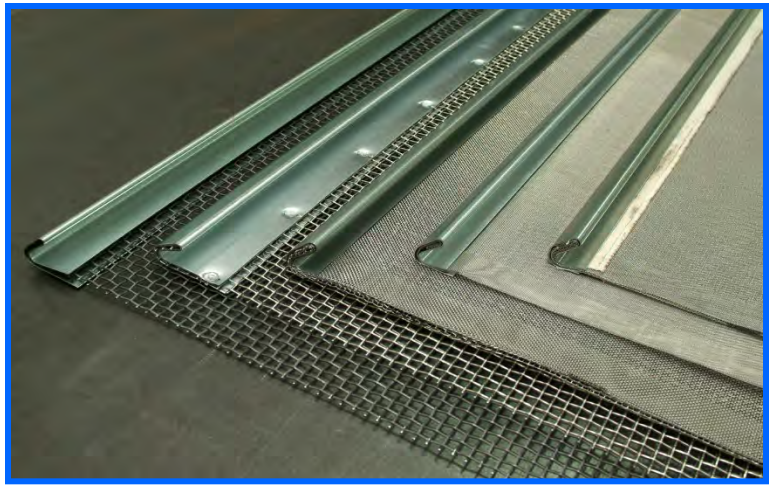


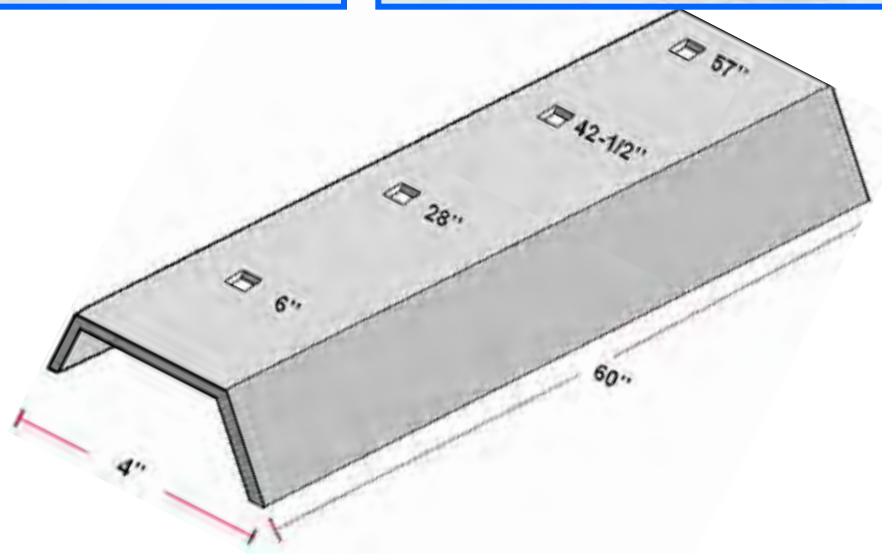
CW-2

CW-6

CW-7

CW-8





HOOK SCREENS: Industries

- Minerals, sand, rock, coal, metal powders, limestone, bricks, glass and recycling

HOOK SCREENS: Clamping & Tensioning

Clamp Rail

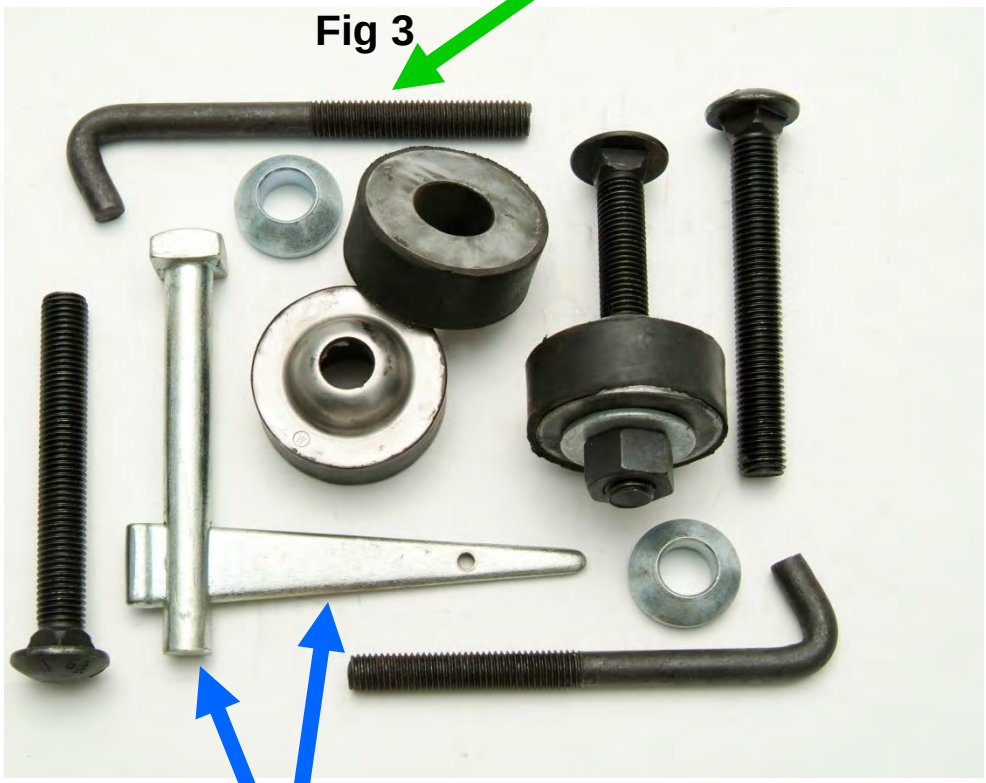
Fig 1

Carriage bolt

Fig 2

J-Bolt

Fig 3



Pin and Wedge

Fig 4

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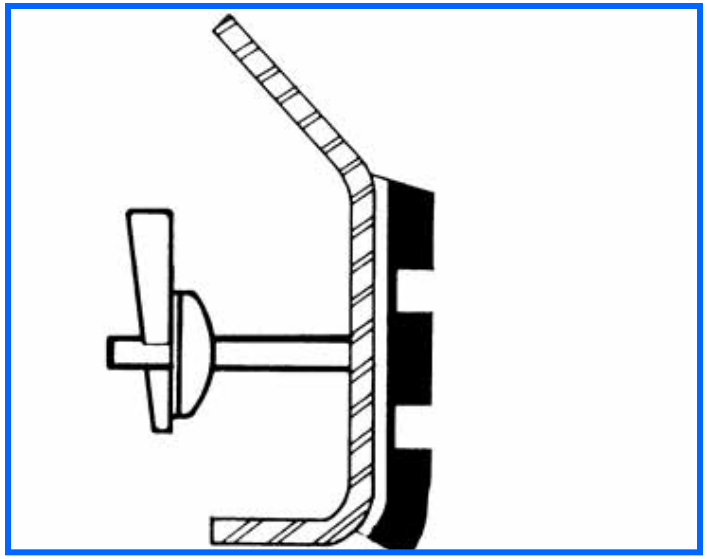
Tensioning Systems

HOOKED SCREENS

Fig 1

Fig 2

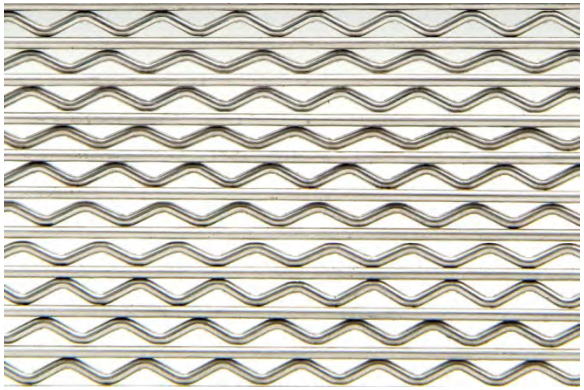


HOOK SCREENS: Blinding

- Backing screens
- Balls
- Change rpms to pulse the machine
- Heated decks

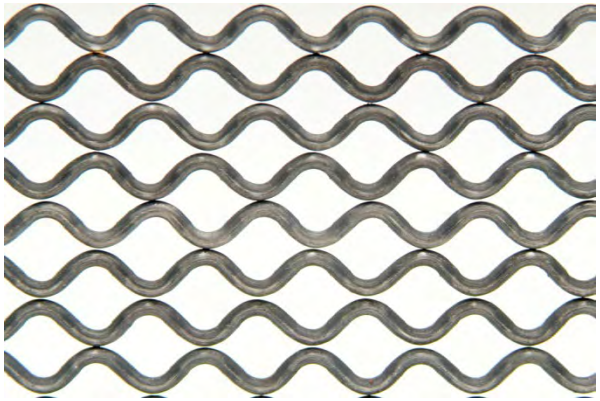
HOOK SCREENS: Blinding

- In aggregate applications, pattern aids in de-blinding



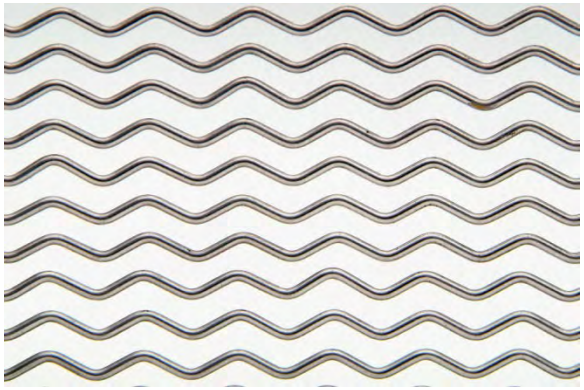
A-Style

- triangular
- resilient to damage from oversized material
- most accurate



B-Style

- diamond
- dry or damp material
- also High Carbon



C-Style

- herringbone
- prevents clogging
- gradation not significant

EDGED SCREENS

Fig 1

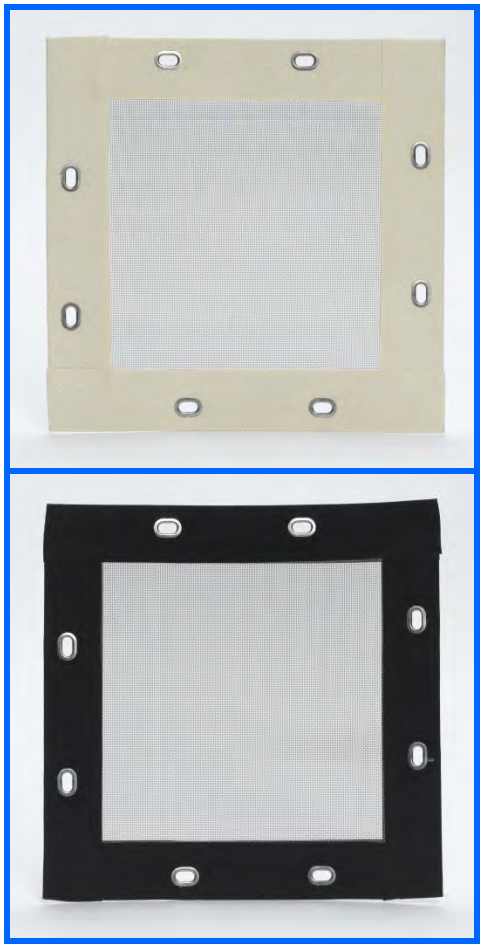


Fig 2

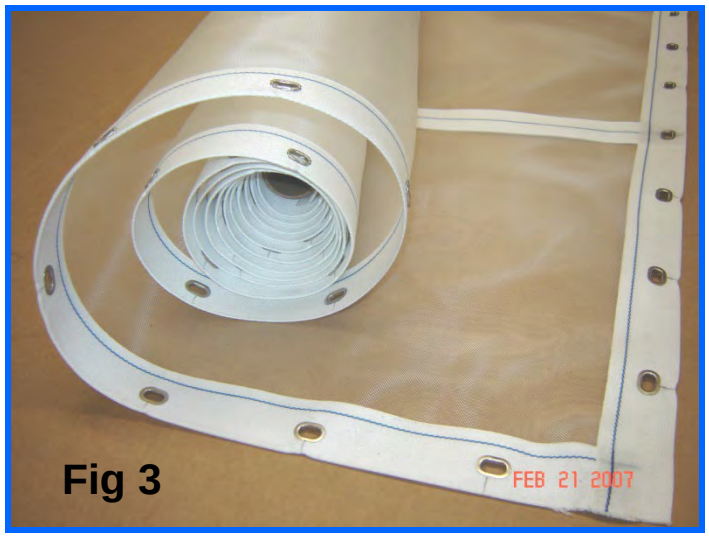


Fig 3

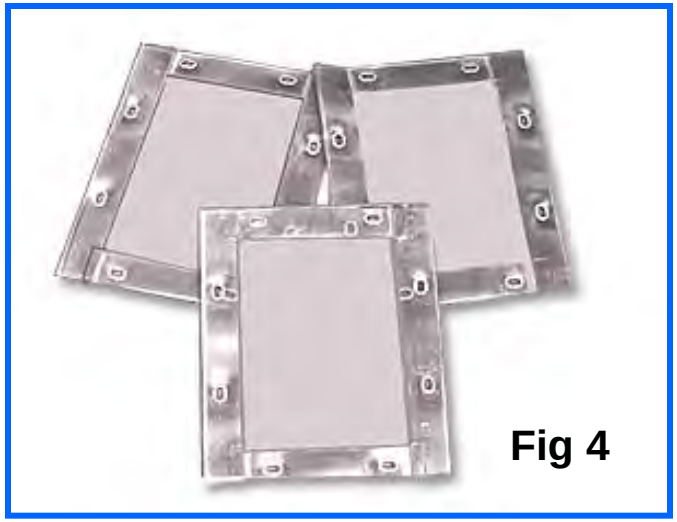


Fig 4

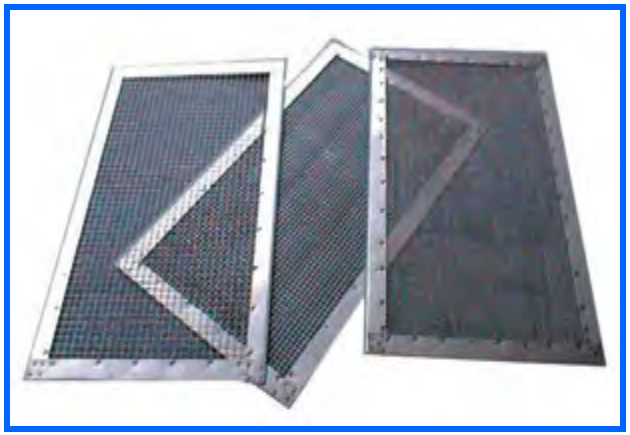


Fig 5

EDGED SCREENS: Industries

- Food, soy soybeans, pharmaceuticals, polymers, resins, metal powders (bonded edge)
- Flour, sugar, (synthetic screen)
- Salt, metal powder, anything coming off a dryer (Nomex)
- Food, wet applications (vinyl)
- Minerals, anything requiring high temperature tolerance (metal)
- Can be FDA approved

EDGED SCREENS: Blinding

- Balls

- Change rpms to pulse the machine

EDGED SCREENS: Clamping & Tensioning

- Grommets

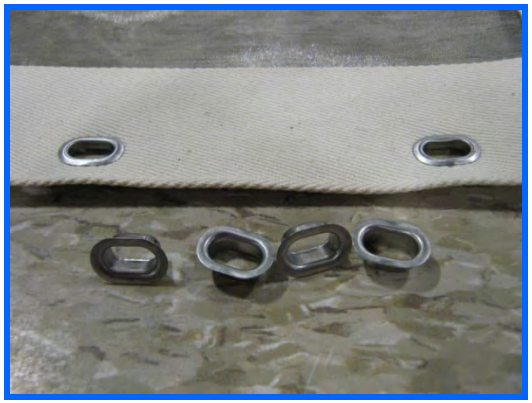


Fig 1

- Bars and rods

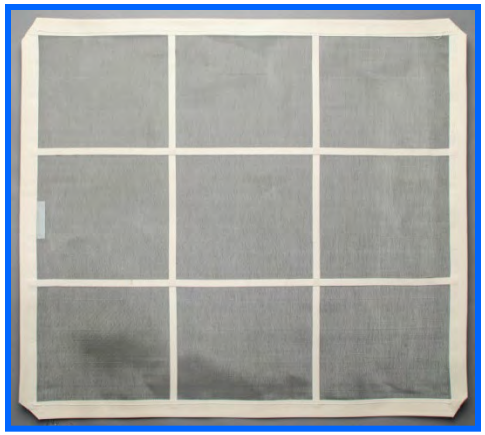


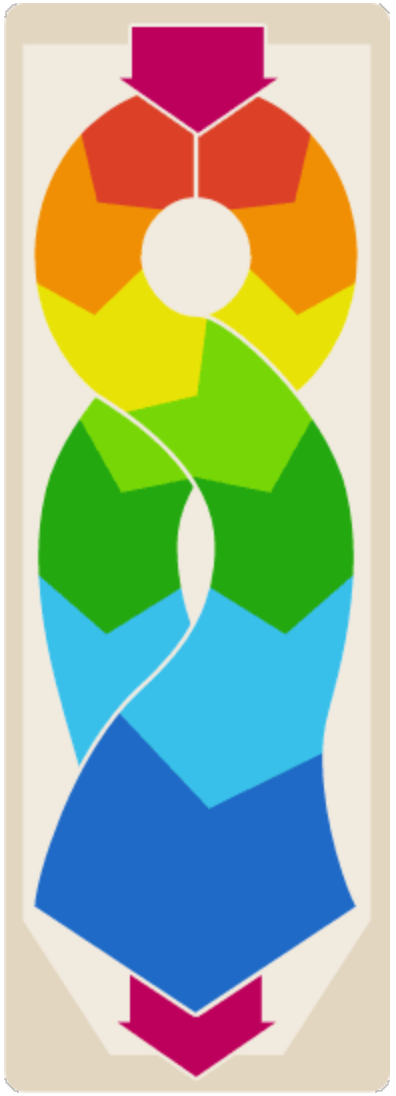
Fig 2

Fig 3

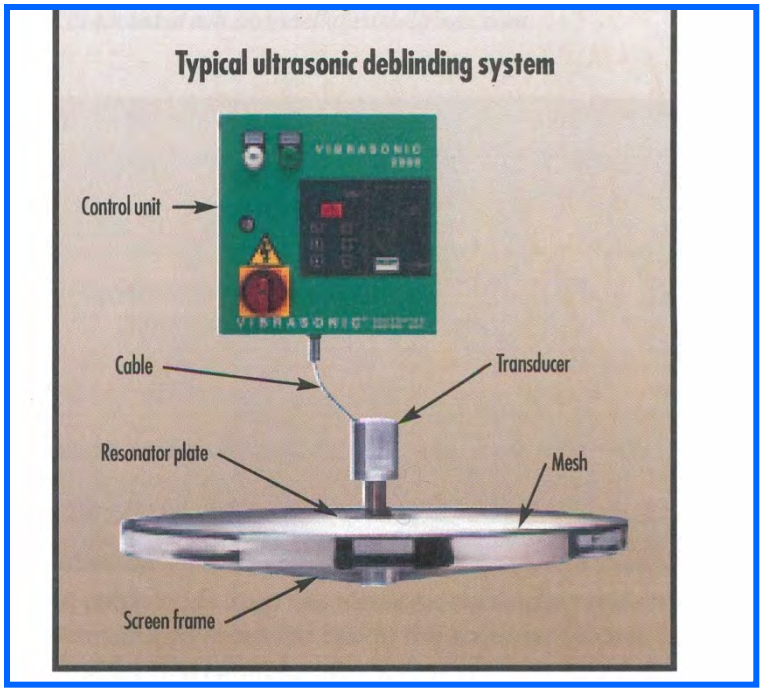
EDGED SCREENS: Product Pattern

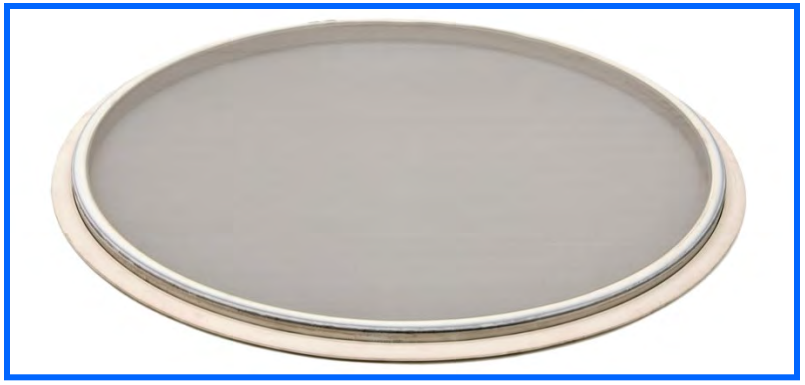
- Depends on machine

- Even flow is essential



ROUND SEPARATOR SCREENS





ROUND SCREENS: Industries

- Food, polymers and resins, metal powders, ink toner

ROUND SCREENS: Clamping

- Center hole → threaded rod → washer and nut
- Clamping ring

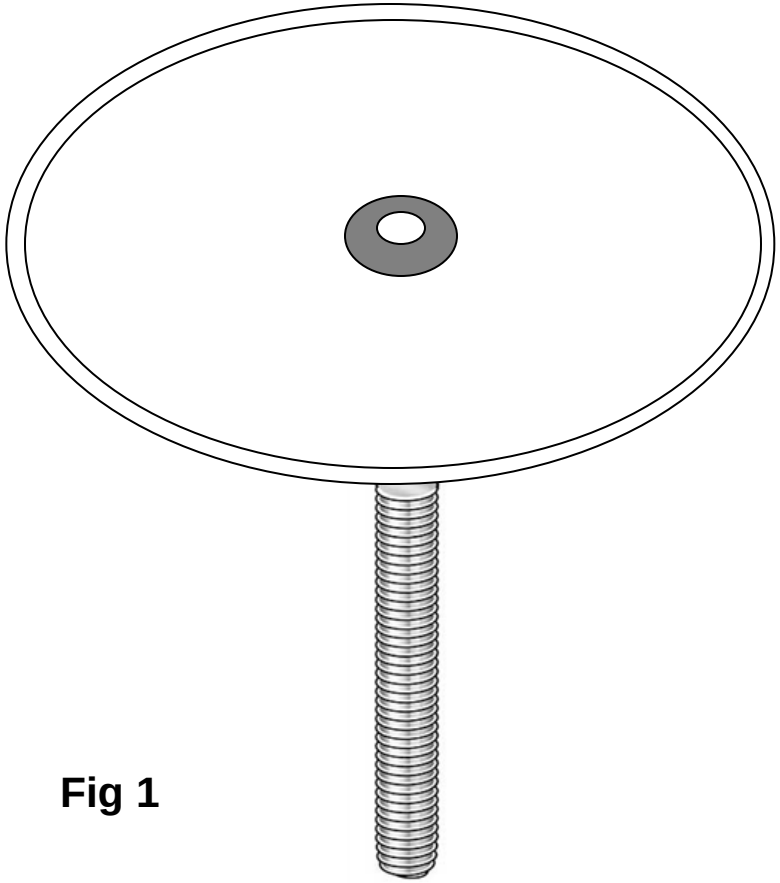


Fig 1

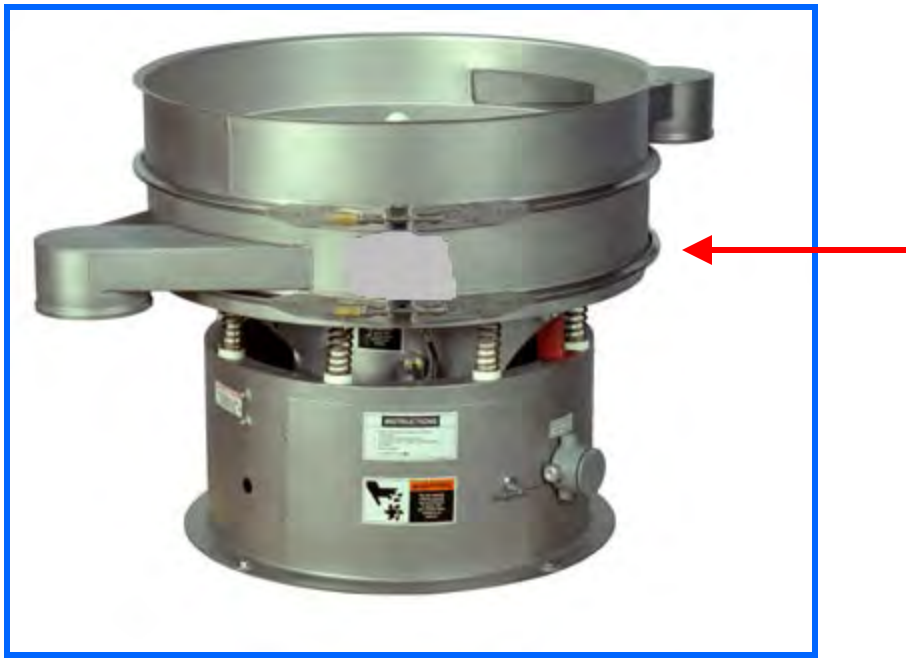
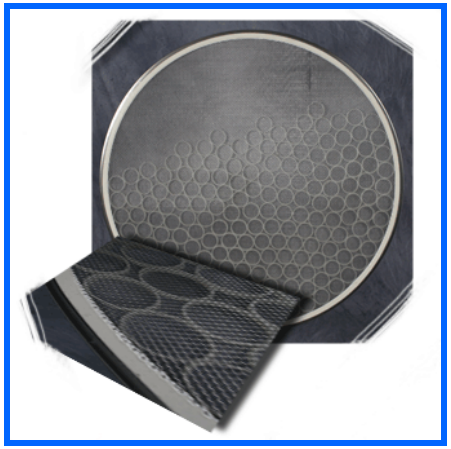


Fig 2

ROUND SCREENS: Blinding

- **Balls**

Fig 1



- **Sliders (single or cluster)**

- **Combination of the two**

Fig 2

- **Ultrasonics**

Fig 3

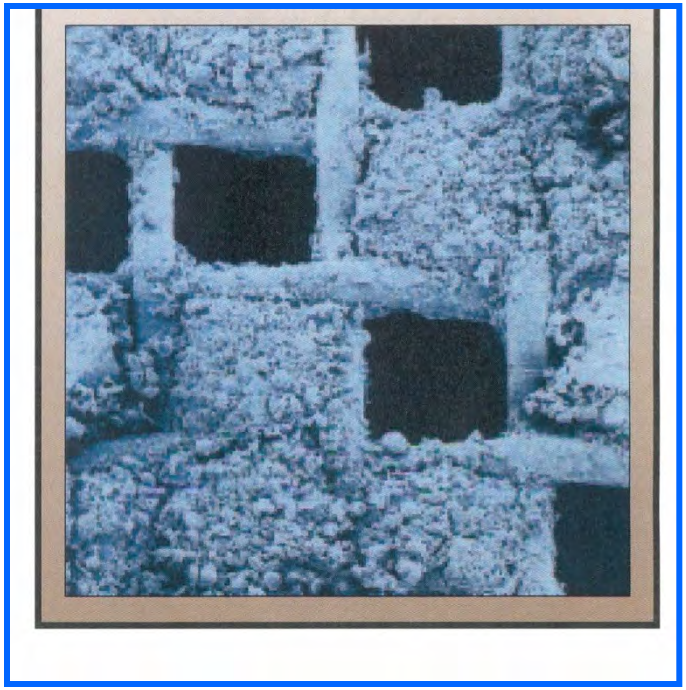
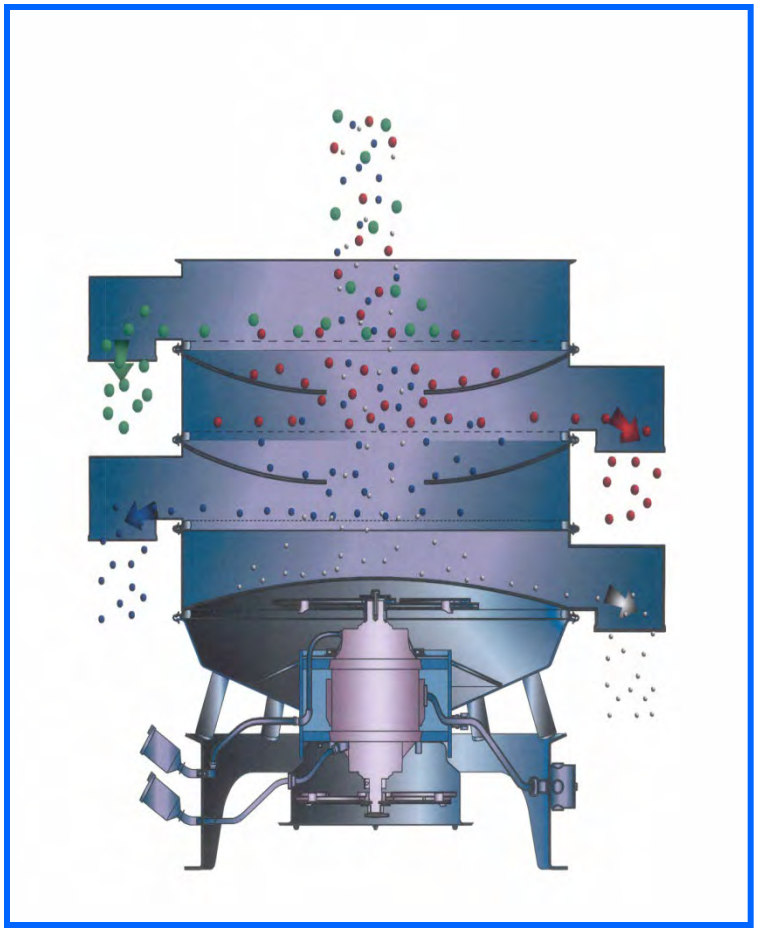


Fig 4

ROUND SCREENS: Product Pattern

- Circular pattern
- Vertical and horizontal



SCREEN MAINTENANCE

- Re-tension screens regularly
- Regularly inspect all clamping bars for corrosion and wear
- Inspect all nuts and bolts
- Make sure support deck is in good repair
- Inspect and replace channel rubber

MAINTENANCE cont.

- Use correct tension clips
- Check impact and spread of material feed
- Basic visual inspection of equipment

Troubleshooting Case #1

Pre-tension screens rip during prolonged use

- Screen: Round screen
- Application: Nutritional compounds
- Issue: Screens ripping
- Resolution: Apply sufficient silicone

Troubleshooting Case #1

Pre-tension screens rip during prolonged use

Fig 1

Fig 2

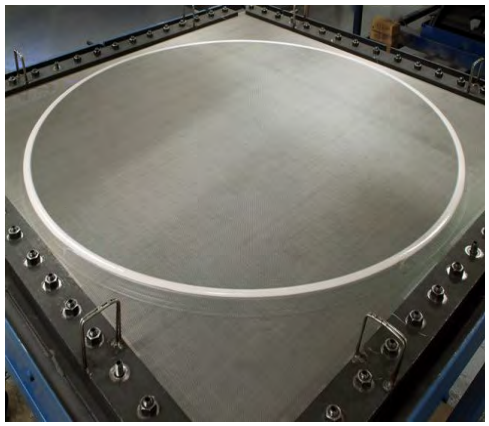


Fig 3

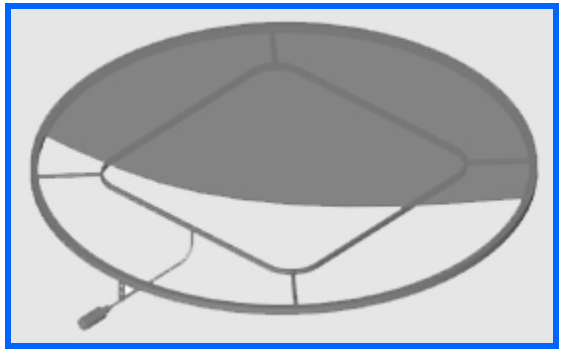
Troubleshooting Case #2

Current Screens Can't Process Potential New Product

- Screen: Round screen
- Application: Aluminum oxide
- Issue: Capture a byproduct to create new product line
- Resolution: Use Ultrasonics

Troubleshooting Case #2

Current Screens Can't Process Potential New Product



Troubleshooting Case #3

Panel Breakdown

- Screen: Tyler hummer screen
- Application: Phosphate fertilizer
- Issue: Screen breakage in the same area on multi-screen deck
- Resolution: Proper tensioning

Troubleshooting Case #3

Panel Breakdown

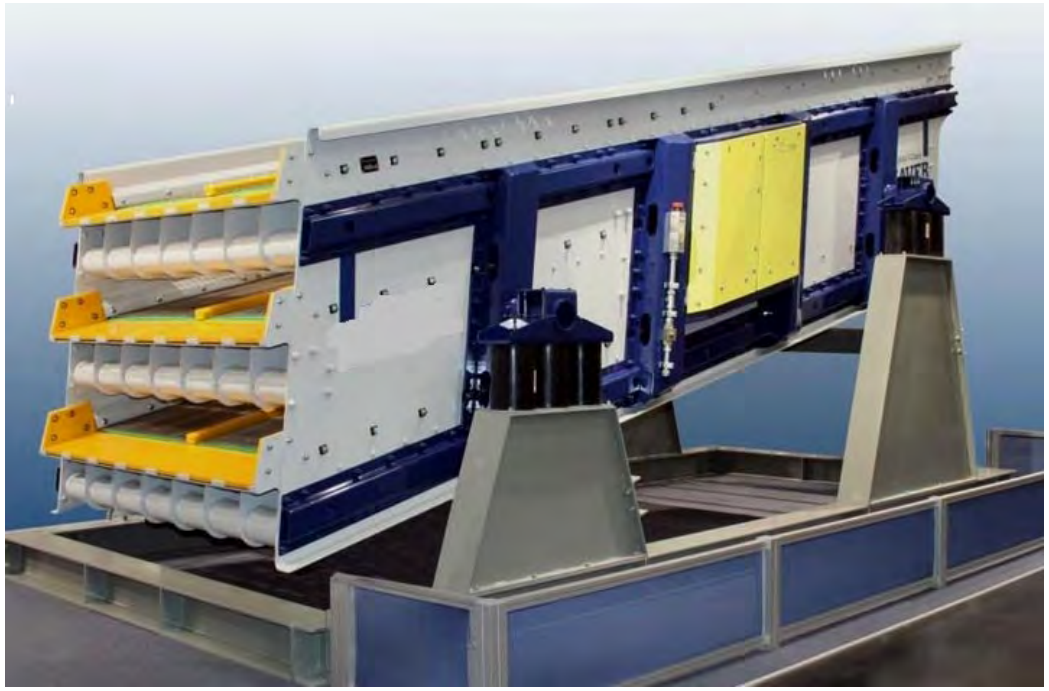


Fig 1

Fig 2

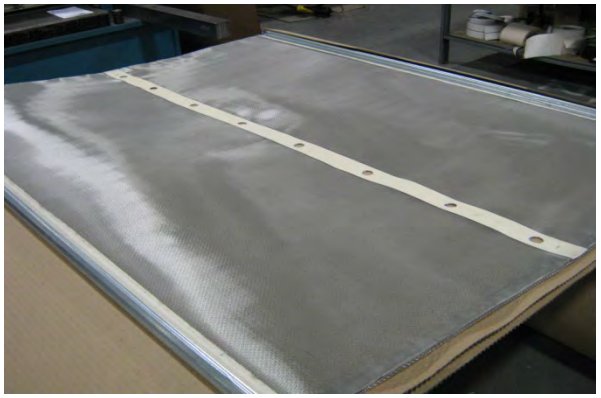


Fig 3

Troubleshooting Case #4

Premature Wear of Trommel Screens

- Screen: Trommel screen
- Application: Aluminum ingots
- Issue: Premature wear at support bars
- Resolution: Rubber installed

Troubleshooting Case #4

Premature Wear of Trommel Screens

Fig 1

Fig 2

Fig 3

Troubleshooting Case #5

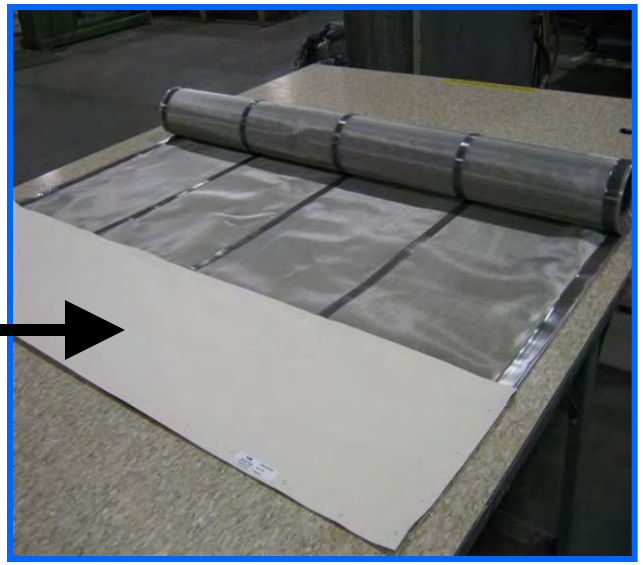
Premature Wear at Point of Impact

- Screen: Plastic-edge screen
- Application: metal powder
- Issue: Screen breaking
- Resolution: Impact patch

Troubleshooting Case #5

Premature Wear at Point of Impact

Impact patch



Troubleshooting Case #6

Heated Deck Results in Screen Failure

- Screen: Hooked screen
- Application: Bricks
- Issue: Screen failure due to wire fatigue
- Resolution: Squash and weld bottom leg of hook to maintain conductivity

Troubleshooting Case #6

Heated Deck Results in Screen Failure

Fig 1

Fig 2

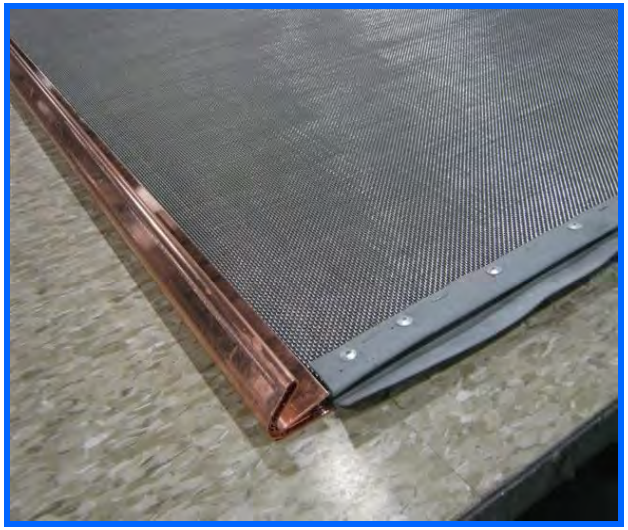


Fig 3

Troubleshooting Case #7

Hook breakage from product build up

- Screen: Aggregate end tension
- Application: asphalt millings
- Issue: Screen failure due to wire fatigue
- Resolution: Pressed insert in lieu of a wrap around shroud

Troubleshooting Case #7

Hook breakage from product build up

Fig 1

Fig 2

Fig 3