
HAYER & BOECKER



Information



HAYER
Industrial Wire Screens

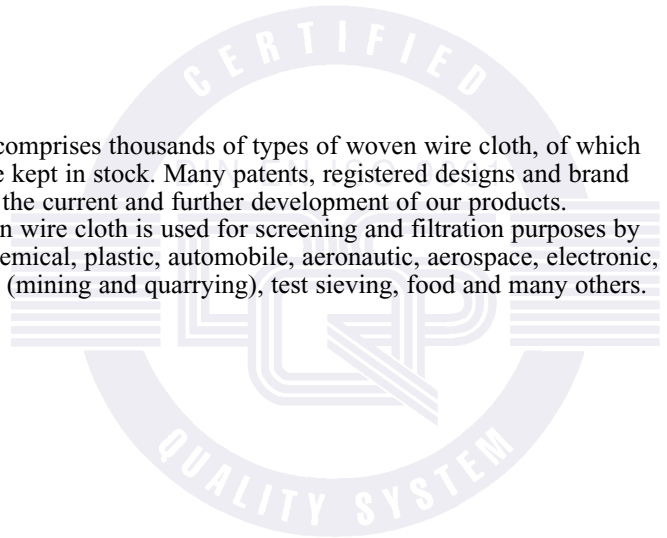


The Company

HAYER & BOECKER began producing woven wire cloth in Hohenlimburg, Germany, in 1887. With four German production sites (Oelde, Sendenhorst, Münster and Raguhn) and production plants in Great Britain, Belgium, Mexico, the USA and Canada we are rightly recognised as one of the most important wire weaving companies in the world.



Our product range comprises thousands of types of woven wire cloth, of which more than 3,600 are kept in stock. Many patents, registered designs and brand names demonstrate the current and further development of our products. Our technical woven wire cloth is used for screening and filtration purposes by many industries: chemical, plastic, automobile, aeronautic, aerospace, electronic, industrial screening (mining and quarrying), test sieving, food and many others.



More than 100 Years – Haver & Boecker Industrial Wire Screens

We manufacture Industrial Wire Screens for all types of Vibrating Screens. The most common types are those with hook strips fixed on two sides of the screen section, called either End Tensioning or Side Tensioning Screens. For special Vibrating Screens there are screen sections with reinforced edges on all four sides.

In addition, there are screen sections mounted on rectangular or round frames using rubber balls or other sieving aids.

The great variety of available Vibrating Screens necessitates “tailor-made” Screen Sections: hook strips, notches, overlaps, reinforced sides, integrated polyurethane strips and many other special requirements, all of which we are able to supply.

We can deliver Round Screens with a complete frame and mesh. We can also re-screen used or damaged frames.



Hook Strips for Screen Sections



Standard hook strip



Double fold hook strip for end tensioning.
Silicon- or rubber lip sealing optional



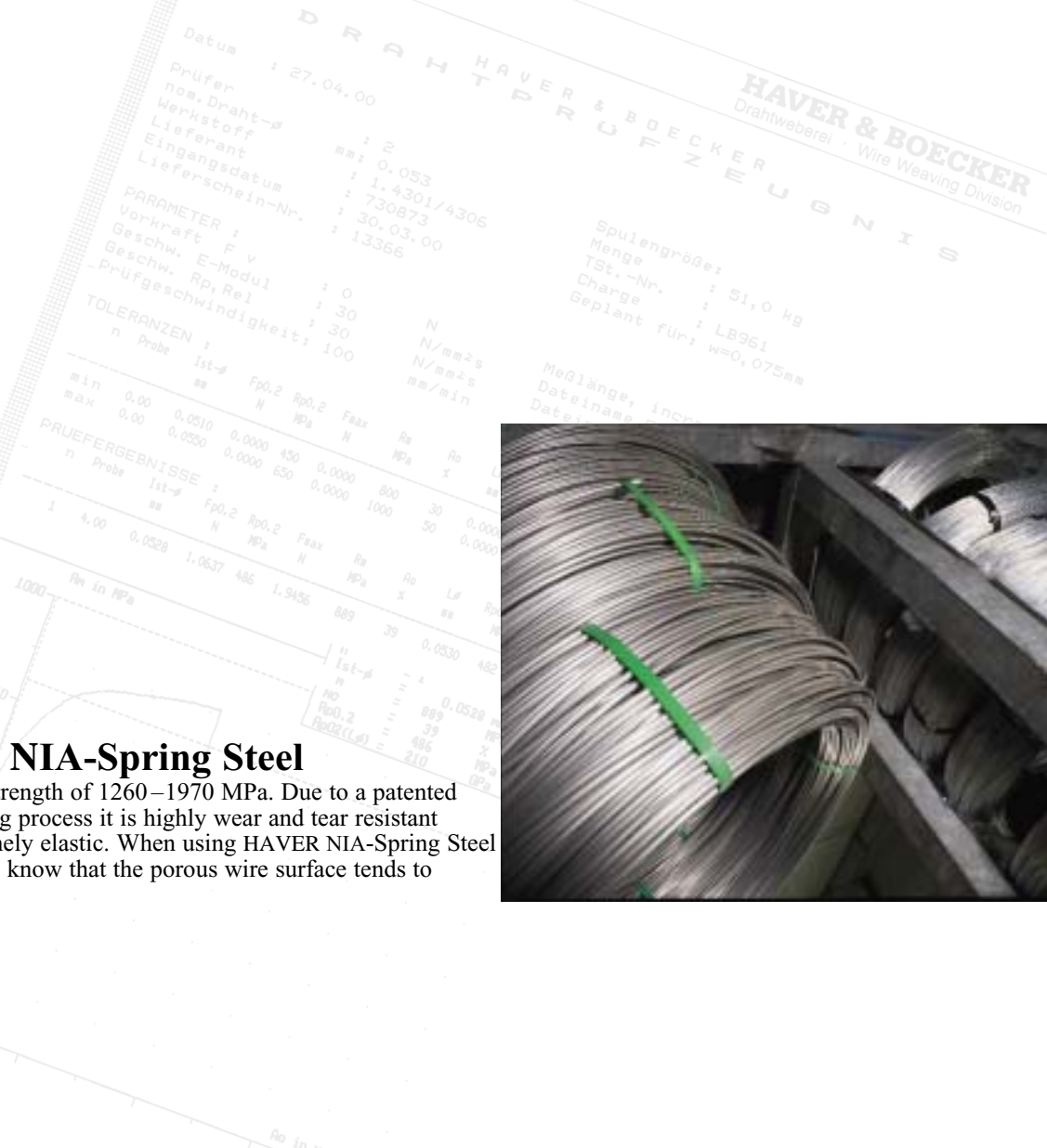
Edge reinforced with PUR-foil.
Eyelets optional

Edge folded 180° with eyelets



Materials for Industrial Wire Screens

(Specifications refer to 1 – 5 mm wire diameter)



HAVER NIA-Spring Steel

has a tensile strength of 1260–1970 MPa. Due to a patented special drawing process it is highly wear and tear resistant and yet extremely elastic. When using HAVER NIA-Spring Steel is important to know that the porous wire surface tends to oxidation.



Austenitic, Stainless Steels

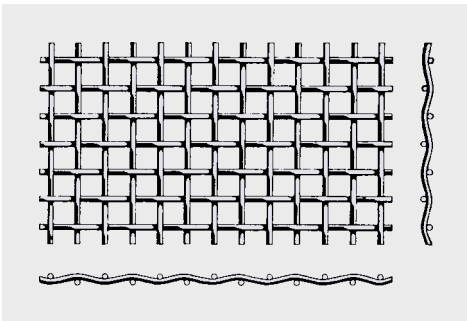
Stainless Steel 1.4301 (AISI 304) and 1.4401 (AISI 316) has a smooth surface with good corrosion resistance qualities. The tensile strength is about 600–1200 MPa, the elasticity is low.

Stainless Steel 1.4310 (AISI 301) is highly wear and tear resistant with high elasticity. The tensile strength is about 1200–2000 MPa. The smooth wire surface is chemically resistant with some exceptions.

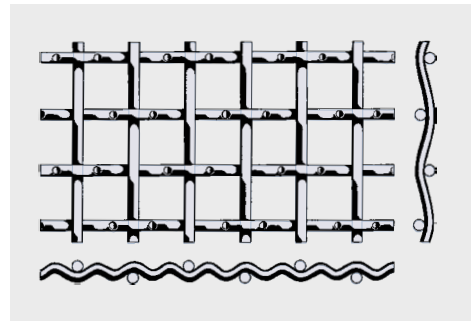
Stainless Steel 1.4016 (AISI 430) has magnetic qualities. The tensile strength is about 600–1200 MPa. The smooth wire surface is chemically resistant with some exceptions.

Weave Types according to ISO 4783/3

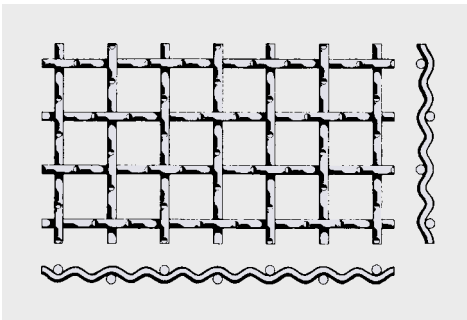
Type A
DOUBLE CRIMP SCREEN
Woven Wire Cloth



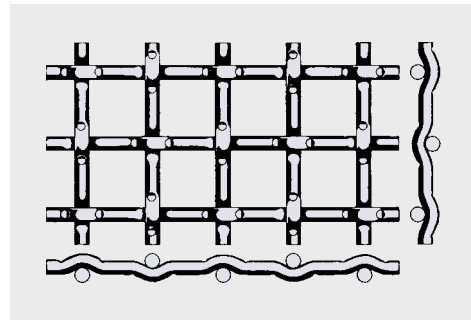
Type B
SINGLE INTERMEDIATE CRIMP SCREEN
Woven Wire Cloth with intermediate Crimps



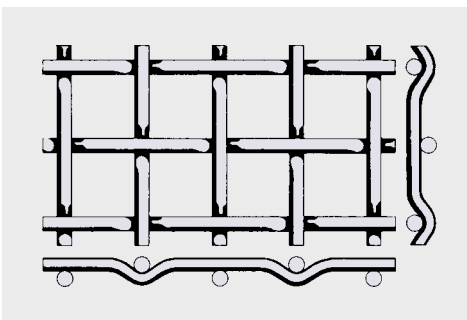
Type C
DOUBLE INTERMEDIATE CRIMP SCREEN
Wire Screen with intermediate Crimps



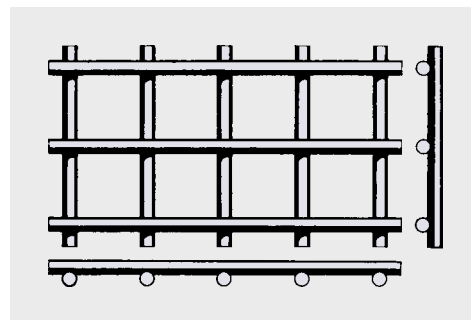
Type D
LOCK CRIMP SCREEN
wire Screen pre-crimped on both Sides



Type E
FLAT TOP SCREEN
Wire Screen with one flat Side



Type F
P-S-Screen
Pressure Welded Screen



Apertures and Open Area

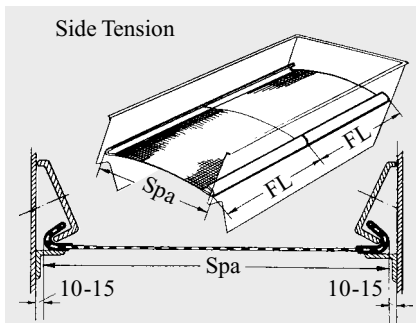
With any given aperture the wire diameter determines the open area and hence the screening capacity of the screen. The thinner the wire diameter, the higher the open area and the potential screening capacity.

However, a wire of too thin a diameter may reduce the service life of the screen section. It is therefore important to find a suitable compromise between the open area and the service life.

For fine screening we recommend a screen section with two layers, where the screening layer is reinforced by a support layer.

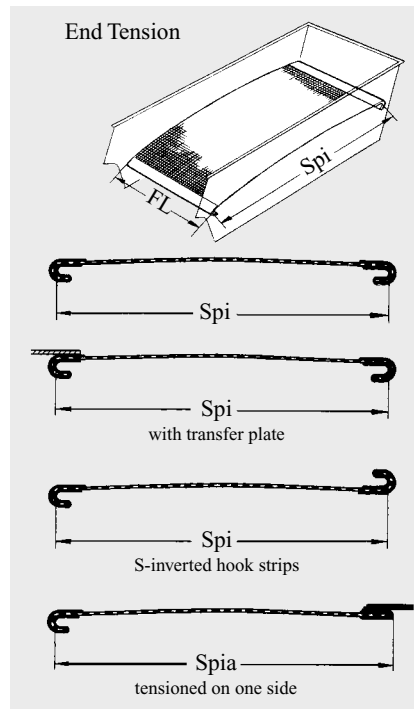
Methods for Fitting a Screen Section

Side Tensioning



The screen with hook strips is mounted across the direction of material flow. Screen sections with particularly strong wires can be mounted at the feed end of the machine. Changing the screen section in 1 or 2 deck machines is fast and easy as only the defected screen section has to be exchanged. Retensioning is easy because the longitudinal sides of the machines are generally easily accessible. The tensioning bar on side tension machines also serves as wear protection. The legs of the hook strips should be shorter than the tensioning bar in order to avoid producing under-sized grains.

End Tensioning



Screening is possible over the whole surface. There are no sealing problems at the borders of the screen sections, so no oversized grains can pass during sieving.

To improve the sealing of some special screens it is possible to fix a rubber strip along the longitudinal side.

Wire Screens with Hook Strips: Measurements and Tolerances

Side Tensioning

Spa Measurement between outsides of the hook strips
Tolerance: $+0 / -(8 + d)$ mm

End Tensioning

Sp_i Measurement between insides of the hook strips
Tolerance: $+(8 + d) / -0$ mm

Sp_{ia} Measurement from inside the hook strip to outside of flat bent tensioning bar
Tolerance: $+(8 + d) / -0$ mm

Side and End Tensioning

Fl Overall length of hook strips
Tolerance: $+0 / -(5 + 2d)$ mm

Δp Parallellity of hook strips
Tolerance ± 4 mm auf 1000 mm length

Changing and Tensioning of Screen Sections

Prior to changing screen sections, please check and clean all screen supports and rubber profiles. If worn or damaged the rubber profiles have to be replaced.

1. Tensioning: Hook strips and tensioning bars have to be positioned properly on the vibration screen to guarantee a drum-tight fit of the screen section on the rubber supports and the longitudinal support angles.

2. Tensioning regulation: During the first service hours of the replaced screen section it is generally advisable to re-tension it, because you can expect settling factors resulting from the vibration. The correct tension and fixing of the screen section is essential for service life and must be maintained to avoid breakage by vibration. With insufficient tension the screen will bounce on the support bars and this will result in premature failure.

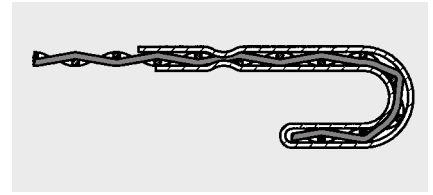
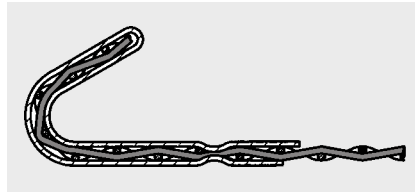
Hook Strips for Screen Sections

Type

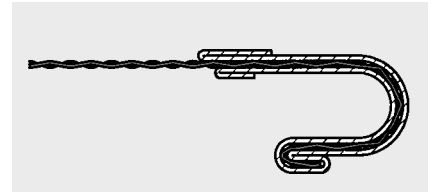
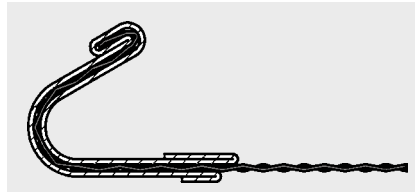
Side Tensioning

End Tensioning

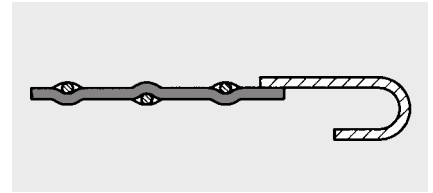
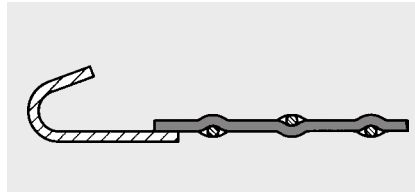
Standard Hook Strip
Type 21



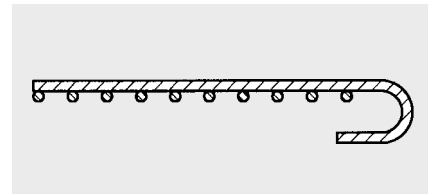
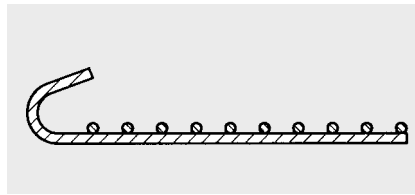
Double Fold Hook Strip
Type 30



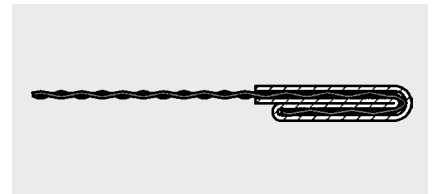
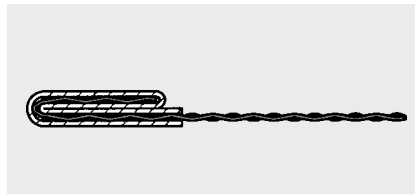
Welded-on Hook Strip for Screens
Type 25



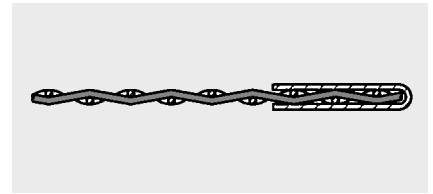
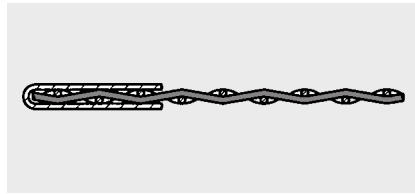
Welded-on Hook Strip for P-S-Screen
Type 24



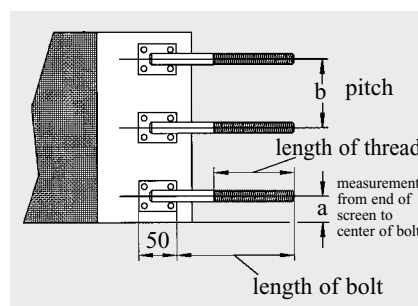
Flat Tensioning Bar
Type 26A



Flat Tensioning bar
Type 26B



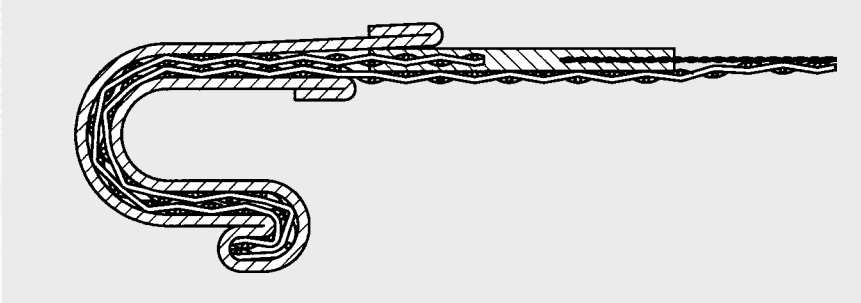
Tensioning Bolts



Flat Tensioning Bar with tensioning bolts. Please indicate measurements $a + b$ and length of bolt.

Hook Strips for Screen Sections: Special Executions

Mono- and Multistretch



- Wire screens with flexible plastic elements
- Optimum uniform tension of the screen
- Varying tensions are compensated
- No breakage of screen mesh caused by over- or undertensioning
- Available for side- and end-tensioned wire screens, the food industry and heat resistance up to 90°C

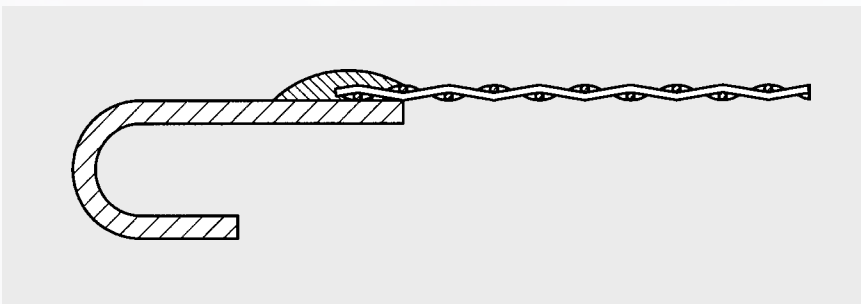
It is particularly difficult to get an even tension on fine mesh wire screens with hook strips: If the tension is too high, the screen mesh will tear and if the tension is too low, it will break due to the vibration.

With the addition of a flexible plastic strip, we can help to resolve these varying tensions. HAVER-MONOSTRETCH Wire Screens can be tensioned to the ideal requirement, so that the tension over the whole width or length is perfect – an overtensioning is impossible.

When it is recommended to use a support mesh, HAVER-MULTISTRETCH Wire Screens are the ideal solution. The support mesh is optimally tensioned – the length of the screen mesh will adapt.

HAVER-MONO- and MULTISTRETCH Wire Screens are available for side and end tensioned wire screens – they are also proved for use in food contact and heat resistance up to 90°C.

LM-Hook-Strip



- Screen mesh fixed by spot welding to the hook strips and completely sealed with adhesives approved for use in food contact
- Complete cleaning is always possible
- No production of fungus and bacteria
- Heat resisting up to 120°C

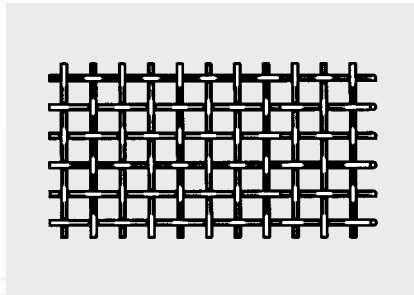
Wire Screens with hook strips are used in the food industry to classify fine material. In practice any small gap between the hook strip and screen mesh may lead to sedimentation of the material being screened and a corresponding fungal or bacterial development.

On the LM-Hook-Strip developed by HAVER & BOECKER the screen mesh is fixed by spot welding to the steel plate. Then it is completely sealed with an adhesive approved for use in food contact. A complete cleaning of the wire screen is always possible, and hence the production of fungus and bacteria can be avoided.

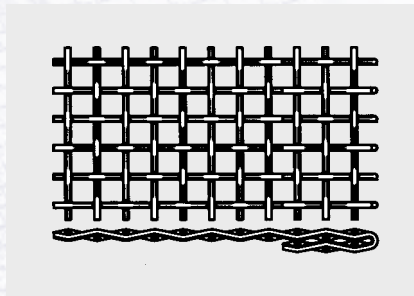
Wire Screens with LM-Hook-Strips are available for side and end tensioned wire screens – also heat resisting up to 120°C.

Sides for Wire Screens

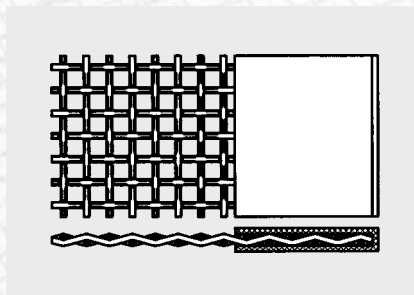
Cut edge



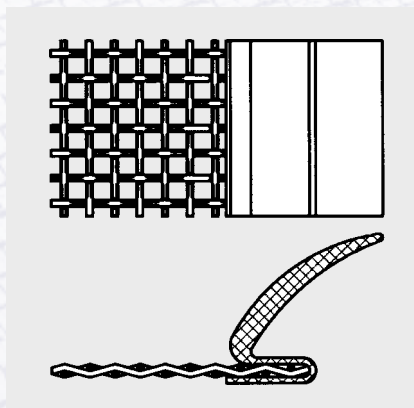
Edge folded 180°



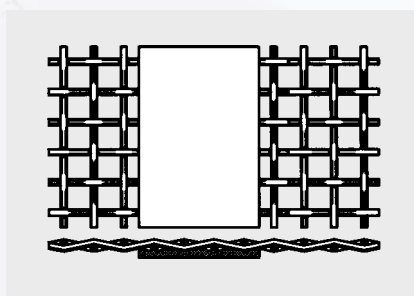
Edge reinforced with PUR-foil



Rubber- or silicon lip sealing



Reinforcement with PUR-foil



Industrial Wire Screens: Main Specifications

0.05 to 2.24 mm

Aperture width w	Wire diameter d	Weight G	Open screening area A ₀	Stainless Steel	HAVERNIA Steel	Weave Type
mm	mm	kg/m ²	%			
0.05	0.028	0.13	41	X		A
0.063	0.04	0.2	36	X		A
0.071	0.05	0.27	34	X		A
0.075	0.053	0.26	34	X		A
0.08	0.05	0.25	38	X		A
0.09	0.05	0.23	41	X		A
0.1	0.063	0.31	38	X		A
0.112	0.071	0.35	37	X		A
0.125	0.08	0.4	37	X		A
0.14	0.067	0.28	47	X		A
0.16	0.1	0.49	38	X		A
0.2	0.125	0.61	38	X		A
0.25	0.14	0.64	41	X		A
0.25	0.125	0.6	44		X	A
0.315	0.16	0.7	46	X	X	A
0.315	0.2	1.05	37	X	X	A
0.355	0.125	0.45	55	X	X	A
0.375	0.125	0.45	56	X	X	A
0.4	0.125	0.45	58		X	A
0.4	0.18	0.71	48	X		A
0.4	0.2	0.9	44		X	A
0.425	0.125	0.4	60	X	X	A
0.475	0.125	0.40	63	X	X	A
0.5	0.125	0.35	64	X	X	A
0.5	0.25	1.15	44	X	X	A
0.5	0.315	1.65	38	X	X	A
0.53	0.125	0.35	65		X	A
0.56	0.125	0.35	67		X	A
0.56	0.224	0.79	52	X		A
0.56	0.25	1.05	48		X	A
0.63	0.16	0.45	64	X	X	A
0.63	0.25	1	51	X	X	A
0.63	0.28	1.2	48		X	A
0.63	0.315	1.45	44	X	X	A

Aperture width w	Wire diameter d	Weight G	Open screening area A ₀	Stainless Steel	HAVERNIA Steel	Weave Type
mm	mm	kg/m ²	%			
0.67	0.16	0.45	65	X	X	A
0.71	0.315	1.35	48	X	X	A
0.75	0.2	0.6	62		X	A
0.75	0.315	1.3	50		X	A
0.8	0.2	0.55	64	X	X	A
0.8	0.315	1.25	51	X	X	A
0.8	0.4	1.8	44	X	X	A
0.85	0.2	0.55	66		X	A
0.9	0.315	1.15	55	X	X	A
0.9	0.4	1.7	48		X	A
0.95	0.2	0.5	68		X	A
1	0.315	1.05	58	X	X	A
1	0.5	2.25	44	X	X	A
1	0.63	3.3	38	X	X	A
1.12	0.25	0.65	67	X	X	A
1.18	0.5	2.05	49		X	A
1.25	0.315	0.9	64		X	A
1.25	0.5	1.95	51		X	A
1.25	0.63	2.9	44	X	X	A
1.25	0.8	4.25	37	X	X	A
1.32	0.63	2.75	46		X	A
1.4	0.315	0.8	67	X	X	A
1.4	0.63	2.65	48		X	A
1.5	0.315	0.75	68		X	A
1.5	0.63	2.55	50	X	X	A
1.6	0.315	0.7	70		X	A
1.6	0.63	2.45	51	X	X	A
1.6	1	5.2	38	X	X	A
1.8	0.315	0.65	72	X	X	A
1.8	0.8	3.35	48	X	X	A
2	0.63	2.05	58	X	X	A
2	1	4.5	44	X	X	A
2	1.4	7.8	35		X	A
2.24	1	4.2	48		X	A

Other specifications upon request

Industrial Wire Screens: Main Specifications

2.5 to 100 mm

Aperture width w	Wire diameter d	Weight G	Open screening area A ₀	Stainless Steel	HAVER NIA Steel	Weave Type
mm	mm	kg/m ²	%			
2.5	1.25	5.65	44	X	X	A
2.5	1.6	8.45	37		X	A
2.8	1.4	6.3	44		X	A
2.8	1.8	9.55	37		X	A
3.15	0.63	1.45	69		X	A
3.15	1.4	5.85	48		X	A
3.15	1.8	8.85	40		X	A
3.55	1.4	5.35	51		X	A
3.55	2	9.75	41		X	A
4	1.25	4.05	58	X	X	A
4	1.6	6.2	51	X	X	A E
4	2	9	44	X	X	A
4.5	1.8	6.95	51	X	X	A
5	1.4	4.15	61		X	A D
5	2	7.75	51		X	A
5.6	1.8	5.95	57	X	X	A
6.3	1.6	4.4	64	X	X	A E
6.3	2	6.55	58	X	X	A
6.3	3.15	14.2	44		X	A
7.1	2.24	7.3	58		X	A
8	2.5	8.05	58	X	X	A
8	3.15	12.05	51		X	A
9	2.5	7.35	61		X	A
9	3.15	11.05	55		X	A
10	2.5	6.75	64	X	X	A D E
10	3.15	10.2	58		X	A D
10	4	15.45	51		X	A
11.2	3.15	9.35	61		X	A
12.5	2.5	5.65	69	X	X	B D E
12.5	3.15	8.6	64		X	A
12.5	4	13.1	57		X	A E
13.2	3.15	8.2	65		X	A
14	2.5	5.15	72	X	X	C E
14	3.15	7.85	67		X	A

Other specifications upon request

Aperture width w	Wire diameter d	Weight G	Open screening area A ₀	Stainless Steel	HAVER NIA Steel	Weave Type
mm	mm	kg/m ²	%			
15	4	11.4	62		X	A E
16	4	10.8	64		X	A
17	2.5	4.35	76		X	C E
18	4	9.85	67		X	A D E
20	3.15	5.8	75		X	D E
20	4	9	69		X	D E
25	4	7.45	74		X	D E
25	5	11.25	69		X	D E F
28	6.3	14.7	67		X	D F
30	5	9.65	73		X	D F
30	6.3	13.89	68		X	D E F
31.5	8	20.58	64		X	D F
35.5	8	18.69	67		X	D F
40	5	7.5	79		X	C F
40	8	16.93	67		X	D F
45	8	15.34	72		X	D F
50	8	14.01	74		X	D F
56	10	19.24	72		X	D F
63	10	17.40	74		X	D F
71	12.5	23.76	72		X	F
80	12.5	21.45	75		X	F
100	16	28.03	74		X	F

Standards for Industrial Wire Screens

DIN ISO 4783: 1996

Industrial wire screens and woven wire cloth – Guide to the choice of aperture size and wire diameter combinations

Part 1: Generalities

Part 2: Preferred combinations for woven wire cloth

Part 3: Preferred combinations for precrimped or pressurewelded wire screens

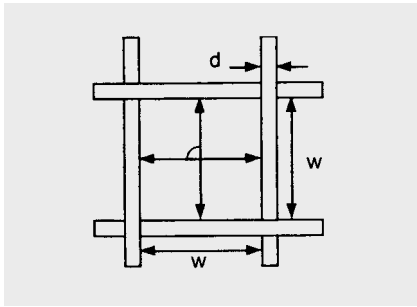
DIN ISO 9044: 1993

Industrial woven wire cloth – Technical requirements and testing

DIN ISO 14315: 1998

Industrial wire screens – Technical requirements and testing

Abbreviations and definitions for Wire Screen Sections (ISO 14315)

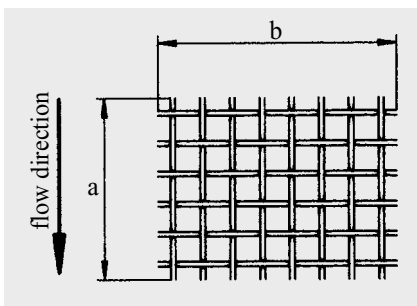


- w Aperture width**
Distance between two adjacent warp or weft wires, measured in the projected plane at mid positions.
- d Wire diameter**
Diameter of the wire in the wire screen.
- p Pitch**
Distance between the middle points of two adjacent wires. Nominally the sum of the aperture width w and the wire diameter d ($p = w+d$).
- k Warp**
All wires running lengthwise in the screen as manufactured.
- s Weft**
All wires running crosswise in the screen as manufactured.
- A_o Open screening area**
Percentage of the surface of all the apertures in the total screening surface. Ratio of the square of the nominal aperture width w and the square of the nominal pitch $p = (w+d)$, rounded to a full percentage value:
 $A_o = 100 \cdot (w : p)^2$
- ρA Mass per unit area**
The quantity calculated using the following equation :

$$\rho A = \frac{d^2 \cdot \rho \cdot f}{618,1 (w + d)}$$

- d = wire diameter in mm
 w = aperture width in mm
 f = type conversion factor (see ISO 4783-1 : 1989, Table 1)
 ρ = material density in kg per m³ (see ISO 4783-1 : 1989, Table 2)
 The equation gives the calculated mass per unit area in kg/m², although the actual value can be up to 3% lower.

How to order Wire Screen Sections



When ordering industrial wire screens the following should be specified:

1. The quantity required and all dimensions of rolls, parts of rolls or cut-to-size pieces, including tolerances.
2. The aperture width w (if required with certified apertures) and the wire diameter d .
3. The material of the wire (alloy, grade or finish, preferably according to international or national standards).
4. Required type of screen according to ISO 4783-3 : 1989, Table 3, if other than type A (type A = DOUBLE CRIMP SCREEN).
5. Flow direction of sieve material (see illustration)
6. Type of certification, if any.
7. Any other requirements not mentioned.

Wire Screen Sections with Hook Strips

- Sketch or drawing preferred, together with an indication of the permissible tolerances
- **FL full length** of hook strip
- **Sp tensioning measurements**, tensioning length.

Screen Frames and Re-Screening Service

Round Screen



Round and rectangular screens are used for fine particle separation by dry and wet screening process, for drainage and cleaning of drilling mud. We supply complete screen frames for these screening machines:

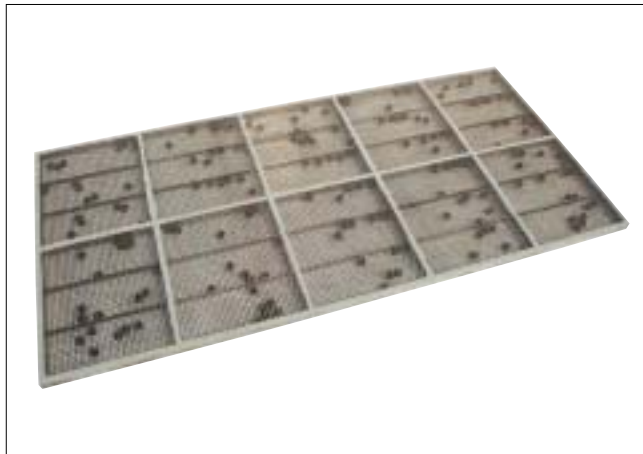
1. Round screens up to 1,650 mm
2. Rectangular screens up to 2,650 x 3,100 mm

The optimum tensioning of round and rectangular screens is essential for their service life and the capacity of the screening machine. The screening equipment developed by us guarantees uniform tension of the screens.

Re-Screening Service

We re-screen your round or rectangular frames. Before re-screening the used or damaged frame, it is carefully cleaned.

Rectangular Screen



Adhesives

Besides standard adhesives we also use adhesives approved for use in food contact and heat resisting adhesives (up to 200°C).

Special Equipment

All screens can be tailored to your individual needs:

- center hole for the center axis reinforced with plastic or stainless steel disc
- center baffle plate
- dividing rods made from cellular rubber or profile made from stainless steel
- support screen
- rubber balls for pulsating effect to help prevent blinding and many more.



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