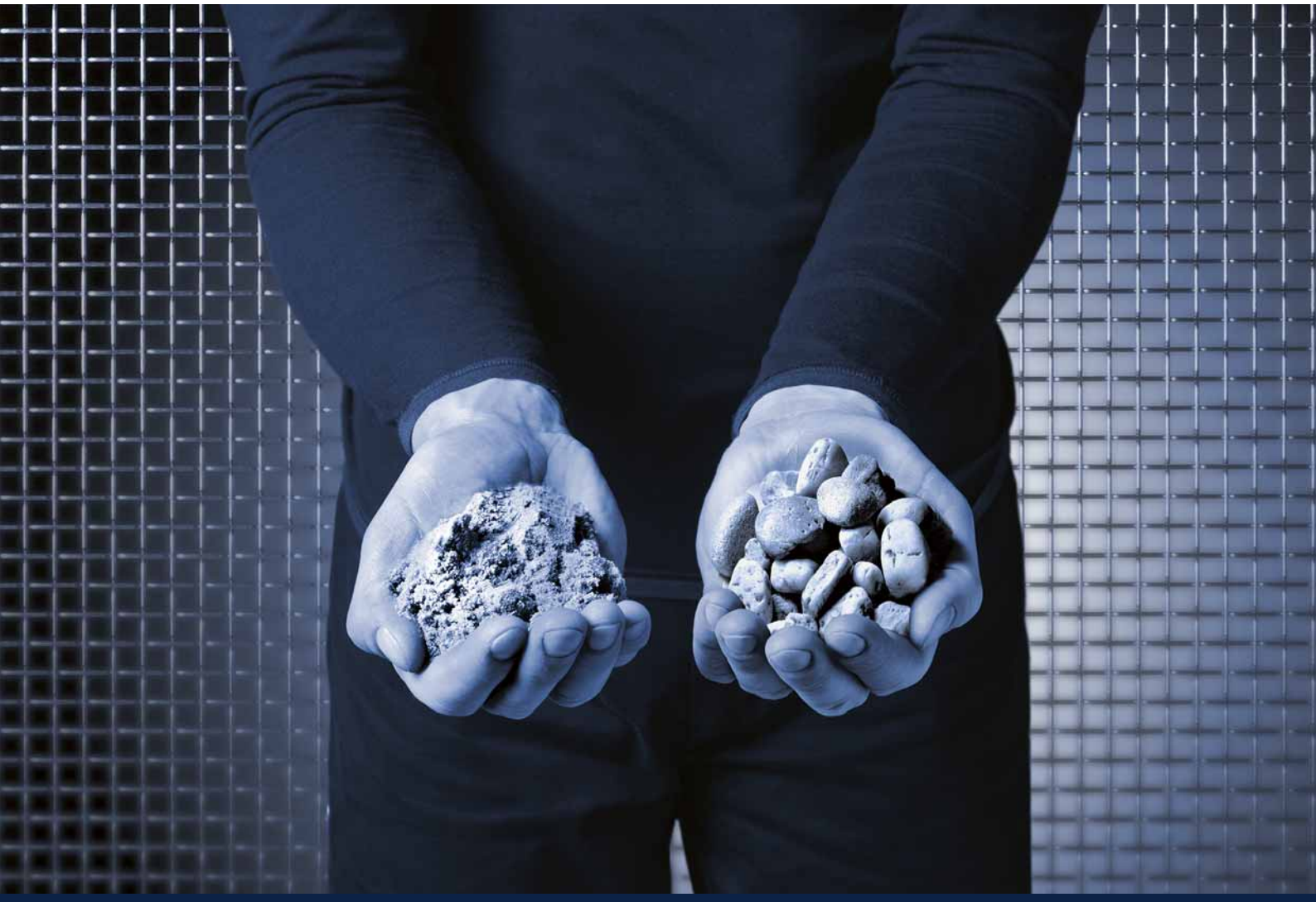
HAVER & BOECKER

DIE DRAHTWEBER

INDUSTRIAL WIRE SCREENS.
PROCESSING ANY CHALLENGE.



INDUSTRIAL WIRE SCREENS.

When it comes to industrial screening, precision and reliability are the factors that count. Here, Haver & Boecker sets international standards in terms of quality and service based on our expert knowledge and long-standing experience in the development and manufacture of wire screen sections. We furthermore benefit from our constructive contributions to all major standardization committees. Haver & Boecker screen cloth and screen sections not only set the standard in many fields of the industry but are also convincing examples for solutions that are really tailored to your requirements.

From quarries over sand and gravel plants to screening of oil mud, from paint and powder manufacturers over chemical and pharmaceutical industry to food industry – industrial wire screens by Haver & Boecker are used in almost every application field.
By constant exchange with engineers, manufacturers, and operators of screening machines, we make sure to always have the best screen section at your disposal.

Future-proof: modern screening technology

Based on more than 125 years of experience in the manufacture of woven wire cloth, Haver & Boecker has continuously enhanced industrial screening technology. In addition to wire cloth manufactured traditionally with warp and weft, our portfolio comprises an extensive range of systems up to entire screening machines, offered in cooperation with our affiliates and partners all over the world who are always at your disposal for all services related to screening technology.

Haver & Boecker's process-oriented quality management is certified pursuant to DIN EN ISO 9001:2015. Differentiated quality assurance guarantees a consistently high quality level for our customers, from the various types of wire up to the finished product.

We will gladly help you to find the optimum media for your screening process and are at your service at all times with our expert skills and know-how.

Haver & Boecker began producing wire cloth in Hohenlimburg, Germany, in 1887. Today we are one of the world's leading wire weaving companies with a global network of branches and manufacturing facilities.

Our work is based upon experience, continuous research and development of our products and manufacturing processes, along with the knowledge and ability of our staff. This combination of tradition and innovation allows us to meet and exceed the high expectations of our customers.

A PARTNER FOR ALL SCREENING PROCESSES.

To ensure safe and efficient screening processes, material, aperture shape, weave, and screening machine must be optimally adapted to the products to be screened. The Haver & Boecker product range comprises solutions for all types of screening machines and applications: classical screen sections made of high-tensile or non-corrosive stainless steels, as well as special high vibration wire screens or pretensioned screens with or without ultrasonic support. No matter which screen type you select, high-quality materials and processing warrant not only optimum functionality but also maximum stability and lifetime.

HAVER Industrial Wire Screens: modern classics

Our product range comprises screen media for all types of screening machines with apertures from 0.025 mm to more than 100 mm. Besides HAVER NIA® spring steel, different stainless steels are used which ensure not only optimum functionality but also maximum stability and lifetime. All our industrial wire screens are available as rolls, cut-to-size pieces, or ready-for-use screen sections, equipped with hook strips or pre-tensioned on frames, all with various optional features and in accordance with ISO 14 315 and ISO 9044.

FLEX-MAT®: High Vibration Wire Screens

The pre-formed flat warp wires in FLEX-MAT® screens are not woven with cross wires but hold in position with special polyurethane strips. This allows for free vibration of the individual wires, resulting in a faster material stratification and increased production rates as well as in a self-cleaning effect which particularly effectively prevents blinding, pegging and clogging. FLEX-MAT® screen sections are available in OptimumWire or stainless steel.

TON-CAP and EGLA-MAX: special slotted apertures

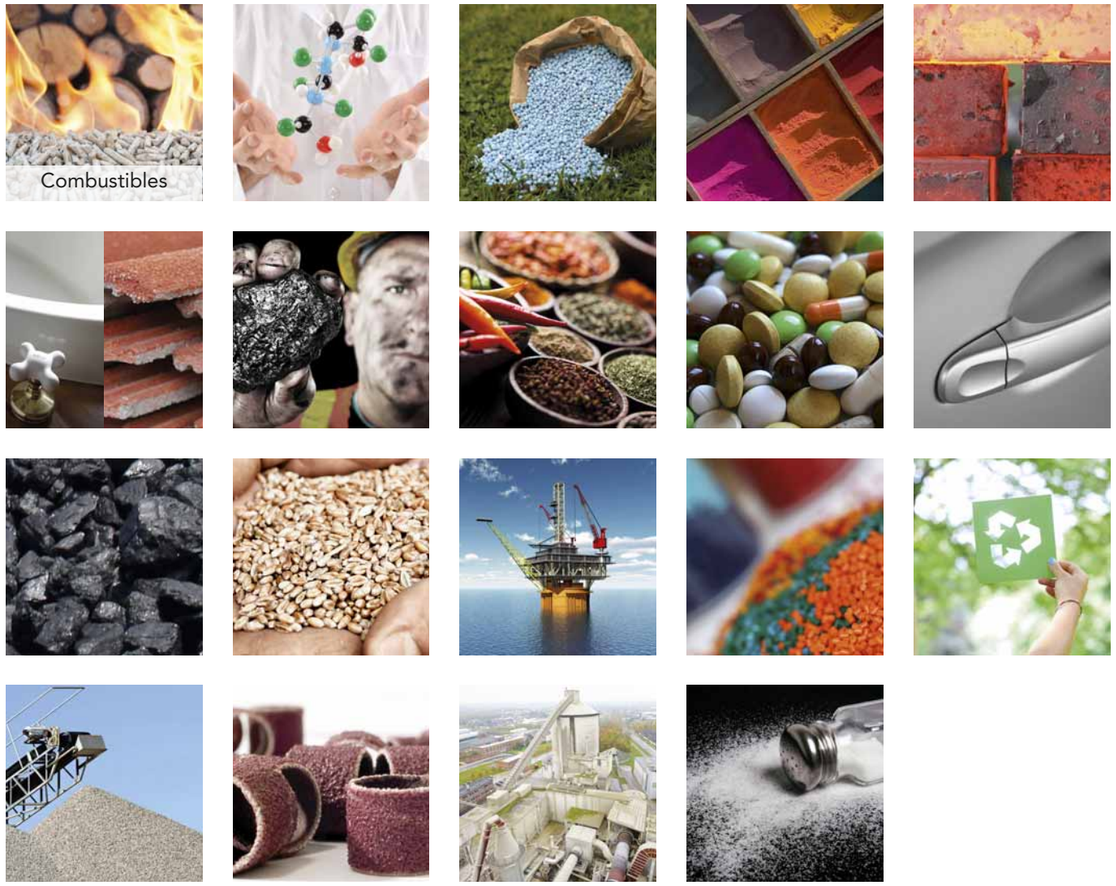
These rectangular mesh types are characterized by their large open screening area and their strong wires. Thus ensuring higher throughput and longer lifetime.

Faster processing thanks to ultrasonic technology

By means of individually designed waveguide systems, Haver ultrasonic screen sections guarantee smooth and safe fine screening also when classifying critical materials. Existing screening units with pre-tensioned screen frames can be retrofitted with this innovative technology.

APPLICATIONS FOR INDUSTRIAL WIRE SCREENS: THE RIGHT SCREENING MEDIUM FOR ALL AREAS.

From quarries, sand and gravel works to the extraction of crude oil, from paint and powder coating manufacturers, from chemical and pharmaceutical companies to the food industry – industrial wire screens from Haver & Boecker are used in almost all areas of application.



- Combustibles
- Chemicals
- Fertilisers, Potash and Salt
- Paint Powders and Varnishes
- Refractory Materials and Hard Stones
- Ceramics and Porcelaine
- Coal
- Foodstaffs
- Medications
- Metal Powder
- Minerals and Ores
- Mills and Feed
- Oil and Gas
- Powders, Pigments, Granulates
- Recycling
- Sand, Gravel and Crushed Stone
- Grindings and Blasting Agents
- Cement and Building Materials
- Sugar and Salt

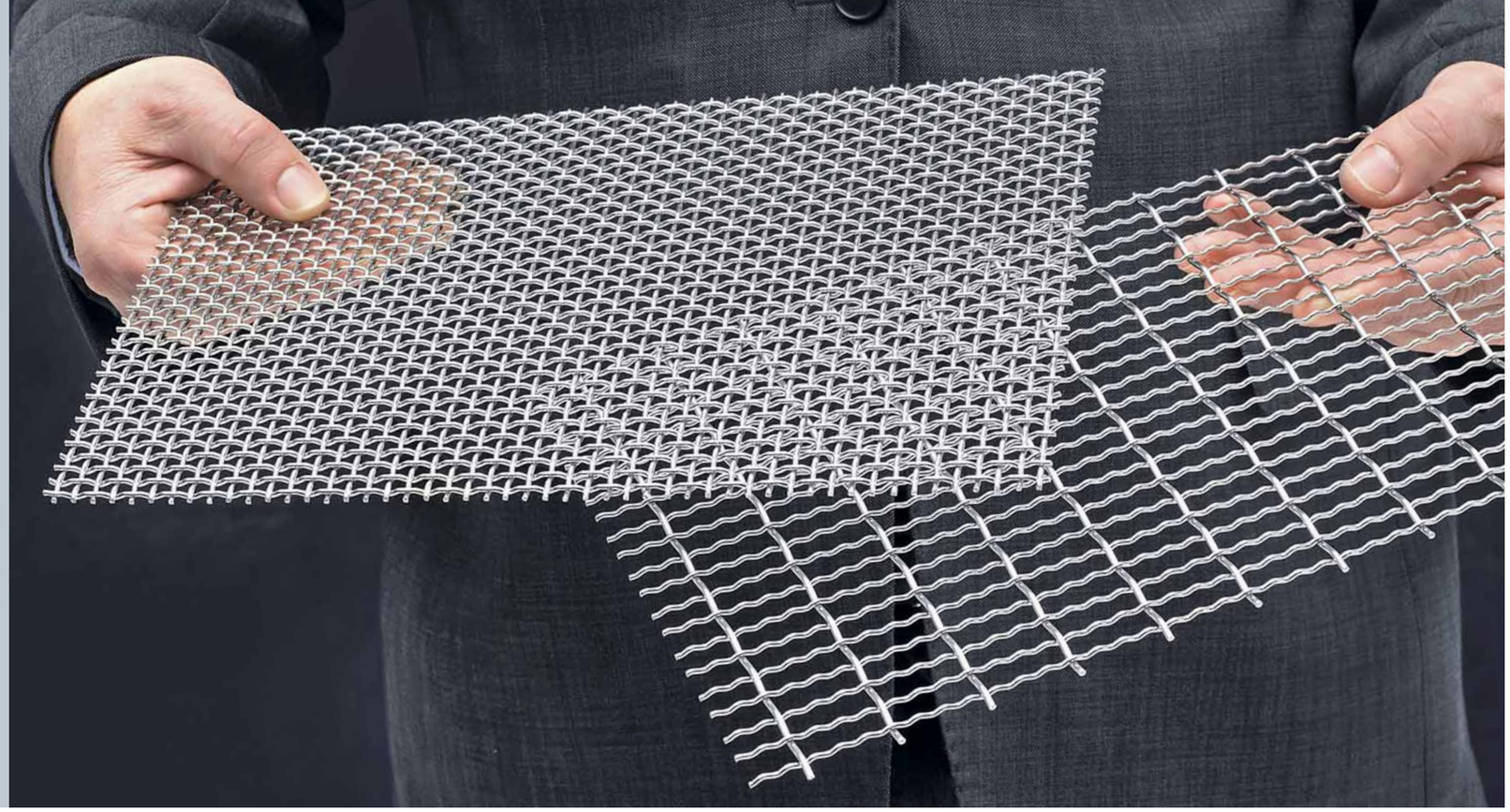
BEST MATERIALS: THE WAY TO SUCCESS.

Materials

Every product has specific properties that must be taken into account not only when designing the entire screening process but also when selecting the screen cloth. Haver & Boecker produces wire cloth from almost any type of metal and offers the suitable alloy for almost any application. Whatever it is you are screening – our metallurgists will certainly find the matching wire for you.

Materials		Properties			
Description	**AISI**	**Corrosion resistance**	**Tensile strength**	**magnetizable**	**Wire surface**
Stainless Steel 1.4301 / 1.4401	304 / 316	very good	medium	no	very smooth
Stainless Steel 1.4310	301	good	high	no	very smooth
Stainless Steel 1.4016	430	good	small	yes	smooth
Duplex		very good	high	yes	very smooth
NIA®-Spring Steel		–	high	yes	coarse
Optimum Wire		–	very high	yes	coarse

Special stainless steel alloys for temperature and acid sensitive products are available on request.



TOP RESULTS WITH CLASSIC SQUARE AND RECTANGULAR APERTURES.

Haver & Boecker stocks a large variety of standard wire cloths pursuant to ISO 14 315 and ISO 9044 so that our customers will find the best specification for any application.

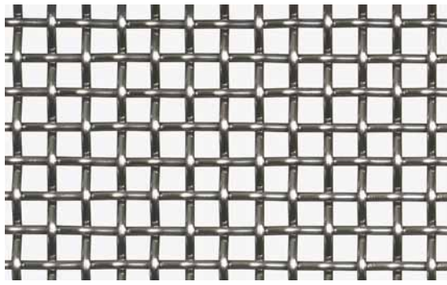
Square apertures
For accurate screening results or for separating longitudinal particles, the use of square wire cloth is imperative.

When processing coarser bulk materials, the crimping of the wire before weaving is decisive for the screening performance. With their rough three-dimensional surface Double Crimp and Lock-Crimp weaves ensure excellent shifting of the material. The chances of the material to pass the apertures are significantly higher. Furthermore, fine particles are conveyed to the screen surface faster, accelerating the entire screening process. The faster the fine particles are screened, the bigger the surface available for screening the critical near-sized particles. However, in case of particularly heavy, abrasive materials the tops of the wire crimps may wear down faster than the other parts of the wire.

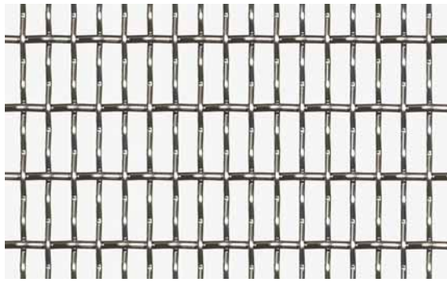
This effect is excluded with the Flat Top crimp that creates a smooth surface on one side. The flat surface ensures consistent wear over the entire screen section. With inclined screening machines, however, the flat surface will have a negative effect on the screening efficiency. The material travels over the screen surface faster. Consequently, fine particles are slower in getting to the surface of the screen, and the chance that all particles are screened is smaller. For this reason, when processing difficult-to-screen materials it is recommended to use Flat Top screens only with horizontal vibrating screening machines.

Slotted apertures
For round or cubic particles, it is an option to use rectangular or slotted wire cloth. Thanks to their relatively large open area, they ensure higher output with smaller clogging tendency. If the long slot runs parallel to the material flow, a higher output is achieved. If it runs crosswise to the flow direction, more accurate cuts are achieved. The larger the length-to-width ratio, the greater the flexibility of the wire cloth and the better the self-cleaning effect.

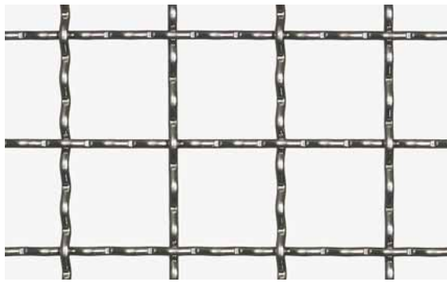
Type A
DOUBLE CRIMP SCREEN



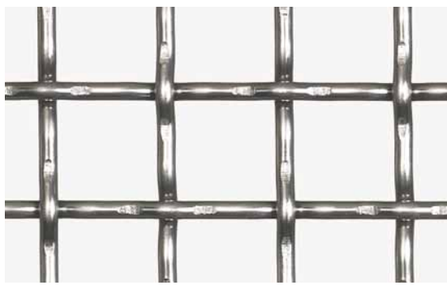
Type B
SINGLE INTERMEDIATE CRIMP SCREEN
with intermediate crimps in one direction



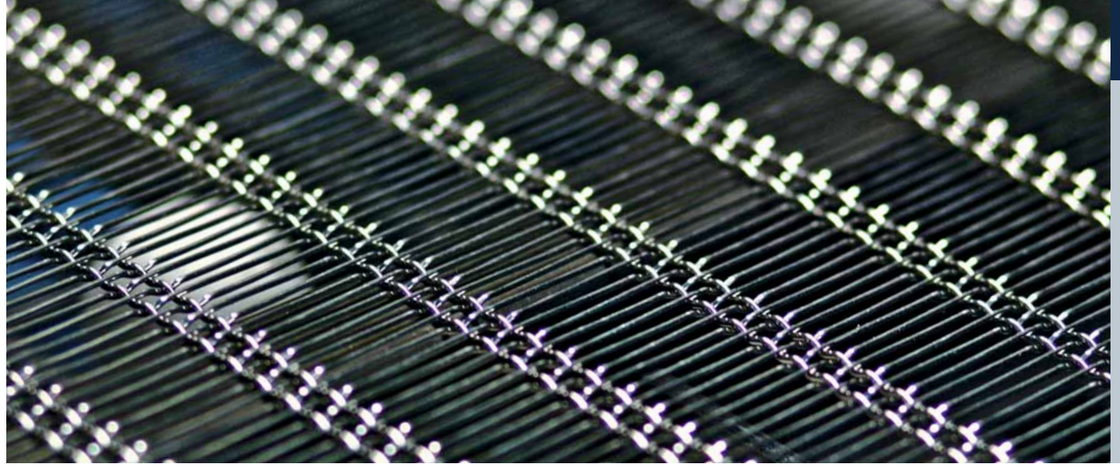
Type C
DOUBLE INTERMEDIATE CRIMP SCREEN
with intermediate crimps



Type D
LOCK CRIMP SCREEN
pre-crimped on both sides



Type E
FLAT TOP SCREEN
with one flat side



TON-CAP			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m²	%
0.18 x 2.65	0.45 / 0.50	2.60	24
0.25 x 1.60	0.40 / 0.56	2.55	29
0.265 x 4.50	0.56 / 0.63	2.95	28
0.30 x 2.00	0.45 / 0.56	2.55	31
0.355 x 2.50	0.45 / 0.63	2.45	35
0.375 x 2.65	0.40 / 0.50	1.90	41
0.40 x 2.50	0.56 / 0.71	3.10	33
0.45 x 3.55	0.45 / 0.63	2.10	43
0.475 x 3.00	0.50 / 0.71	2.55	39
0.53 x 3.35	0.45 / 0.63	2.00	46
0.53 x 3.35	0.63 / 0.90	3.45	36
0.56 x 3.55	0.50 / 0.71	2.30	44
0.56 x 3.55	0.56 / 0.80	2.75	41
0.63 x 4.25	0.63 / 0.90	3.00	41
0.71 x 4.25	0.71 / 0.90	3.25	41

EGLA-MAX			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m²	%
0.63 x 30.00	1.00 / 2 x 0.80	4.15	37
0.71 x 30.00	1.00 / 2 x 0.80	3.97	39
0.80 x 30.00	1.00 / 2 x 0.80	3.78	42
0.90 x 30.00	1.00 / 2 x 0.80	3.60	45
1.00 x 30.00	1.00 / 2 x 0.80	3.43	48
1.12 x 30.00	1.00 / 2 x 0.80	3.25	50
1.25 x 30.00	1.25 / 2 x 1.00	4.37	47
1.40 x 30.00	1.25 / 2 x 1.00	4.14	50
1.60 x 40.00	1.25 / 2 x 1.00	3.78	54
1.80 x 40.00	1.25 / 2 x 1.25	4.36	53
2.00 x 40.00	1.40 / 2 x 1.25	4.13	55
2.50 x 40.00	1.40 / 2 x 1.25	3.66	60
3.15 x 50.00	1.60 / 2 x 1.40	3.89	63
4.00 x 63.00	1.80 / 2 x 1.60	4.04	66
5.00 x 63.00	1.80 / 2 x 1.60	3.52	70

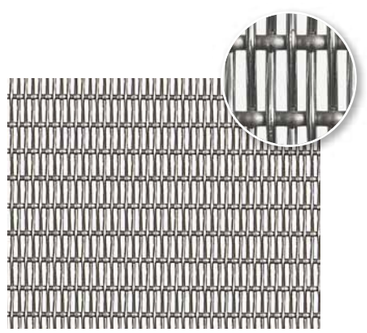
MORE THROUGHPUT, LONGER LIFETIME: SPECIAL SLOTTED APERTURES – TON-CAP AND EGLA-MAX.

By default, rectangular apertures have a length-to-width ratio of 1:3. Wires of the same diameter as for the corresponding square apertures are used. The open area is larger than with a square aperture, ensuring a higher throughput. However, the wear lifetime of the screen section is shorter due to the lower weight. The Haver & Boecker product range has two special rectangular apertures that provide for convincing solutions.

TON-CAP

This stands for Tonnage Capacity, a wire cloth consisting of fine rectangular apertures with a length-to-width ratio of 1:6 to 1:15. The sleek shape of these apertures permits the use of larger-diameter wire than with corresponding square apertures. While the open area remains approximately the same, the weight is more than double, which ensures that the wear life of TON-CAP is significantly longer with comparable throughput capacity.

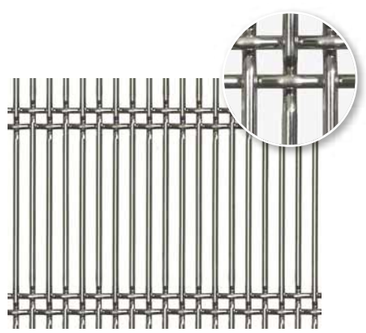
TON-CAP is suitable primarily for abrasive materials when a long wear life is a top priority.



EGLA-MAX

Contrary to TON-CAP, increasing the open area is of primary importance in EGLA-MAX which has extreme aperture proportions of up 1:25. The wire diameter is only slightly bigger than for the corresponding square apertures so that both qualities have comparable weights and thus wear properties. To ensure a tight connection between warp and weft wires and to strengthen the stability of the wire cloth, EGLA-MAX has two weft wires woven in with each group of cross wires.

Thanks to the larger open area, throughput and capacity of the operation are increased.



The extremely long aperture significantly reduces the tendency to blinding and pegging. Furthermore, the EGLA-MAX surface is flat on one side, which ensures consistent wear over the entire screen section.



MAIN SPECIFICATIONS OF INDUSTRIAL WIRE

Square apertures			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m²	%
0.025	0.025	0.16	25
0.038	0.025	0.13	36
0.050	0.028	0.13	41
0.063	0.040	0.20	37
0.071	0.050	0.26	34
0.075	0.050	0.28	36
0.080	0.050	0.24	38
0.090	0.050	0.23	41
0.100	0.063	0.31	38
0.112	0.071	0.35	38
0.125	0.080	0.40	37
0.140	0.067	0.28	46
0.160	0.100	0.49	38
0.200	0.125	0.61	38
0.224	0.125	0.57	41
0.250	0.125	0.53	44
0.250	0.140	0.64	41
0.315	0.160	0.68	44
0.315	0.200	0.99	37
0.355	0.125	0.41	55
0.400	0.125	0.38	58
0.400	0.180	0.71	48
0.400	0.200	0.85	44
0.425	0.125	0.36	60
0.450	0.200	0.78	48
0.500	0.125	0.32	64
0.500	0.250	1.06	44
0.500	0.315	1.55	38
0.530	0.125	0.30	66
0.560	0.125	0.29	67
0.560	0.224	0.81	51
0.630	0.160	0.41	64
0.630	0.280	1.09	48
0.630	0.315	1.33	44
0.670	0.160	0.39	65
0.710	0.315	1.23	48
0.800	0.315	1.13	52
0.800	0.400	1.69	44
0.900	0.315	1.04	55
0.900	0.400	1.56	48

Square apertures			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m²	%
1.000	0.315	0.96	58
1.000	0.500	2.12	44
1.000	0.630	3.19	38
1.180	0.500	1.89	49
1.250	0.400	1.23	57
1.250	0.630	2.77	44
1.250	0.800	4.09	37
1.320	0.630	2.67	46
1.400	0.315	0.73	67
1.400	0.630	2.56	48
1.500	0.630	2.44	50
1.600	0.315	0.66	70
1.600	0.500	1.51	58
1.600	0.630	2.33	52
1.600	1.000	5.04	38
1.800	0.315	0.60	72
1.800	0.560	1.69	58
1.800	0.800	3.22	48
2.000	0.560	1.56	61
2.000	1.000	4.37	44
2.000	1.400	7.78	35
2.240	0.630	1.81	61
2.240	0.900	3.38	51
2.500	0.710	2.06	61
2.500	1.250	5.63	44
2.500	1.600	8.43	37
2.800	1.400	6.30	44
2.800	1.800	9.51	37
3.150	0.800	2.12	64
3.150	1.400	5.82	48
3.150	1.800	8.84	41
3.550	1.400	5.35	51
3.550	2.000	9.73	41
4.000	1.250	4.02	58
4.000	1.600	6.17	51
4.000	2.000	9.00	44
4.500	1.800	6.94	51
5.000	1.250	3.38	64
5.000	1.400	4.13	61
5.000	2.000	7.71	51

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Square apertures			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m²	%
5.60	1.80	5.91	57
6.30	1.60	4.37	64
6.30	2.00	6.51	58
6.30	3.15	14.18	44
7.10	2.00	5.93	61
8.00	2.50	8.04	58
8.00	3.15	12.01	52
9.00	2.50	7.34	61
9.00	3.15	11.03	55
10.00	2.50	6.75	64
10.00	3.15	10.19	58
10.00	4.00	15.43	51
11.20	2.50	6.16	67
12.50	2.50	5.63	69
12.50	3.15	8.56	64
12.50	4.00	13.09	57
13.20	3.15	8.19	65
14.00	2.50	5.11	72
14.00	3.15	7.81	67
15.00	4.00	11.37	62
16.00	4.00	10.80	64
17.00	2.50	4.33	76
18.00	4.00	9.82	67
20.00	3.15	5.79	75
20.00	4.00	9.00	69
20.00	6.00	18.69	59
25.00	4.00	7.45	74
25.00	6.00	15.68	65
28.00	6.00	14.29	68
31.50	6.00	12.96	71
31.50	8.00	21.87	64
35.50	8.00	19.86	67
40.00	8.00	18.00	69
45.00	8.00	16.30	72
50.00	8.00	14.90	74
56.00	10.00	20.45	72
63.00	10.00	18.49	75

Slotted apertures			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m²	%
0.10 x 0.30	0.08 / 0.08	0.33	44
0.15 x 0.45	0.125 / 0.14	0.57	42
0.18 x 0.67	0.18 / 0.18	0.81	39
0.20 x 0.60	0.125 / 0.112	0.42	52
0.20 x 0.60	0.20 / 0.18	0.90	39
0.25 x 0.75	0.16 / 0.14	0.54	51
0.25 x 0.75	0.224 / 0.20	0.94	42
0.30 x 0.90	0.28 / 0.25	1.20	41
0.315 x 0.95	0.20 / 0.18	0.69	51
0.40 x 1.18	0.25 / 0.224	0.84	52
0.45 x 1.40	0.315 / 0.28	1.15	49
0.50 x 1.50	0.25 / 0.224	0.71	58
0.50 x 1.50	0.315 / 0.28	1.08	52
0.50 x 1.50	0.40 / 0.355	1.60	45
0.56 x 1.70	0.355 / 0.315	1.20	52
0.63 x 1.90	0.28 / 0.25	0.74	61
0.63 x 1.90	0.50 / 0.45	1.95	45
0.71 x 2.12	0.315 / 0.28	0.83	61
0.80 x 2.36	0.315 / 0.28	0.76	64
0.90 x 2.65	0.40 / 0.315	1.01	62
1.00 x 3.00	0.63 / 0.80	2.70	48
1.25 x 3.75	0.63 / 0.80	2.35	55
1.40 x 4.25	0.71 / 1.00	2.85	54
1.60 x 4.75	0.80 / 1.00	3.00	55
1.80 x 5.30	0.90 / 1.25	3.60	54
2.00 x 6.00	0.90 / 1.40	3.65	56
2.50 x 7.50	1.00 / 1.40	3.45	60
2.80 x 8.50	1.00 / 1.40	3.15	63
3.15 x 9.50	1.00 / 1.40	2.90	66
4.00 x 11.80	1.25 / 1.60	3.30	67
4.00 x 11.80	1.60 / 2.00	4.85	61
4.50 x 13.20	1.25 / 1.60	3.05	70
5.00 x 15.00	1.40 / 2.00	3.70	69
6.30 x 19.00	1.60 / 2.50	4.20	71
7.10 x 21.20	1.60 / 2.00	3.20	75
8.00 x 23.60	1.60 / 2.00	2.85	77
10.00 x 30.00	2.00 / 2.50	3.55	77

Other specifications available on request.
Spring Steel specifications are available from aperture width 0.224 mm and up.
Depending on material and type of weave, the actual weights may differ from the above.

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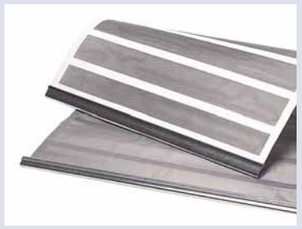
Standard hook strip

Double fold hook strip for end tensioning. Available with silicon or rubber seal



Multilayer screen section reinforced with PUR-strips

Edge reinforced with PUR-strip and equipped with eyelets

Measurements and tolerances (DIN ISO 14315)

Side tensioning

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

End tensioning

Spi Measurement between insides of the hook strips.
Tolerance: +(8 + d) / 0 mm

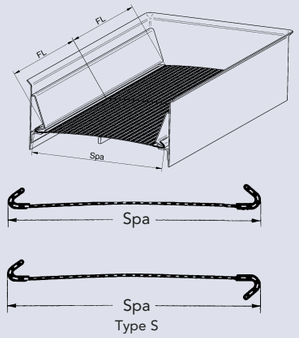
Spia Measurement from inside the hook strip to outside of flat bent tensioning bar.
Tolerance: +(8 + d) / 0 mm

Side and end tensioning

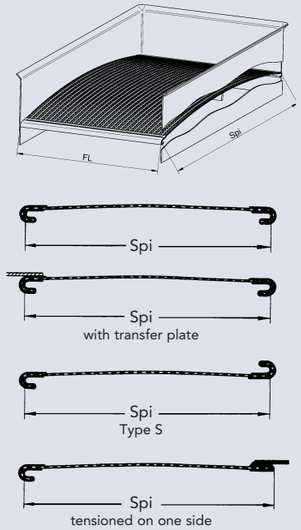
Fl Overall length of hook strips
Tolerance: 0 – 5 mm

Δp Parallelity of hook strips
Tolerance: +/- 4 mm on 1.000 mm length

Side tensioning



End tensioning



TENSIONING SYSTEMS IN ALL EXECUTIONS.

Haver & Boecker offers a great variety of solutions for all types of screening machines in respect of weave and material, as well as of hook strips and tensioning techniques.

Strong hooks

Hook strips for Haver & Boecker wire screen sections are available in many different versions, and each of these for end and side tensioning. From standard hook strip to protection with PUR-strips, we manufacture industrial wire screens that suit your applications.

For special needs

Especially with hooked fine wire cloth screen sections, it is sometimes difficult to attain consistent tension of the screen section over the entire width or length. When tensioning is critical, we have a proven solution: For multi-layer screen sections, HAVER MULTISTRECH provides for optimum tensioning of screen and support layer and for the proper adaptation of the length of the fine wire cloth.
HAVER MULTISTRETCH screen sections are also suitable for use in food industry and with temperatures of up to 90°C.

For use in the food industry with ambient temperatures of up to 120°C, Haver & Boecker offers a special food hook strip. The screen mesh is fixed to the hook strips and fully sealed with adhesives approved for use in food contact.

Thus, complete cleaning of the wire screen sections is always possible, the formation of fungus and bacteria is prevented. All special hook strips are available for side- and end-tensioned screening machines.

Optional equipment

- PUR-strips for extra wear protection
- Stapled rubber seal / silicon seal
- Glued silicon seal
- Transfer plate
- Flat tension profile
- Tension screws
- S-shaped hook strips
- Wire cloth folded by 180°
- Edge notching
- Wire cloth cleaned by ultrasonic process

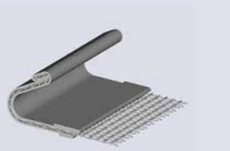
Secure fitting

Screen sections with hook strips can be tensioned along the sides or the end in reference to the flow direction.

Side tensioning has the advantage that screens are very easy to replace and re-tension: The tension screws at the side walls of the screening machine can be re-adjusted easily. In case of defect in a one- or multi-deck screening machine, just the damaged screen section needs to be replaced.

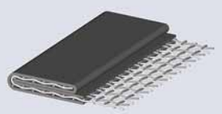
With screen sections for end tensioning machines, the area between the outside walls can be used over its full width. For improved sealing, additional rubber or silicon seals can be attached to the longitudinal sides.

Side tensioning



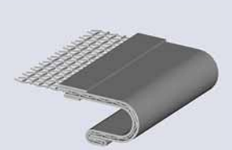
Standard hook strip type 21

Double fold hook strip type 30



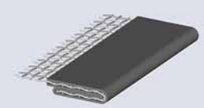
Flat tensioning bar type 26 A

End tensioning



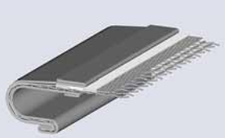
Standard hook strip type 21

Double fold hook strip type 30

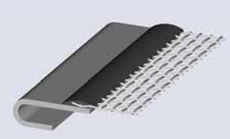


Flat tensioning bar type 26 A

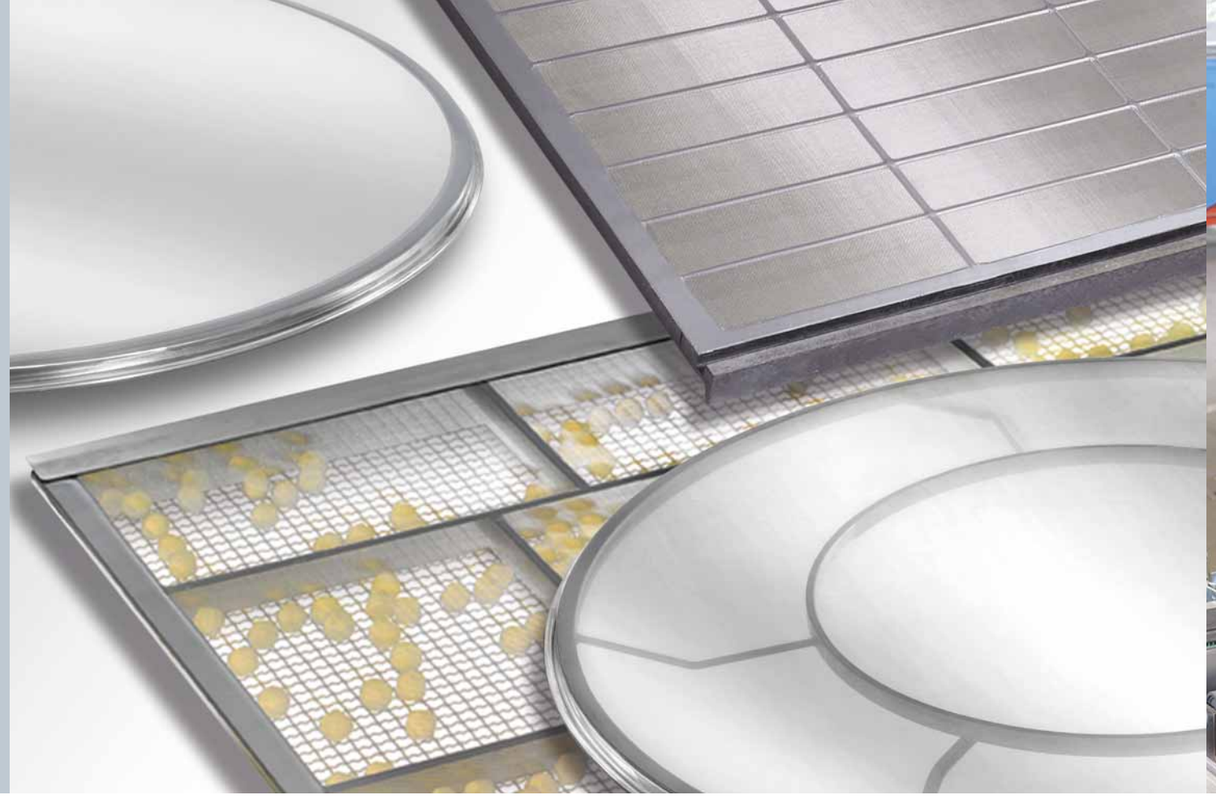
Special executions



Multistretch



LM-hook-strip for food industry



SCREENING WITH TENSION: PRE-TENSIONED FRAMES AND RE-SCREENING SERVICE.

Before commissioning a screening machine, the operators must properly tension all screen sections with hook strips. In particular fine wire cloth sections may be accidentally damaged during the installation. For this reason, pre-tensioned screen sections are used for many types of screening machines. To produce these screen sections, the pre-tensioned wire cloth is carefully and evenly glued to the screen frame in a tensioning unit developed by Haver & Boecker. This way, optimum quality is guaranteed right from delivery, which is mandatory for high performance and a long service life. You only need to install the frame, then you can start screening right away. Haver & Boecker screen frames are manufactured in compliance with all applicable standards, monitored by our quality management system certified according to DIN EN ISO 9001-2008.

Screen frames

Haver & Boecker supplies screen frames tailored to the respective requirement – available in stainless steel, plain steel, aluminium, or synthetic materials. The adhesive is selected to match the application: FDA-approved for use in food contact, heat- or acid-resistant, or suitable for use with ultrasonic screening systems. Whether commonly used screen frames of renowned screening machine manufacturers kept in stock in our warehouses, or complex tailor-made frame structures – Haver & Boecker provides pre-tensioned screen sections in any size and shape, circular screen frames up to a diameter of 2,900 mm, rectangular frames up to a size of 2,650 mm x 3,100 mm.

Re-screening service

Furthermore, we offer re-screening of defective screen frames. Send us your frame. We will remove the old wire cloth and clean the frame thoroughly. Next, we will re-screen your used frame with new wire cloth. For customers who regularly need re-screening for a large number of screen frames, specifically manufactured boxes are available for easy transportation of your frames between your factory and our workshop.

Special equipment

All screen frames are adjusted to individual requirements:

- Centre hole for the central axis, reinforced with GFRP or stainless steel disk
- Centre baffle plate
- Deflector/guide spiral made from cellular rubber or stainless steel
- Support screen and multi-layer versions
- Spherical and rhomboid balls for ball trays

ULTRASONICS – EXCITING MESH.

Haver & Boecker is collaborating with ARTECH Ultrasonic Systems AG, an international leader in ultrasound technology, to provide custom-made ultrasonic screening systems with innovative frequency variation. This type of screening systems provides for more efficient screening because it improves screen throughput, helps to break down agglomerates, reduces the amount of oversize particles and ensures a long-term cleaning effect. Ultrasonic screening solutions by Haver & Boecker can be used for cut sizes of approx. 1,000 µm to 25 µm.

The principle that convinces

For ultrasonic screening, a special waveguide system vibrates at high frequencies distributed evenly over the screen section. The vibrations in the wire cloth reduce the frictional resistance between the particles and the screen surface and the tendency towards clogging, resulting in increased throughput.

The varying frequency is a special feature of the ARTECH process. Contrary to resonance processes, it avoids patterns of constant-size resonance amplitudes. This reduces not only the dynamic stress on the screen frame but also the formation of "hot spots".

Safety in critical areas as well

Specifically in the range of ultra-fine particles, production plants are often operated in an explosive environment where EX certified products are used. Haver & Boecker Atex ultrasonic screen frames are specifically made and tested for this type of application. Each screen frame and re-screening is certified for use in EX-Zone 20. Unlike comparable systems, ARTECH ultrasonic components are positioned outside of the screening machine, the primary source of danger. They are used in EX-Zones 1/21, 1/22 or zone-free.

Round, rectangular, or cylindrical screens

ARTECH screening systems by Haver & Boecker are manufactured for screen frames of almost any size and type. In addition to the use on round or rectangular flat screens, the ultrasonic system can also be installed on cylindrical screens in rotary screening machines. On request, we also offer re-screening of modified screen frames and cylinders and upgrade existing screening machines for use with ultrasonics. Ultrasonics reduce blinding and pegging and ensure longer cleaning intervals. The quota of good material in the oversize is reduced, the throughput and performance of the screening unit increases significantly.

Available for OEM use or upgrade

The system comprises all required components from the pre-tensioned screen frame with waveguide-system over the ultrasonic converter and the generator to the support elements, if needed. If you wish to use our ARTECH ultrasonics with your existing screening machines, we will upgrade your screen frames with the appropriate waveguide. With their "Plug'n'Sieve" concept, ultrasonic screen frames with ARTECH frequency variation offer great user convenience:
Simply install the screen frame, connect the ARTECH components, and immediately start screening with higher throughput.

GREAT PERFORMANCE ON A SMALL FOOTPRINT: HAVER SCREENING MACHINES DMS AND UMD.

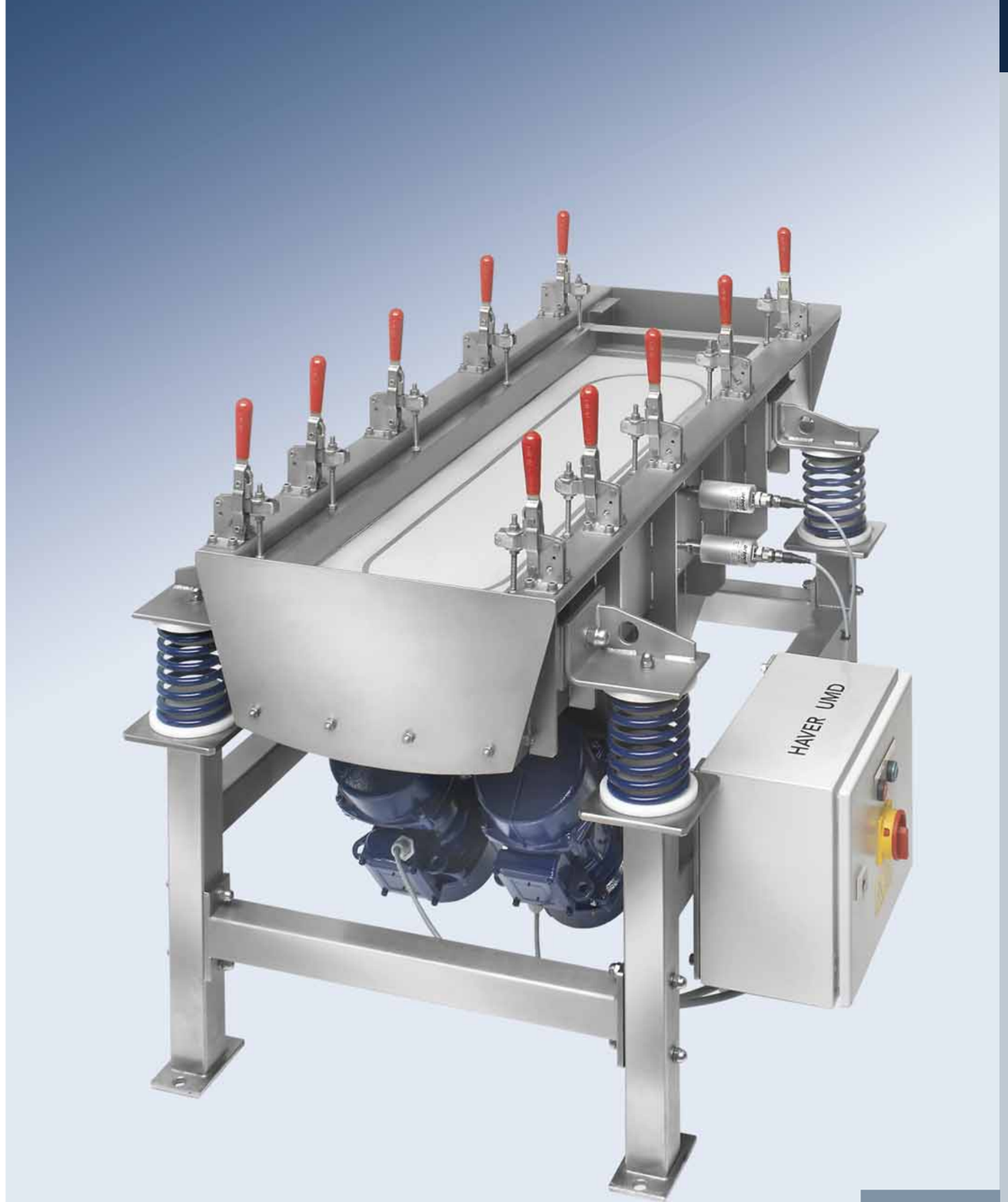
HAVER DMS

With more than 75 years of experience in the screening machine manufacture, mineral processing technology is not only a valuable part of the Haver & Boecker company history but also one of the technical cornerstones of the company. To this day, the name NIAGARA stands for quality, robustness, and performance. Three sites in Germany, Canada, and Brazil collaborated to form the Haver & Tyler Alliance for the sector of mineral processing technology. Haver & Tyler designs, produces, and provides support for premium state-of-the-art technologies in the field of screening, washing, and pelletising.

For screening small production volumes and small single batches and for applications on laboratory and pilot plant scale, Haver & Boecker Wire Weaving Division offers two sleek screening machines. Both machines are available in one- and two-deck design.
The HAVER DMS and the HAVER UMD are suitable for a large variety of bulk materials such as sand, gravel, ore, or coal, as well as for sensitive or aggressive products. Our in-house re-screening service manufactures the screen frames ready for installation with the desired wire cloth specification. They can optionally be re-screened several times.

The screen frames can also be equipped with ball trays or ARTECH ultrasonics to allow for implementation of ultra-fine cut sizes and good self-cleaning of the wire cloth. These screening aids furthermore improve the screening results and increase the throughput rate. Both machines are linear vibrating screens, characterized by their small footprint and high separation accuracy.
The HAVER DMS receives frames of size 630 mm x 200 mm which can be equipped with wire cloth of apertures of 100 µm to 25 mm. Depending on the feed material and the desired cut sizes, throughput rates of up to 200 kg/h are well possible. For larger volumes, the HAVER UMD of size 1,250 mm x 400 mm for apertures of 100 µm to 50 mm is available. This machine can easily process up to one ton of material per hour.

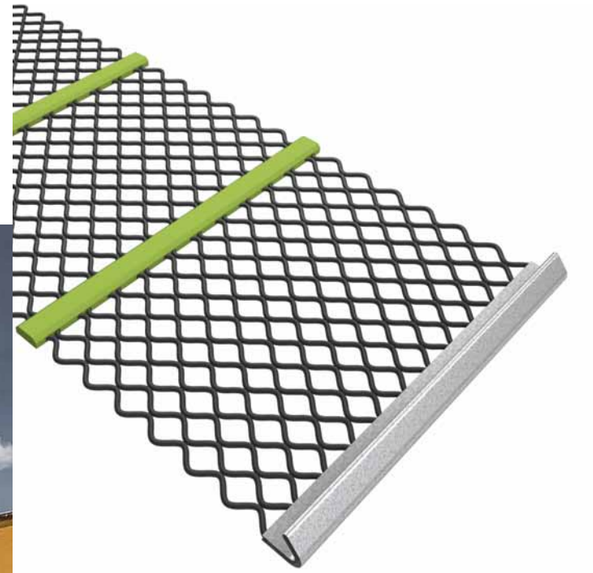
The sizes of these two machines and their design, which allows for batch and for continuous operation, make them particularly suitable for use in smaller industrial applications or for connection to analysis systems, for example the HAVER CPA particle analyser.



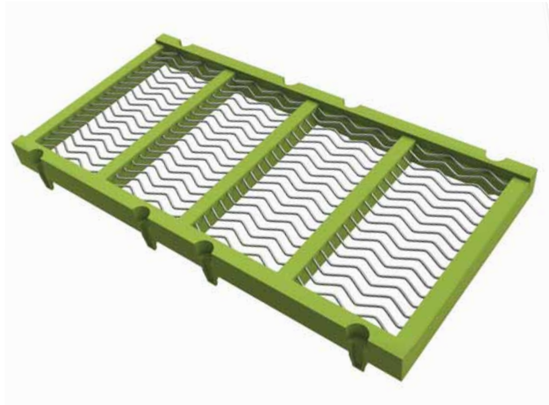
HAVER UMD

Screening machines		
	HAVER DMS	**HAVER UMD**
Screen frame:	630 mm x 200 mm (L x W)	1.250 mm x 400 mm (L x W)
Particle size range:	100 µm to 25 mm	100 µm to 50 mm
Voltage:	230 V/50 Hz, 115 V/60 Hz	400 V lines voltage
Design:	Classification screen (dry) with magnetic drive	Classification screen (dry) with unbalanced motor
Machine type:	Double-deck screen (3 split cuts)	Double-deck screen (3 split cuts)
Screening aids:	Ball tray, ultrasonics	Ball tray, ultrasonics
Material versions:	Regular steel / stainless steel	Regular steel / stainless steel
Dimensions:	appx. 1,000 mm x 600 mm (L x W), variabel height	appx. 1,500 mm x 900 mm (L x W), variabel height

FLEX-MAT®: HIGH VIBRATION WIRE SCREENS.

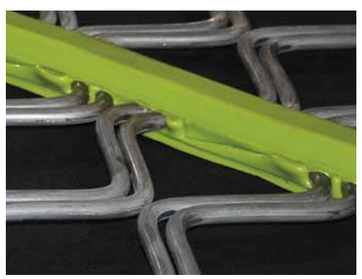


FLEX-MAT®
HIGH VIBRATION WIRE SCREENS



FLEX-MAT High Vibration Wire Screens set the standard in lowering cost of production per ton by dramatically increasing throughput and wear life while eliminating blinding and pegging. Their distinctive lime-green polyurethane strips bond independent OptimumWire wires – the industry's longest-lasting – which vibrate at high frequencies to accelerate the stratification process.

FLEX-MAT High Vibration Wire Screens are available for ultra-fine products with a cut size of up to 0.5 mm as well as for coarser materials with cut sizes of up to 100 mm.



D Double Wire™ Series.

Benefits include

- up to 40% more screen capacity than traditional woven wire and
- up to 50% more than traditional polyurethane and rubber panels
- up to 5 times longer wear life than traditional woven wire
- minimized downtime spent cleaning/replacing screen media
- elimination of near-size pegging on top decks
- cleaner retained product through the middle decks
- elimination of material blinding and clogging on bottom decks.

Always the best solution

FLEX-MAT screen sections are available in OptimumWire or stainless steel. They can be used on end- and side-tensioned screening machines and on all common modular screen decks. The polyurethane strips are custom-placed to match the position of the cross bars in the customer's machine.

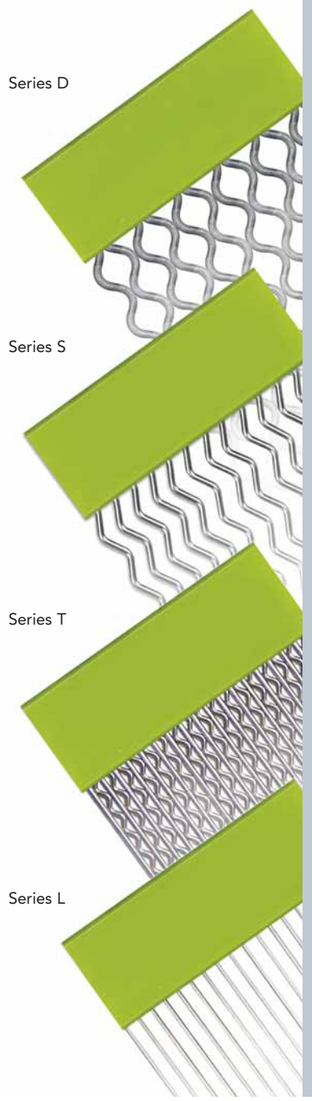
On Site Technical Services

FLEX-MAT and OptimumWire are manufactured by Major Wire Industries, a Haver & Boecker Company. Its high production capacity ensures fast delivery all over the world.
Local authorized Major dealers are trained in screening best practices and high-performance screening media. They provide local Screening Performance Assessments, technical assistance and training to maximize the screening performance of producers and contractors in the aggregate, mining, construction-demolition recycling, asphalt, slag, green waste, topsoil and fertilizer industries.

Major Europe, located in Belgium, is the direct source for all producers in Germany, Austria and Belgium.

Screening Assessment

- On-site problem solving and identification of opportunities to increase your productivity
- On-site training of plant operators on screening maintenance
- Best practices to optimize your operation and improve plant uptime



A HEAVY ARGUMENT: OPTIMUM WIRE SCREENS FROM STOCK.

OptimumWire® is a patented steel wire with an optimum content of carbon and manganese used in FLEX-MAT® High Vibration Wire Screens and Woven screens made by our daughter company Major.

It provides the best combination of hardness and tensile strength which makes it more resistant to abrasion and less susceptible to break in high-impact conditions compared to conventional high-carbon wires. It's optimum ductility allows to perfectly crimp the wire without causing micro-damages which cause early failure of the wire under use.

Woven wire screens produced from OptimumWire® are made to be the longest-lasting woven wire screens in the industry with a stringent opening tolerance of +/- 3% and an extremely tight crimp to prevent the wires from rubbing against each other and wearing prematurely during use.

With wire diameters ranging from 1.25 mm to 19 mm Major Europe stocks OptimumWire® in all standard openings from 2.00 mm to 100 mm in Battice, Belgium. Screen sections are equipped with hooks within a few days to provide a fast delivery to all users.

In Germany, Austria and Belgium screens from OptimumWire® are available directly from Major Europe. All other countries are served through the authorized Major Wire dealer network.

Benefits include:

- Up to 40% longer wear life compared to conventional screens
- Reduced downtime spent cleaning/replacing screens
- Less labor and maintenance costs
- Reduced production loss

INNOVATIVE ULTRASONIC CLEANING: EFFICIENT, LOW-NOISE AND RELIABLE.

Bulk solids can adhere to the inner silo wall and reduce the material flow because of bridging close to the outlet. For a better separation and conveying of bulk solids in silos ultrasonic excitation with frequency variation is a proven, gentle and efficient method.

Ultrasonic excitation reduces friction between material and inner wall, without compacting or separating the material.

- No more noise protection needed, as tapping of tubes is no longer necessary
- No breakdown caused by wear of moving mechanical components
- No cracking in hopper walls and tubes through mechanical impact
- Easy installation by welding a curved waveguide to critical zones
- Low space requirements thanks to small components
- No need to strengthen the walls and floors of building zones
- Separation of bulk solids provides an even mass flow
- No or only minor dust formation
- Controlled dosing through integrated pulse function

The ultrasonic excitation with frequency variation is particularly suited for wall thicknesses of 2-3 mm.

However, it can also achieve positive effects when using it for bigger wall thicknesses, provided that the material has good free-flowing properties and tends not to agglomerate.

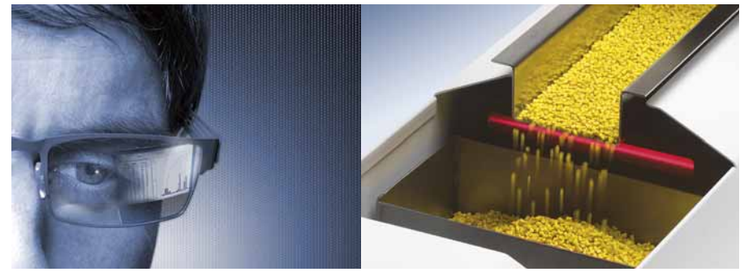
Applications: tanks, silos, feeders, hoppers, pipes, deflectors...

INTELLIGENT PARTICLE ANALYSIS. BENCHMARK FOR PRECISION.

In many industrial production and handling processes, careful material analysis is the precondition for optimum results.
Based on our competence and more than 125 years of experience in wire cloth engineering, Haver & Boecker offers innovative systems for particle analysis which keep setting new standards in terms of function, precision, and reliability, ensuring premium investment security.

Fine differences:
HAVER Particle Analysis
Whether sands, gravel or construction materials or foods and recycling, chemicals and synthetics or paints, varnish, and special coatings: our analyser systems provide for added quality assurance. Haver & Boecker is certified pursuant to DIN EN ISO 9001:2015 and (ISO TC 24) and is a leading member of the international standards committee for test screens (ISO TC 24). Thus, our customers in industry, research and development can be doubly sure that the Haver & Boecker analysis screens and analysis screening machines – like all our other products – are manufactured to pass the strictest quality tests, from the selection of the wire quality to the finished product.

Here, users and dealers benefit from the collective know-how and the powerful service of the entire Haver group, which also includes the world's largest manufacturer of test sieves, the US-based company W.S. Tyler. From the product ranges of all the companies of our group, we offer full service from one source, from sample preparation over test sieves up to the complete analysis screening machine.



Automatically precise:
Photo-optical particle analysis
HAVER CPA technology is available in a laboratory, pilot series, or online version for analysis of coarse and fine materials such as gravel, sand, coke, coal, blasting abrasives, synthetic granules, wood chips, and products of chemical and pharmaceutical industry, fertilizers, and food.
The measuring procedure allows for analysis of grain sizes and shapes of dry, non-agglomerating particles in a measuring range of 10 µm to 400 mm.

The results provided by the HAVER CPA are definitely comparable to those of a conventional screen analysis, but offer a range of clear advantages: highly reproducible measurement results, huge time savings, additional information on grain shapes and particles numbers, and reduced operating costs due to low-maintenance technology.
Another benefit is the variety of particle data analyses for evaluation of different grain shape values, or for statistical means in freely selectable grain size classes.
The HAVER CpaServ software is operator-friendly and works under all common Windows operating systems. It offers a wide range of analysis functions as well as evaluating the measuring results in real time (HAVER REAL TIME) and displaying them in graphs or tables.

HAVER CPA systems have a GigE camera interface. This technology is fit for flexible use with a notebook computer. As a standard, the systems have interfaces for their direct integration as online devices in the process. As the robust technology is nearly maintenance-free, it works with absolute reliability also under extreme conditions.

ENVIRONMENT STANDARDS AND CERTIFICATIONS.

State-of-the-art production methods, a highly competent staff, and differentiated quality assurance processes ensure the consistently high quality of our products.
This is evidenced by many individual certificates of independent test institutes, as well as by our process-oriented quality management system certified to DIN EN ISO 9001:2015.

Haver & Boecker was one of the first companies to be certified to DIN EN ISO 9001 in 1997. Our Automotive division is furthermore certified to the particularly demanding automotive standard ISO TS 16949. Haver & Boecker introduced an environmental management system pursuant to ISO 14001. We actively follow it in close collaboration with the Employers' Liability Insurance, our Corporate Health Centre, and the Works Council. It goes without saying that Haver & Boecker complies with all applicable environmental laws and regulations. We take environmental aspects into consideration when developing our processes and products so as to avoid potential environmental epollution in the run-up to production.

NO SITE IS OUT OF SIGHT.

Haver & Boecker has actively influenced the technology of wire weaving since its beginning. As a result of our successful company history, today we are able to offer our customers the benefit of our unrivalled experience, technology and know-how about wire cloth.

Whether science or research, industry or architecture – wherever Haver & Boecker wire cloth is used, our customers benefit from a broad but still unique individual service.

With our worldwide weaving network we offer the comforting certainty to be your competent and reliable partner at any time and any place. So as to continue WEAVING IDEAS in time to come.

Haver & Boecker operates production sites in Germany, Great Britain, Belgium, the USA, Canada, Brazil, India and Belarus.

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