

HAYER & BOECKER



DIE DRAHTWEBER



**INDUSTRIAL WIRE SCREENS.
PROCESSING ANY CHALLENGE.**

HAYER & BOECKER

INDUSTRIAL WIRE SCREENS.

In the field of 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 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 9001:2008. Differentiated quality assurance guarantees a consistently high quality level for our customers, from the various types of wire as a source material 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 SREENING 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 self-cleaning screens and hybrid screen sections with wire cloth cast in polyurethane. No matter which screen type you select, high-quality materials and processing warrant not only optimum functionality but also maximum stability and lifetime.

HAYER 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 220 mm. Besides HAYER 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® 3: Screen sections with self-cleaning effect

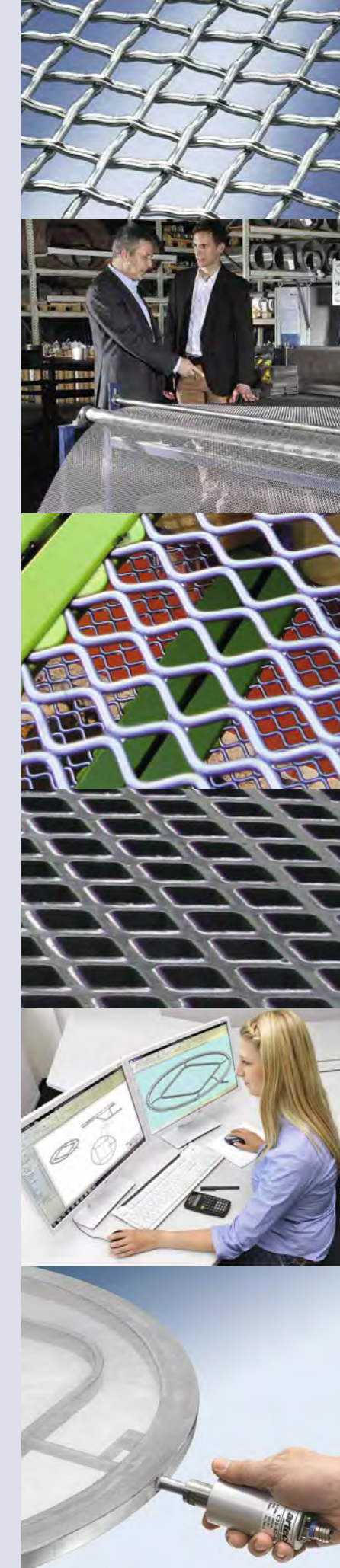
The pre-formed flat warp wires in FLEX-MAT® screens are not woven with cross wires but hold in position with special polyurethane strips. This allows for free vibration of the individual wires, resulting in a self-cleaning effect which particularly effectively prevents blinding, pegging and clogging.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

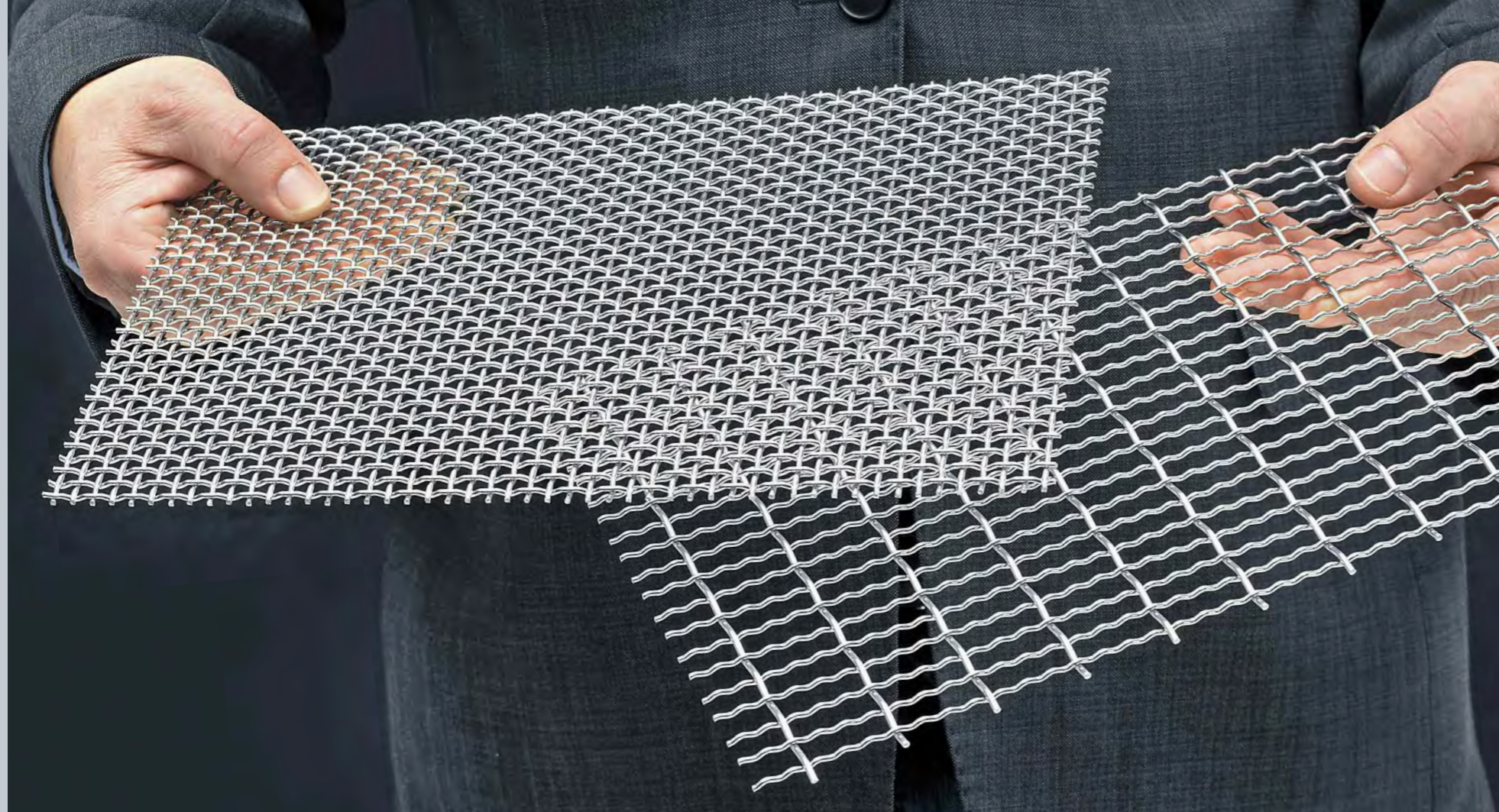
TY-WIRE: wear-resistant multi-talents

TY-WIRE hybrid screen sections combine the large open area of conventional wire screen sections with the long service live of polyurethane screens. Wire cloth is cast in polyurethane in a special process. Conical openings in the screen prevent near-sized particles from getting stuck, eliminating clogging of the screen section.

Faster processing thanks to ultrasonic technology

By means of the individually dimensioned ARTECH waveguide system, 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.





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

to-be-screened. The chances of the material to pass the apertures and be screened 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.

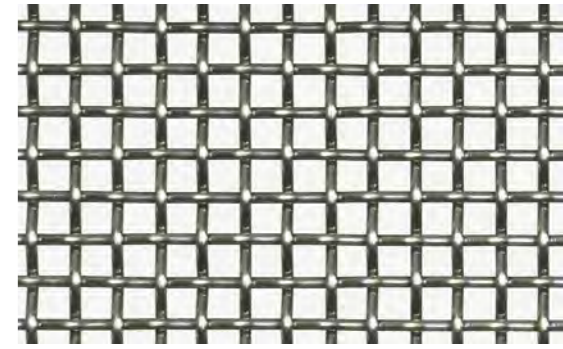
This effect is excluded with the Flat Top crimp that creates a smooth surface on one side. The flat surface

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.

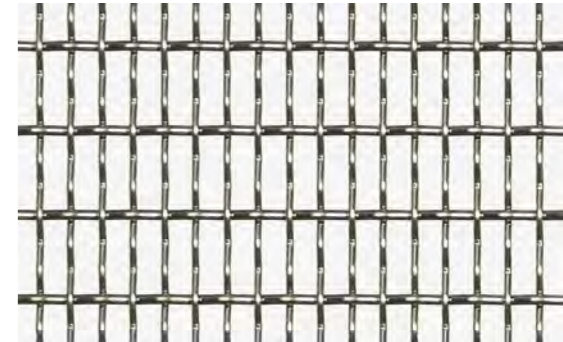
Slotted apertures

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



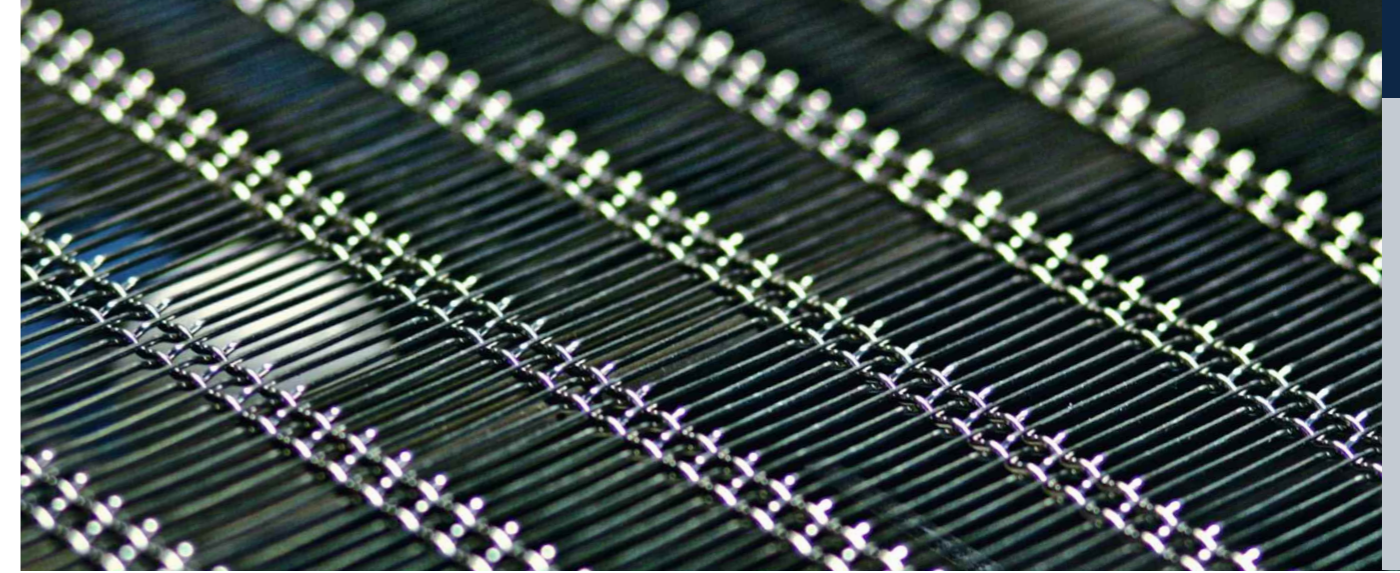
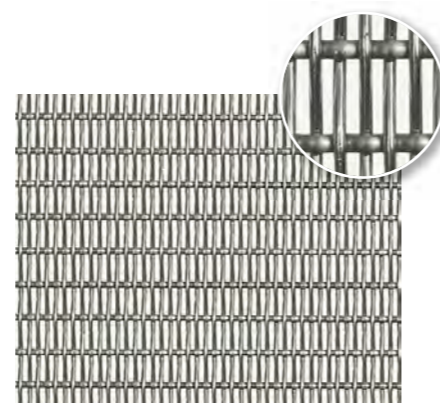


MORE THROUGHPUT, LONGER LIFETIME: SPECIAL SLOTTED APERTURES – TON-CAP UND EGLA-MAX.

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 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.



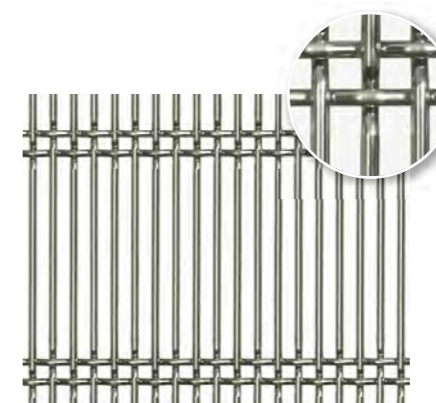
TON-CAP			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m ²	%
0.18 x 2.65	0.45 / 0.50	2.60	24
0.25 x 1.60	0.40 / 0.56	2.55	29
0.265 x 4.50	0.56 / 0.63	2.95	28
0.30 x 2.00	0.45 / 0.56	2.55	31
0.355 x 2.50	0.45 / 0.63	2.45	35
0.375 x 2.65	0.40 / 0.50	1.90	41
0.40 x 2.50	0.56 / 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/m ²	%
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

EGLA-MAX

Contrary to TON-CAP, increasing the open area is of primary importance in EGLA-MAX which has extreme aperture proportions of up to 1:25. The wire diameter is only minimally 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 several 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.

A WEIGHTY ARGUMENT: HEAVY SPRING STEEL WIRE SCREENS IN STOCK.



For screening heavy, large-sized bulk goods, extremely robust screens with a wire diameter of 6 mm to 10 mm and larger are used. As these coarse screens are not easy to handle, they are frequently custom-made with long delivery periods and high prices.

To provide our customers with an alternative, Haver & Boecker developed a warehousing program for heavy spring steel specifications. Pre-cut sections that are in stock are supplied immediately, or can be equipped with hook strips in short time.

Thanks to larger production runs, we are able to offer you particularly

attractive prices and short delivery times.

The following specifications are available from stock:

Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m ²	%
20.00	6.00	18.69	59
25.00	6.00	15.68	65
28.00	6.00	14.29	68
31.50	6.00	12.96	71
35.50	8.00	18.86	67
40.00	8.00	18,00	69
50.00	8.00	14.90	74
56.00	10.00	20.45	72
63.00	10.00	18.49	75

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 all types 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	magnetic	Wire surface
Stainless Steel 1.4301 / 1.4401	304 / 316	very good	medium	no	very smooth
Stainless Steel 1.4310	301	good	very high	no	very smooth
Stainless Steel 1.4016	430	good	small	yes	smooth
Duplex		very good	very high	yes	very smooth
NIA®-Spring Steel		–	very high	yes	coarse

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

MAIN SPECIFICATIONS OF INDUSTRIAL WIRE SCREENS.

Square apertures			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m ²	%
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/m ²	%
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

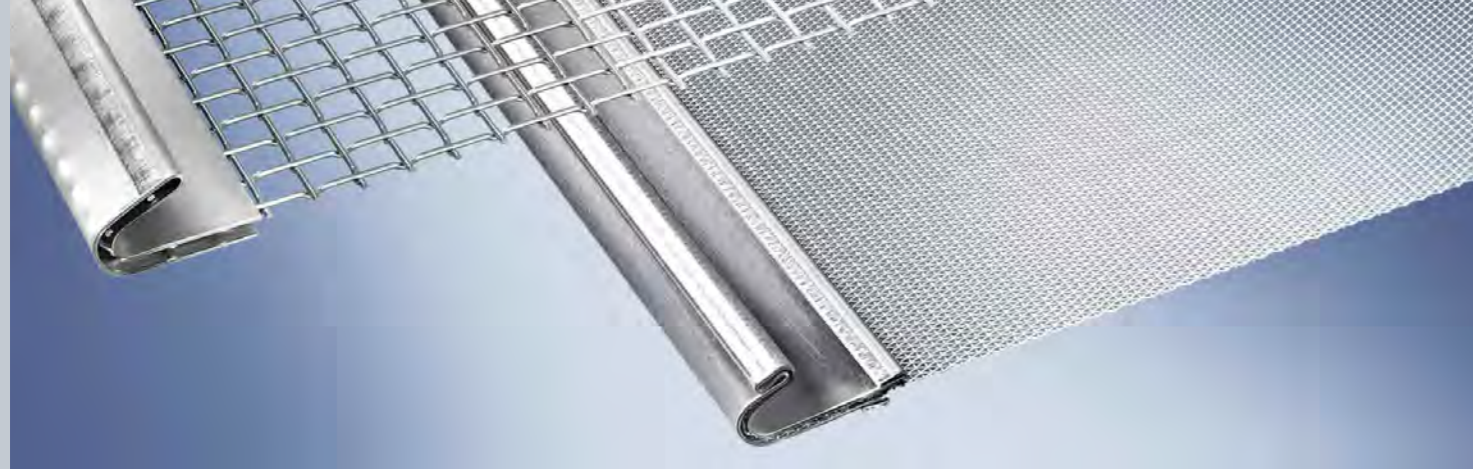
Square apertures			
Aperture width	Wire diameter	Weight	Open screening area
w	d	G	Ao
mm	mm	kg/m ²	%
5.60	1.80	5.91	57
6.30	1.60	4.37	64
6.30	2.00	6.51	58
6.30	3.15	14.18	44
7.10	2.00	5.93	61
8.00	2.50	8.04	58
8.00	3.15	12.01	52
9.00	2.50	7.34	61
9.00	3.15	11.03	55
10.00	2.50	6.75	64
10.00	3.15	10.19	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/m ²	%
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.

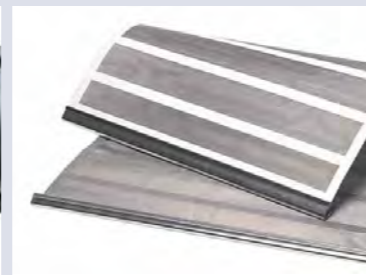
Depending on material and type of weave, the actual weights may differ from the above.



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

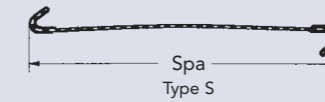
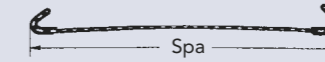
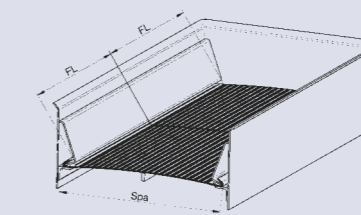
Spia Measurement from inside the hook strip to outside of flat bent tensioning bar.
Tolerance: $+(8 + d) / 0$ mm

Side and end tensioning

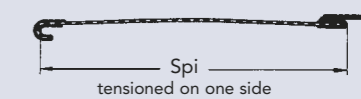
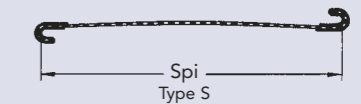
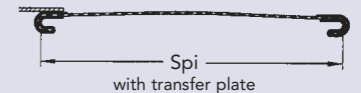
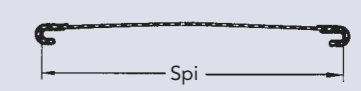
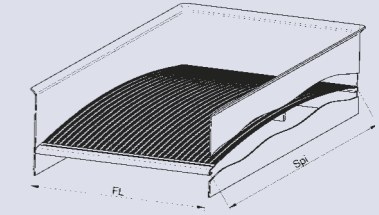
Fl Overall length of hook strips
Tolerance: $0 - 5$ mm

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 two proven solutions: HAVER MONO and MULTISTRETCH

screen sections allow for optimum tensioning. They cannot be over-stretched.

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 MONO and 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 where 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

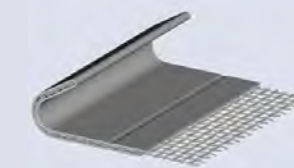
Secure fitting

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 must 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

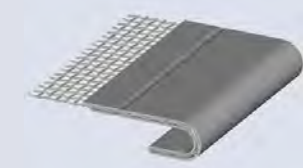


Double fold hook strip type 30



Flat tensioning bar type 26 A

End tensioning



Standard hook strip type 21

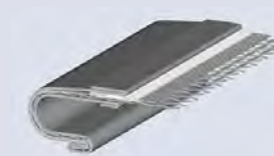


Double fold hook strip type 30

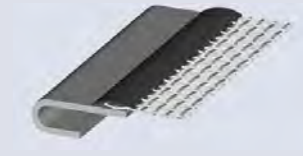


Flat tensioning bar type 26 A

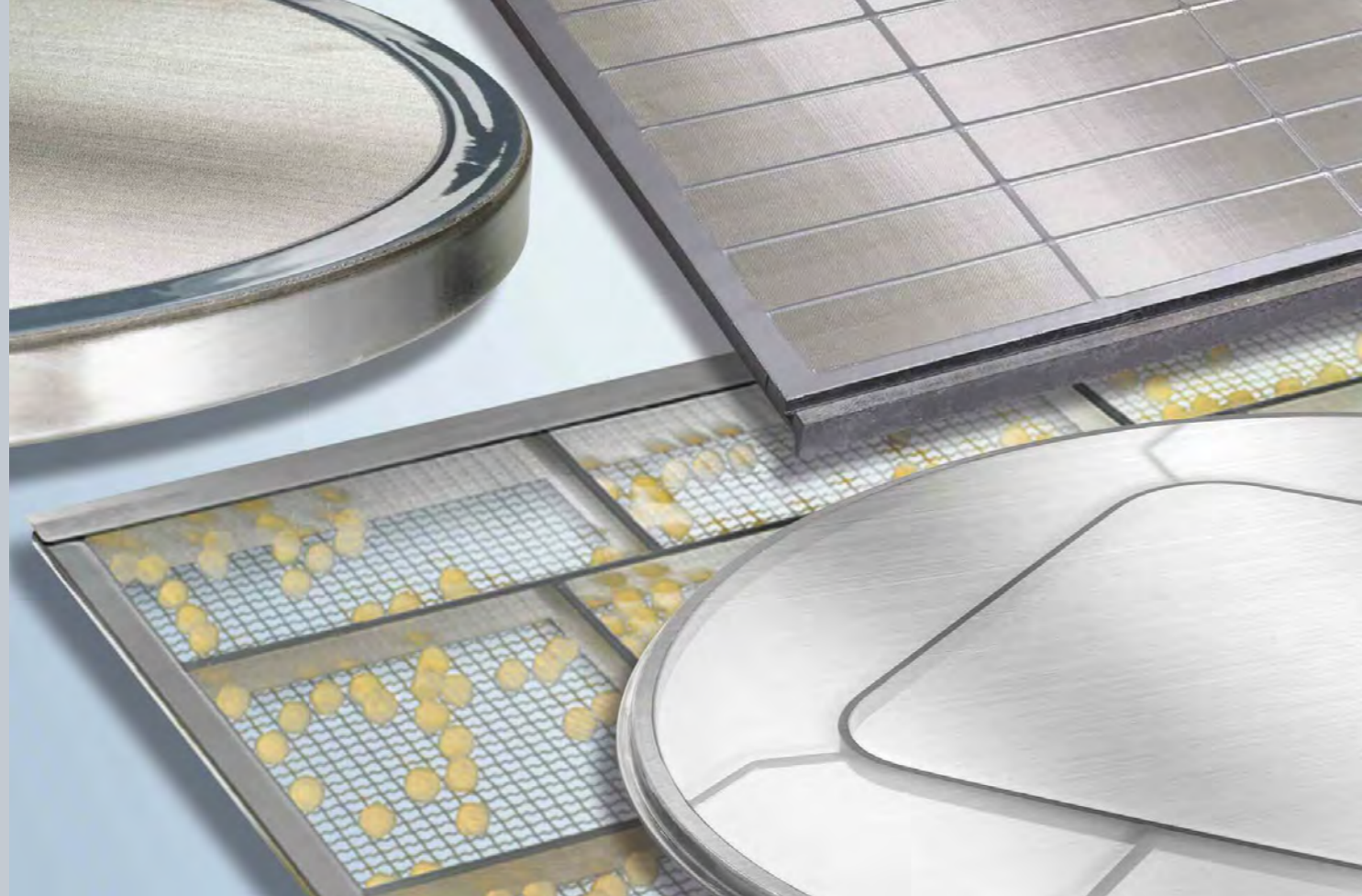
Special executions



Mono- and 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 device developed by Haver & Boecker. In this way, optimum quality is guaranteed right from delivery, which is a precondition 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 commuter 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 is caused to vibrate 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. In contrast to the usual 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. Other than in comparable systems, ARTECH ultrasonic components are outside of the screening machine, the primary source of danger. They are used in EX zone 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 machine 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.

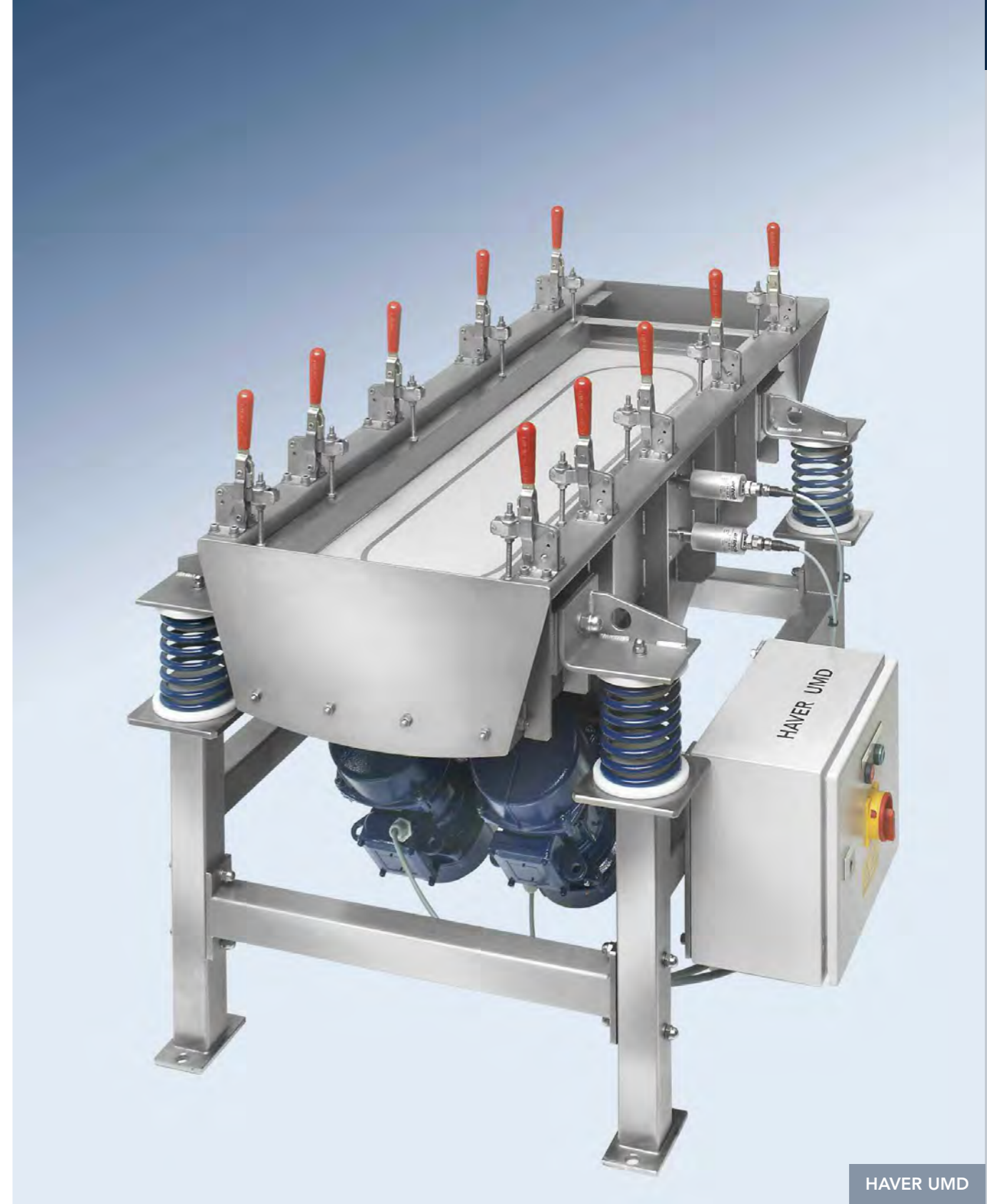
For screening small production volumes and small single batches and for applications on laboratory and pilot plant scale, Haver & Boecker Wire Weaving Division offers two sleek screening machines. Both machines are available in one- and two-deck design.

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 50 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 50 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:	50 µm to 25 mm	50 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



TY-WIRE™-HYBRID-SCREEN SECTIONS.

Screening of abrasive materials such as stone, gravel or crushed rock causes high wear on traditional wire cloth screen sections. Consequently, they have to be replaced more frequently, resulting in undesirable operating downtime. Polyurethane screen sections can be used as an alternative as they have a longer wear life, but their open area is smaller, resulting in loss of capacity. This necessitates the purchase of an additional screening machine in many cases.

One solution, all the benefits

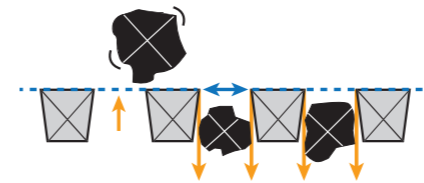
With TY-WIRE hybrid screen sections, the advantages of wire cloth and polyurethane screen sections are combined. TY-WIRE is comprised of high-carbon woven wire encased

with an engineered grid comprised of polyurethane composite. The result is a screen section which has a significantly larger open area than traditional polyurethane combined with four to six times longer wear life than woven wire.

TY-WIRE is available with apertures of 3.15 mm to 41.50 mm and can be used for screening applications of up to 70°C. The conical apertures prevent near-sized particles from getting stuck, largely preventing pegging of the screen section.

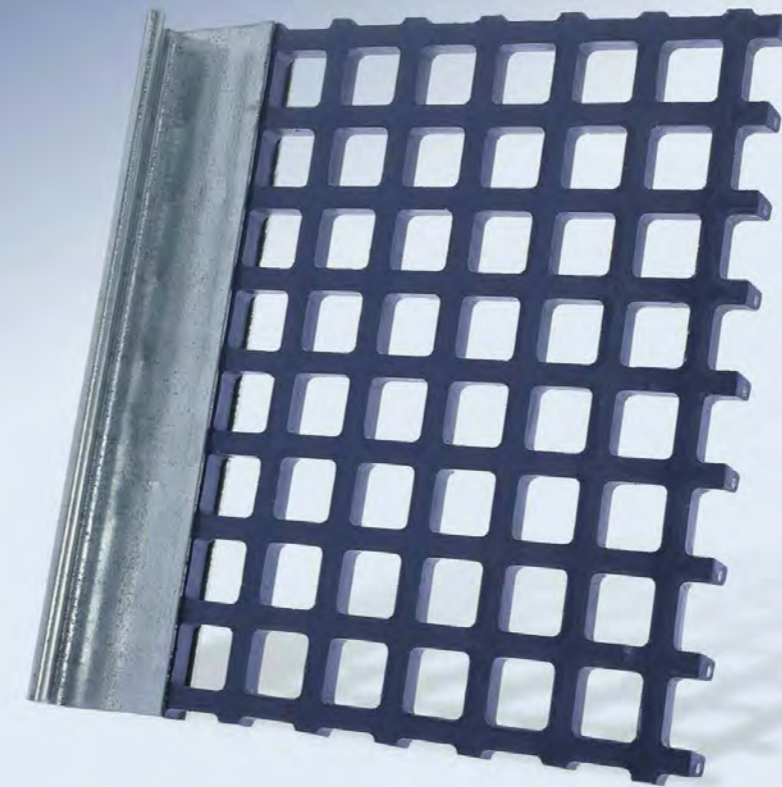
Another advantage: The installation of TY-WIRE does not require modification of the screen deck, neither for modular screen panels nor for cambered decks with hooked sections.

TY-WIRE screens with hook strips are tensioned in the same way as woven wire screen sections.



Conical apertures prevent pegging. The screen section stays clean.

TY-WIRE™-HYBRID-SCREEN SECTIONS			
Aperture width	Thickness (+/-0,5 mm)	Weight	Open screening area
w	t	G	Ao
mm	mm	kg/m ²	%
3.15	8.00	9.40	24
4.75	8.00	7.20	30
6.30	8.00	7.00	34
8.00	8.00	7.00	36
9.50	8,00	9.30	39
11.20	9.50	9.10	43
12.50	9.50	8.10	46
14.00	9.50	8.80	46
16.00	12.50	9.10	49
19.00	12.50	11.90	44
22.40	12.50	10.00	48
25.00	12.50	10.70	51
28.50	16.00	12.10	52
31.50	16.00	9.40	55
38.00	16.00	11.00	56
41.50	16.00	12.50	59



Modular panels for different bolt-down systems.



Immediately interchangeable and hooked for cambered decks.

FLEX-MAT® 3: HIGH-PERFORMANCE, SELF-CLEANING SCREEN MEDIA.



Self-cleaning screen sections have been a well-established screen media for several years, in particular when processing difficult-to-screen bulk goods. With FLEX-MAT 3 by our partner company Major Wire, Haver & Boecker is now offering a new generation of self-cleaning screen media which ensures another

significant improvement of the self-cleaning effect. Contrary to the existing products, the horizontally crimped warp wires are not fixed by cross wires but exclusively by recyclable polyurethane strips. The distinctive lime green strips permit each wire to vibrate individually over its entire length, for even more



D Double Wire™ Series.



efficient prevention of clogging, blinding and pegging. In addition to the high flexibility of the wires, the smooth screen surface helps to significantly increase the wear life compared to that of traditional wire screen sections.

Clean: from very coarse to ultra-fine
Till now, self-cleaning screens were available with apertures from 2 mm up to 28 mm for use on the critical screen deck only. With FLEX-MAT, Haver & Boecker greatly extends the range of possible applications, now offering self-cleaning screen sections also 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.

Because of their excellent wear properties, thinner wires can be used for FLEX-MAT screen sections than for traditional wire screen sections. Thanks to the resulting extension of the open area, and additional capacity, productivity can be increased in many cases by up to 40 %.

Always the best solution
With four different styles FLEX-MAT offers the best specification for almost any screening application. The D and T Series with their defined crimps, for example, provide the same or better accuracy as square apertures, especially when blinding reduces the real aperture size in the woven wire screen. The D Double Wire™ Series is particularly useful for heavy bulk goods, for example on the feed end of screening machines. Comparable to traditional harp screens, the screens of the S and L Series are primarily used to effectively remove fines from the product.

FLEX-MAT screen sections are available in Optimum Wire® spring steel 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. Eleven production lines ensure fast delivery all over the world.

Series D

Series S

Series T

Series L





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:

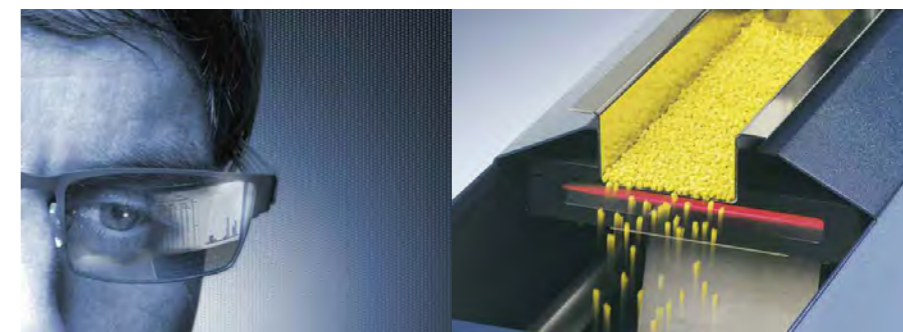
HAYER Particle Analysis

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 9001:2008 and (ISO TC 24) and is a leading member of the international standards committee for test sieves (ISO TC 24). Thus, our customers in industry, research and development can be doubly sure that the Haver & Boecker test sieves and test sieve

shakers – 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 the test sieve to the complete test sieve shakers.



Automatically precise:

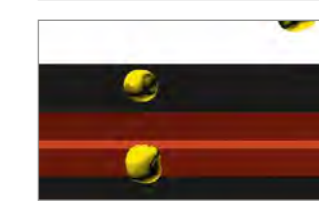
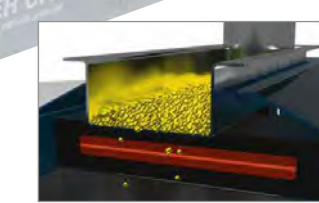
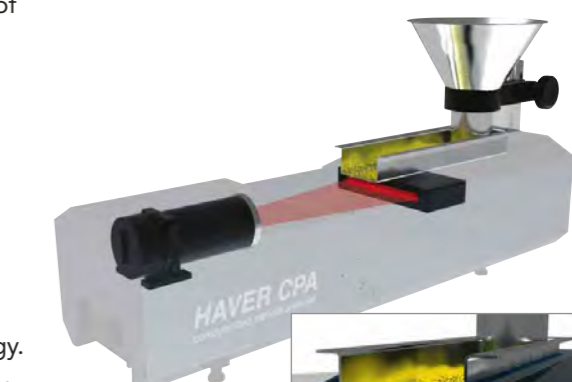
Photo-optical particle analysis

HAYER 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 µm.

The results provided by the HAYER CPA are directly 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 particle counts, 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 HAYER 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 (HAYER REAL TIME) and displaying them in graphs or tables.

HAYER 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. shakers



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 qualification institutes, as well as by our process-oriented quality management system certified to DIN EN ISO 9001:2008.

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 pollution 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.

In 2013 Haver & Boecker operates production sites in Germany, Great Britain, Belgium, the USA, Canada, India and Belarus. More than 2,500 people work for the Group worldwide.

Belgium

HAYER BELGIUM S.A.

Rue des Gaillettes 9

B-4651 BATTICE

Téléphone: +32-87-69 29 60

Fax: +32-87-69 29 61

E-Mail: hbsa@cybernet.be

Internet: www.haverbelgium.com

France

HAYER & BOECKER

Toiles Métalliques

7, Rue Sainte Catherine

F-24100 BERGERAC

Téléphone: +33-5-53 24 93 13

Fax: +33-5-53 24 95 99

E-Mail: haver.toiles@wanadoo.fr

Internet:

www.les-tissus-metalliques.com

Spain

HAYER & BOECKER

Telas Metalicas

Avda. Les Bobiles, 7

Casa 2

E-08850 GAVA (Barcelona)

Teléfono: +34-93-6 62 63 55

Fax: +34-93-6 62 90 59

E-Mail: haverboecker@telefonica.net

Internet: www.telas-metalicas.com

Great Britain

H&B Wire Fabrications Ltd.

30-32 Tatton Court

Kingsland Grange, Woolston

GB-WARRINGTON, Cheshire WA1 4RR

Phone: +44-1925-81 95 15

Fax: +44-1925-83 17 73

E-Mail: sales@hbwf.co.uk

Internet: www.hbwf.co.uk

Belarus

OOO HAYER BY

Ul. Zhukova, D.2

BY-231295 LIDA, GRODNO

Tel./Fax +375 154 600 656

E-Mail: info@haver.by

Internet: www.haver.by

India

HAYER STANDARD INDIA Pvt. Ltd.

Standard House, 83,

Maharshi Karve Marg, P.O.Box 2082,

IN-MUMBAI - 400 002

Phone: 22-22060016 + 22060031

Fax: 22-22086915

E-Mail: wiremesh@haverstandard.com

Internet: www.haverstandard.com

U.S.A.

W.S. TYLER - Industrial Group

8570 Tyler Boulevard

USA-MENTOR, Ohio 44060

Phone: +1-440-974-1047

+1-800-321-6188

Fax: +1-440-974-0921

E-Mail: wstyler@wstyler.com

Internet: www.wstyler.com

Canada

W.S. TYLER CANADA LTD.

225 Ontario Street

CA-ST. CATHARINES, Ontario L2R 7B6

Phone: +1-905-688-2644

+1-800-325-5993

Fax: +1-905-688-4733

E-Mail: sales@wstyler.ca

Internet: www.wstyler.ca

MAJOR WIRE Industries Limited

225 North Montcalm Blvd.

CA-Candiac, Quebec, J5R 3L6

Phone: +1-450-659-7681

Fax: +1-450-659-5570

E-Mail: major@majorwire.cc

Internet: www.majorwire.cc

Brazil

HAYER & BOECKER Latinoamericana Divisão de Telas

Rodovia Campinas / Monte Mor, km 20

BR-CEP 13190.000, MONTE MOR, SP

Teléfono: +55-19-3879 9100

Fax: +55-19-3879 1410

E-Mail: telas@haverbrasil.com.br

Internet: www.haverbrasil.com.br

HAYER & BOECKER · Ennigerloher Straße 64 · 59302 OELDE · Germany

Phone: +49-(0) 25 22-300 · Fax: +49-(0) 25 22-30 636

E-Mail: pn@haverboecker.com

Internet: www.weavingideas.com