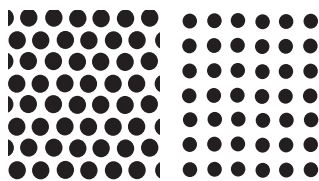
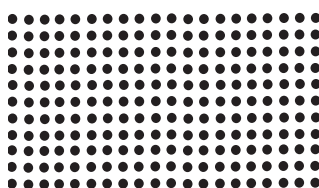


Basket and screen data

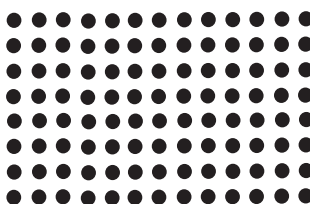
Pattern examples



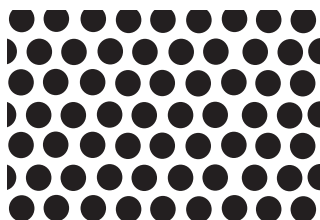
Staggered holes Straight holes



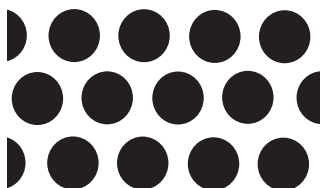
1/32" – Actual size



1/16" – Actual size



1/8" – Actual size



1/4" – Actual size

Basket and screen design

Designed to be both effective and durable, the basket or screen is the heart of an Eaton strainer. Eaton supplies baskets for simplex and duplex strainers and screens for Y-strainers, in standard and heavy-duty designs. Standard design baskets meet the needs of most applications. Eaton recommends the heavy-duty design in cases when straining an extremely high viscosity material or experiencing a high solids load.

Eaton baskets and screens are available in two standard materials: 316 stainless steel or MONEL®. These materials cover nearly all corrosion resistance levels needed in strainer services. A wide range of perforations and mesh provides removal of solids from 1/2" down to as low as 40 microns. For special, unique applications, Eaton custom fabricates baskets from just about any material to exact specifications.

Basket construction

Each style basket includes a perforated sheet induction welded to a rigid top ring and solid bottom cap. Special attention to the welds along the perforated sheet seam, prevent the possible bypass of solids and maintain the basket's strength. A handle, welded to the I.D. of the top ring, facilitates easy removal. Heavy-duty baskets have reinforcing strips induction welded along the perforation's seam and circumferentially on

the outside of the mid-section of the basket. The perforated sheet is inside the top ring and bottom cap.

Screen construction

Y-strainer screens, rolled to form a cylinder, are induction welded along the seam. A neat weld, applied along the perforated sheet seam, prevents the possible bypass of solids and provides a seam of acceptable strength. Eaton machines Y-strainer screen seats to specific dimensions and, accordingly, both the O.D. and length of these screens are closely toleranced.

Perforated sheet – specification

Eaton baskets utilize perforated sheets because of their greater inherent strength and resistance to stress cracking. The percentage of open area of a screen generally dictates the internal pressure drop experienced across it. The objective is to select a perforation with the best balance of open area, hole arrangement and sheet thickness.

Open area

Perforated sheets can have an open area from 15% to 75%. In general, the larger the open area of perforated sheet, the thinner the sheet thickness must be. Holes punched closer together increase the perforated open area; the solid portion between holes distorts and becomes weak. Another factor in controlling the sheet thickness is the hole

diameter. The smaller the hole diameter, the thinner the sheet. Eaton baskets and screens have between 28% to 63% open area with gauge thickness from 18 (0.048 mm) to 25 (0.021 mm), depending upon the size of the perforations and the size and model of the strainer.

Hole arrangement

Holes can be punched either in a straight line or in a staggered pattern. Eaton baskets and screens have a staggered pattern that increases the open area, provides extra strength and creates less pressure drop.

Perforations

Eaton baskets and screens are available in 1/32", 3/64", 1/16", 1/8", 5/32", 1/4", 3/8" and 1/2" perforations and in mesh sizes 20, 40, 60, 80, 100, 200, 325 and 400. However, for general service there is one perforation for each size and type of strainer. Unless specified, this standard perforation is the size furnished with the strainer.

MONEL® is a registered trademark of Special Metals Corporation group of Companies.

Basket and screen data

Wire mesh specifications

Eaton strainers are available with woven wire mesh screens. Wire mesh provides smaller openings for very fine straining applications down to 40 microns. Eaton baskets and screens use monofilament mesh possessing equal wire size and wire count in both directions to produce square openings. Other types of mesh such as Dutch (or Hollander) are also available. Dutch weave has a greater quantity of wires in one direction and fewer wires of a larger diameter in the other direction. This creates a rectangular opening. As with perforated sheet, the best wire mesh selection is a balance of open area, wire diameter and type of weave.

Openings

Standard wire mesh liners for Eaton baskets and screens are available from 20 to 400 mesh. For any size mesh, there are different open area selections based on the diameter of the wires used. Twenty mesh means 20 wires per inch in both a vertical and horizontal direction. Therefore, as the wire size increases, the hole size decreases. Eaton baskets offer wire mesh with openings from 0.034" to 0.0015" (20 to 400 mesh).

Open area

The open area of wire mesh is a function of both the weave and the wire diameter. Eaton uses a plain square weave in most cases because its straight-through flow path creates the least pressure drop. The mesh is reinforced with a perforated metal

backing possessing greater than a 60% open area. This combination affords the greatest degree of strength, yet offers a lower pressure drop than other types of wire mesh. In certain instances, such as Y-strainer in steam applications, the increased pressure drop resulting from the use of a Dutch weave is not as critical as the retention of small particles. Therefore, in applications that involve steam, Eaton suggests the use of weave such as the 30x160 size that can withstand a much higher differential pressure without bursting. Eaton can supply baskets and screens with open areas from 14% to 46%

Plain square weave

Woven in an over and under pattern of wire having the same diameter, this weave produces a square opening with excellent flow characteristics.

Plain dutch weave

Woven in an over and under pattern in one direction in which the horizontal wires are larger in diameter than the vertical wires, which are driven close and crimped at each pass. This weave produces greater strength, but lower flow rates, than a square weave. Most often used in steam applications.

Mesh liners available

The number of openings per linear inch determines the size of mesh liners. The standard sizes Eaton can furnish are 20, 40, 60, 80, 100, 200, 325 and 400.

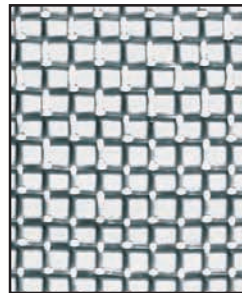
Perforated basket sheet specifications

Perforation size inches	Sheet thickness uss gauge #	Hole pattern	% Open area
0.020	26 (0.018 mm)	Straight	16.0
1/32	26 (0.018 mm)	Straight	28.0
3/64	26 (0.018 mm)	Straight	30.2
0.045	26 (0.018 mm)	Staggered	36.0
1/16	26 (0.018 mm)	Straight	31.0
1/8	26 (0.018 mm)	Staggered	47.9
5/32	26 (0.018 mm)	Staggered	63.0
1/4	26 (0.018 mm)	Staggered	42.0
3/8	26 (0.018 mm)	Staggered	52.0
1/2	26 (0.018 mm)	Staggered	47.9

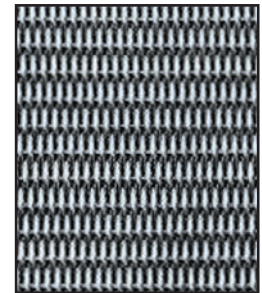
Mesh basket sheet specifications

Mesh size	Wire diameter inches	Mesh opening inches	Mesh opening microns	% Open area
20	0.016	0.0340	864	46.2
40	0.010	0.0150	381	36.0
60	0.0075	0.0092	234	30.5
80	0.0060	0.0065	165	27.0
100	0.0045	0.0055	140	30.3
200	0.0021	0.0029	74	33.6
325	0.0014	0.0017	43	30.0
400	0.0015	0.0381	38	36.0

Wire mesh weaves



Plain square weave



Plain dutch weave

Basket effective area

Strainer model	Pipe size (in)	Perforation size (in)	Nominal area of pipe (sq in)	Gross screen area (sq in)	Free area (sq in)	Ratio free area to pipe area
85	1/4	.045	.10	5.0	1.8	18.0
85	3/8	.045	.19	5.0	1.8	9.5
85	1/2	.045	.30	5.0	1.8	6.0
85	3/4	.045	.53	7.1	2.6	4.9
85	1	.045	.86	10.4	3.7	4.3
85	1-1/4	.045	1.49	15.1	5.5	3.7
85	1-1/2	.045	2.03	21.7	7.8	3.8
85	2	.045	3.35	30.4	10.9	3.3
85	2-1/2	.045	4.78	43.2	15.5	3.2
85	3	.045	7.39	70.7	25.5	3.4
85	4	.045	12.73	106.8	38.4	3.0
85	6	.045	28.70	241.7	87.0	3.0
85	8	.045	50.02	414.6	149.2	3.0
85	10	.045	71.80	652.2	234.8	3.3
30R	1-1/2	5/32	2.03	35.4	22.3	11.0
30R	2	5/32	3.35	50.9	32.1	9.6
30R	2-1/2	5/32	4.78	84.7	53.4	11.2
30R	3	5/32	7.39	84.7	53.4	7.2
30R	4	5/32	12.73	114.5	72.1	5.6
30R	5	5/32	20.0	158.1	99.6	5.0
30R	6	5/32	28.9	180.9	113.9	4.0
30R	8	5/32	50.03	275.6	171.8	3.4
50	5	3/16	20.0	216.1	106.0	5.4
50	6	3/16	28.9	265.4	132.7	4.6
50	8	3/16	50.02	506.7	253.4	5.1
53BTX	3/4	1/32	0.53	19.8	5.5	10.4
53BTX	1	1/32	0.86	19.8	5.5	6.4
53BTX	1-1/4	1/8	1.49	45.0	22.0	14.4
53BTX	1-1/2	1/8	2.03	45.0	22.0	10.6
53BTX	2	1/8	3.35	65.0	31.0	9.3
53BTX	2-1/2	1/8	4.78	65.0	31.0	6.5
53BTX	3	3/16	7.39	110.3	55.1	7.4
53BTX	4	3/16	12.73	152.0	76.0	5.9
52	10	3/16	78.8	800	400	5.1
52	12	3/16	113.1	1200	600	5.3
52	14	3/16	137.9	2000	1000	7.3
52	16	3/16	182.6	2000	1000	5.5
52	18	3/16	182.6	2000	1000	5.5

Strainer model	Pipe size (in)	Perforation size (in)	Nominal area of pipe (sq in)	Gross screen area (sq in)	Free area (sq in)	Ratio free area to pipe area
72X	1	1/32	0.86	19.5	5.2	6.1
72X	1-1/2	1/8	2.03	49.7	19.0	9.4
72X	2	1/8	3.35	50.9	24.4	7.3
72X	3	3/16	7.39	114.5	57.2	7.8
72X	4	3/16	12.73	168.3	84.1	6.6
72X	6	3/16	28.9	324.2	162.1	5.6
73	10	3/16	78.8	800	400	5.1
73	12	3/16	113.1	1200	600	5.3
73	14	3/16	137.9	2000	1000	7.3
73	16	3/16	182.6	2000	1000	5.5
73	18	3/16	182.6	2000	1000	5.5

Alloy data

Metal alloys used in Eaton strainers

Carbon steel – ASTM A-216 grade WCB

Tensile strength:480 N/mm²
 Yield:245 N/mm²
 Elongation:22%
 Chemical composition:
 C (Carbon)0.30%
 Si (Silicon)0.60%
 P (Phosphorus)0.04%
 S (Sulfur)0.045%
 Mn (Manganese)1.00%
 Residual Elements1.00% max

Aluminum bronze – ASTM B-148 grade C95400

Tensile strength:517 N/mm²
 Yield:206 N/mm²
 Elongation:12%
 Chemical composition:
 Cu (Copper)85%
 Fe (Iron)4%
 Al (Aluminum)11%

Stainless steel – ASTM A-351 grade CF8M

Tensile strength:480 N/mm²
 Yield:206 N/mm²
 Elongation:30%
 Chemical composition:
 C (Carbon)0.08% max
 Si (Silicon)1.5%
 P (Phosphorus)0.040%
 Cr (Chromium)18.0 - 21.0%
 Ni (Nickel)9.0 - 12.0%
 Mn (Manganese)1.50%
 S (Sulfur)0.04%
 Mo (Molybdenum)2.0 - 3.0%

Cast iron – ASTM A-126 class B

Tensile strength:214 N/mm²
 Compressive strength: 750 N/mm²
 Tensile modulus:103.000 N/mm²
 Chemical composition:
 C (Carbon)3.20 - 3.40 %
 Si (Silicon)2.10 - 2.30%
 P (Phosphorus)0.15 - 0.30%
 S (Sulfur)0.08 - 0.12%
 Mn (Manganese)0.50 - 0.80%

Ductile iron – ASTM A-395 grade 60-40-18

Tensile strength:413 N/mm²
 Yield:275 N/mm²
 Elongation:18%
 Chemical composition:
 C (Carbon)3.20 - 4.0%
 Si (Silicon)1.80 - 2.80%
 P (Phosphorus)0.08% max.
 S (Sulfur)0.03% max.
 Mn (Manganese)0.03% max.