

INTRODUCTION TO



Eaton Y strainers are available with threaded, socket weld and flanged connections

of the strainer is critical so that it can stand up to these high pressures without fear of failure. When high pressure steam is being handled, another complicating factor arises – temperature. With steam pressures of 1500 psi or higher, standard carbon steel is sometimes not suitable because the steam temperature may be 1000°F or higher. In these cases, the Y strainer body is generally made of chrome-moly steel.

Besides steam, Y strainers are often used in air and natural gas applications. Here again, high pressures are not uncommon. However, unlike steam, high air pressure does not automatically mean high temperature – and so, ordinary carbon steel bodies of sufficient wall thickness will generally suffice.

Unlike other types of strainers, a Y strainer has the advantage

Y strainers are devices for mechanically removing unwanted solids from liquid, gas or steam lines by means of a perforated or wire mesh straining element. They are used in pipelines to protect pumps, meters, control valves, steam traps, regulators and other process equipment.

Y strainers are very cost effective straining solutions in many applications. Where the amount of material to be removed from the flow is relatively small, resulting in long intervals between screen cleanings, the strainer screen is manually cleaned by shutting down the line and removing the strainer cap. For applications with heavier dirt loading, Y strainers can be fitted with a “blow off” connection that permits the screen to be cleaned without removing it from the strainer body.

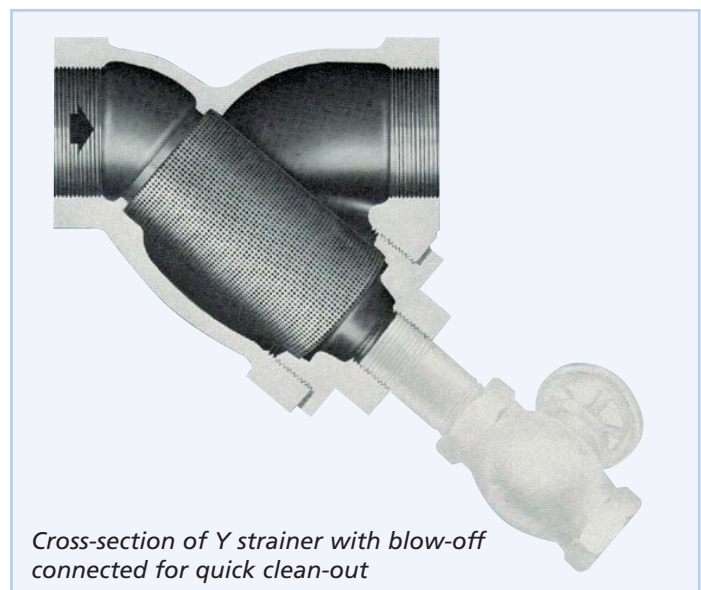
Y strainers are used in a wide variety of liquid straining applications to protect downstream process system components in many industries, including: chemical processing, petroleum, power generation and marine. Water handling applications, where Y strainers are used to protect equipment that could be damaged or clogged by unwanted sand, gravel or other debris, are very common.

Applications

While often used in many different types of liquid applications, a Y strainer is considered the standard for steam applications – and is almost universally used for these applications. Its compact, cylindrical shape is very strong and can handle high pressures. It is, literally, a pressure vessel. Y strainers which handle pressures up to 6000 psi are not uncommon. Of course, in these cases, the design

of being able to be installed in either a horizontal or vertical position. Obviously, in both cases, the screening element must be on the “down side” of the strainer body so that the entrapped material can properly collect in it.

Some manufacturers reduce the size of the Y strainer body to save material and cut cost. Before installing a Y strainer, be sure it is large enough to properly handle the flow. A low-priced strainer may be an indication of an undersized unit.



Cross-section of Y strainer with blow-off connected for quick clean-out

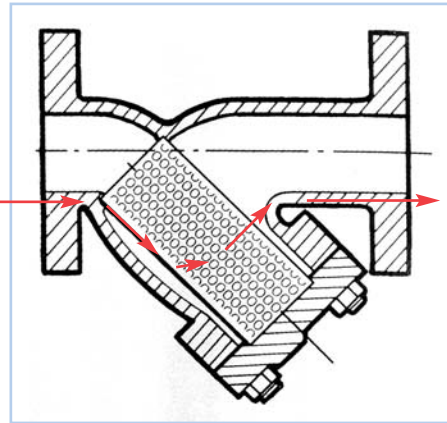
Y STRAINERS

Carbon steel strainers are used mainly in the oil and petrochemical industry. They have excellent resistance to mechanical or thermal shock – and these are important considerations in the event of a fire. Most oil refineries will not permit iron piping components for this reason. Carbon steel strainers are also used for higher pressure applications because of their great strength.

Stainless steel strainers, of course, are used where high corrosion resistance or where freedom from contamination is required. They are popular in the chemical, food and pharmaceutical industries.

Design Criteria

It cannot be stressed too highly that Y strainers for critical



Flow path through a Y strainer

applications must be adequately designed. This means sufficiently heavy wall thickness and blowoff connections. As an example, in improperly trapped steam lines, condensate can collect in low points and become a slug of water traveling at very high velocity down the line. Even the slight change in

direction caused by a Y strainer can produce a tremendous shock which can damage the strainer. Manufacturers who thin down walls to save weight and cost are asking for trouble in these cases.

A Y strainer, if fitted with a blowoff connection, can be a self cleaning strainer. A valve is installed on the connection located on the strainer cap. The screen can thus be cleaned by simply opening and then closing the valve without shutting off the flow or disassembling the strainer. When the valve is opened the material trapped inside the screen drains out.

Another critical thing to check for in Y strainers is the point where the screen or straining element seals to the body. This seat should be carefully machined so no particle can bypass it. The same thing applies to the cleanout end. The screen should fit tightly. Beware of strainers with unmachined seats: the improperly seated screen will permit bypass of the fluid – allowing dirt or debris downstream.

Screen Construction

The screen is the heart of the Y strainer and the point where the dirt or unwanted material is trapped. Strainer screens made with thin gauge material and soldered, rather than welded, connections can compromise the entire system. When a screen is damaged in service or in cleaning, the Y strainer is effectively out of service. While brass is sometimes used as a screen material to cut costs, it is truly false economy. Stainless steel, because of its strength and corrosion resistance, is always the preferred material for Y strainer screens. The screen is critical to the operation of the strainer, and it is recommended that the user have on hand an extra screen for each size Y strainer installed.

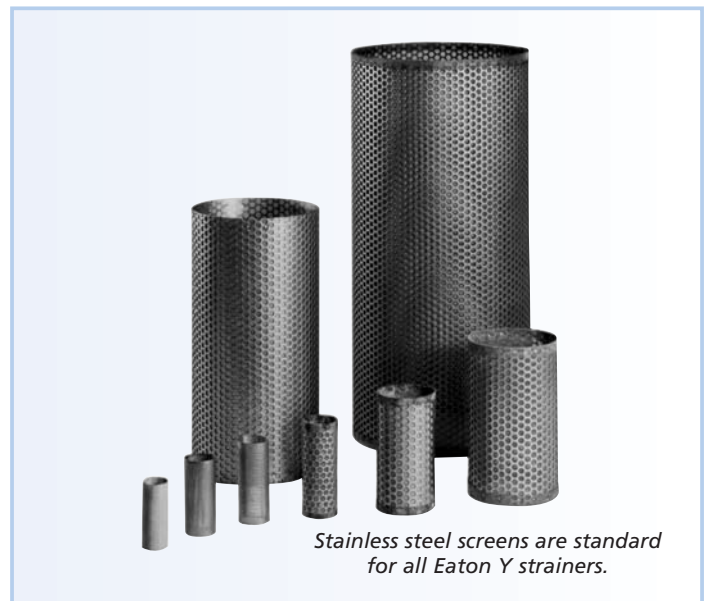
Types of Connections

Y strainers are available in a wide variety of end types including threaded, flange, or welded. Flanges are designed to ANSI specifications.

Special flanges such as ring joints are often available as well. Y strainers can also be constructed to US Navy flange dimensions, which are different from commercial standards. For extremely high pressure applications, Y strainers with socket or butt weld end connections are often specified.

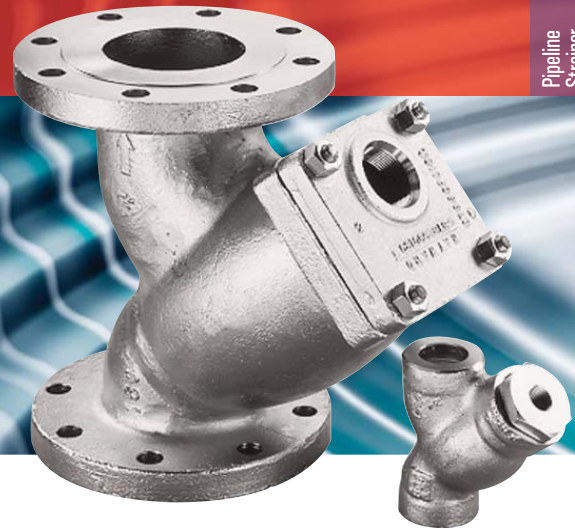
Final Considerations

When specifying or buying a Y strainer, price, which is often the prime consideration, should be the least important consideration. A well made and properly designed Y strainer will last almost indefinitely. Its first cost is, therefore, not important compared to other features when spread out over a service life of many years. Is the screen area large enough to assure adequate flow? Are the seats carefully machined to eliminate bypass of dirt? Is the body strong enough to resist mechanical shock and avoid accidents? Are blowoff connections heavy enough to avoid leakage or failure? All these factors should be considered carefully before selecting a Y strainer.



Stainless steel screens are standard for all Eaton Y strainers.

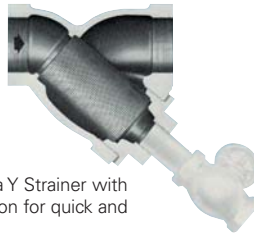
Model 85



- 1/4" to 10"
- Carbon Steel and Stainless Steel
- Threaded, Flanged, or Socket Weld Connections

FEATURES

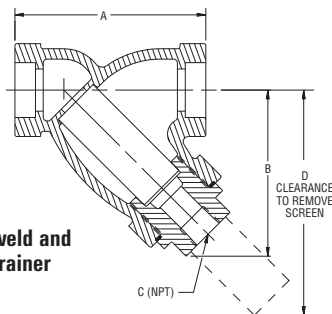
- Compact design
- Bolted or threaded covers
- Standard stainless steel screens
- Horizontal or vertical installation



Cross-section of a Y Strainer with blow off connection for quick and easy clean-out.

OPTIONS

- Basket perforations from 1/32" to 1/2"
- Basket mesh from 20 to 400
- Monel screens



Typical socket weld and threaded Y strainer

Eaton Model 85 Y strainers are engineered to withstand aggressive industrial and commercial applications. Y strainers protect downstream process system components by mechanically removing unwanted solids from liquid, gas, or steam lines by means of a perforated or wire mesh straining element.

To protect against any bypass, the Model 85 Y strainers are manufactured with a precision-machined screen seat on the body of the strainer and high quality stainless steel screens fabricated to fit the strainer body perfectly. Model 85 Y strainers are available in

carbon steel or stainless steel for pipeline sizes from 1/4" to 10" with threaded, flanged, or socket weld connections.

For cost-effective straining solutions, Y strainers work well in applications in which the amount of material to be removed from the flow is relatively small—resulting in long intervals between screen cleanings. The strainer screen is manually cleaned by shutting down the line and removing the strainer cap.

For applications with heavier dirt loading, Y strainers fitted with a “blow off” connection permit cleaning of the screen without removing it from the strainer body.

Eaton Model 85 Y Strainers 1/4" to 10" Carbon and Stainless Steel-Threaded, Socket Weld & Flanged

Size	Material	End Connection	Cover	Rating (WOG) non-shock
1/4" to 2"	Carbon Steel	Threaded or Socket Weld 600#	Threaded	1480 psi @ 100°F
1/4" to 2"	Stainless Steel	Threaded or Socket Weld 600#	Threaded	1440 psi @ 100°F
1/2" to 10"	Carbon Steel	Flanged 150#	Bolted	285 psi @ 100°F
1/2" to 10"	Carbon Steel	Flanged 300#	Bolted	740 psi @ 100°F
1/2" to 10"	Stainless Steel	Flanged 150#	Bolted	275 psi @ 100°F
1/2" to 10"	Stainless Steel	Flanged 300#	Bolted	720 psi @ 100°F

Socket Weld, Threaded Carbon Steel & Stainless Steel – 600# (in/mm)

Size	A	B	C (Nom.)	D	Wt (lb / kg)
1/4	3.00 / 76	3.00 / 76	3/8	4.00 / 102	2 / 0.9
3/8	3.00 / 76	3.00 / 76	3/8	4.00 / 102	2 / 0.9
1/2	3.00 / 76	3.00 / 76	3/8	4.00 / 102	2 / 0.9
3/4	3.75 / 95	3.50 / 89	3/8	4.75 / 121	4 / 1.8
1	4.63 / 118	4.00 / 102	1/2	5.75 / 146	6 / 2.7
1-1/4	5.00 / 127	4.63 / 118	3/4	6.50 / 165	8 / 3.6
1-1/2	5.63 / 143	5.25 / 133	3/4	7.50 / 191	10 / 4.5
2	7.00 / 178	5.75 / 146	1	8.75 / 222	15 / 6.8

Consult Eaton for 12" and larger size dimensions. Dimensions and weights are for references only. Contact Eaton for certified drawings.



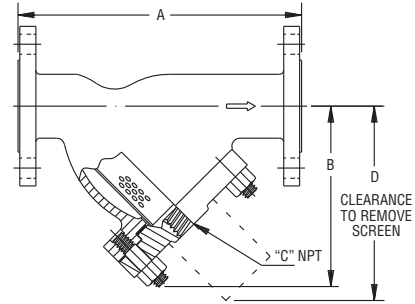
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MODEL 85Y Strainer

Flanged Carbon Steel & Stainless Steel – 150# (in/mm)

Size	A	B	C (Nom.)	D	Wt (lb / kg)
1/2	5.00 / 127	2.75 / 70	3/8	3.50 / 89	5 / 2.3
3/4	5.63 / 143	3.00 / 76	3/8	4.00 / 102	7 / 3.2
1	6.38 / 162	3.64 / 92	1/2	5.00 / 127	9 / 4.1
1-1/4	7.25 / 184	4.25 / 108	3/4	5.75 / 146	14 / 6.3
1-1/2	8.88 / 226	5.75 / 146	3/4	6.50 / 165	18 / 8.2
2	7.88 / 200	6.00 / 152	1	8.25 / 210	16 / 7.3
2-1/2	9.75 / 248	6.50 / 165	1	9.25 / 235	25 / 11.4
3	10.00 / 254	7.25 / 184	1-1/4	10.50 / 267	35 / 16
4	12.13 / 308	9.75 / 248	1-1/2	14.75 / 375	70 / 32
6	18.50 / 470	14.25 / 362	2	21.00 / 533	130 / 59
8	21.63 / 549	18.00 / 457	2	26.75 / 679	240 / 109
10	26.00 / 660	22.50 / 565	2	33.75 / 857	300 / 136

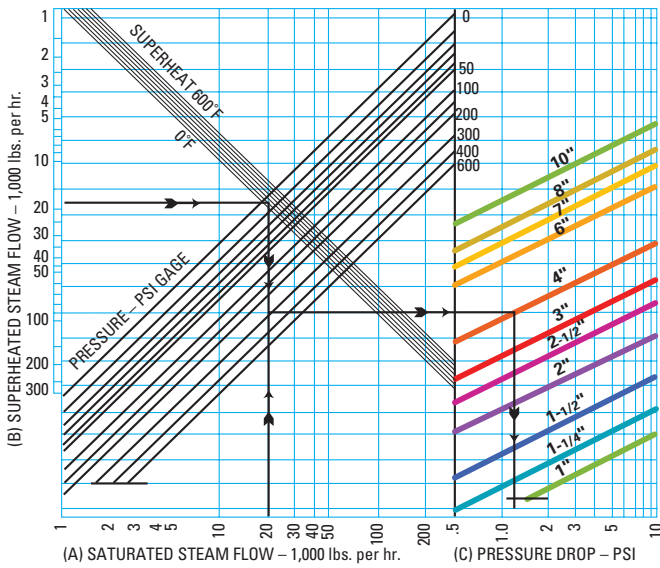
Typical Flanged Y Strainer



Flanged Carbon Steel & Stainless Steel – 300# (in/mm)

Size	A	B	C (Nom.)	D	Wt (lb / kg)
1/2	5.25 / 133	2.75 / 70	3/8	3.50 / 89	6 / 2.7
3/4	6.00 / 152	3.00 / 76	3/8	4.00 / 102	9 / 4.1
1	6.88 / 175	3.63 / 92	1/2	5.00 / 127	13 / 6.0
1-1/4	7.75 / 197	4.25 / 108	3/4	5.75 / 146	18 / 8.2
1-1/2	9.38 / 238	5.75 / 146	3/4	6.50 / 165	24 / 11
2	8.63 / 219	6.25 / 159	1	8.25 / 210	30 / 13.6
2-1/2	10.63 / 270	7.00 / 178	1	9.25 / 235	40 / 18.2
3	12.00 / 305	7.75 / 197	1-1/4	10.50 / 267	55 / 25
4	14.50 / 368	10.50 / 267	1-1/2	14.75 / 375	105 / 48
6	20.00 / 508	14.75 / 375	2	21.00 / 533	200 / 91
8	23.38 / 594	18.75 / 476	2	27.00 / 686	360 / 164
10	27.38 / 695	22.75 / 578	2	34.50 / 876	430 / 195

Steam Pressure Drops



Calculating Saturated Steam Pressure Drop

Example: Pressure = 300 psig, Flow Rate = 20,000 lb/hr, Strainer Size = 4 inches

1. Locate steam flow on Scale A.
2. Follow vertical line to required pressure.
3. Follow horizontal line to strainer size.
4. Follow vertical line downward and read pressure drop on Scale C.
5. Pressure drop equals 1.25 psi.

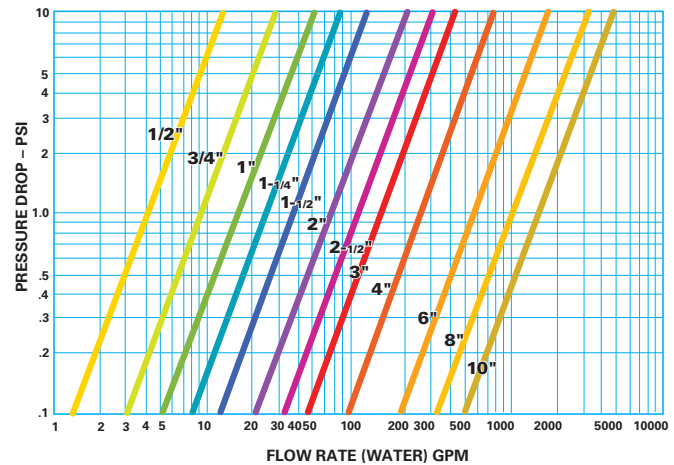
Calculating Superheated Steam Pressure Drop

Example: Pressure = 300 psig, Flow Rate = 18,000 lb/hr, Strainer Size = 4 inches

1. Locate steam flow on Scale B.
2. Follow horizontal line to superheat.
3. Follow vertical line to pressure.
4. Follow horizontal line to strainer size.
5. Follow vertical line and read pressure drop on Scale C.
6. Pressure drop equals 1.25 psi.

Note: Use the superheat temperature value above the saturated steam temperature to obtain the point on this graph.

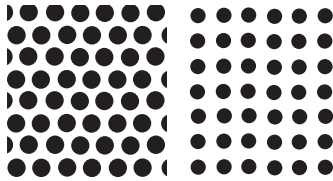
Flow Rates



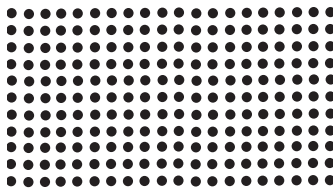
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Basket and Screen Data

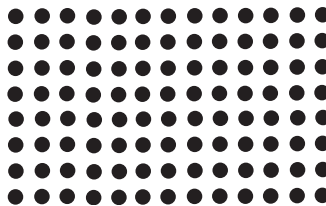
Pattern Examples



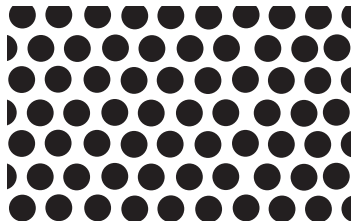
Staggered Holes Straight Holes



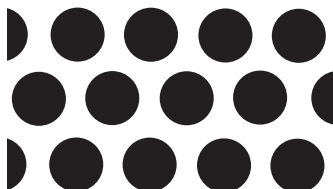
1/32" – Actual Size



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 perfect 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. The rule of thumb used by commercial perforated sheet manufacturers is that hole dimensions smaller than the plate thickness are impractical and costly to manufacture. Eaton baskets and screens have between 28% to 63% open area with gauge thickness from 18" (0.048") to 25" (0.021"), 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.



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Basket and Screen Data

Wire Mesh Specifications

All 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 mesh 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 30 x 160 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.

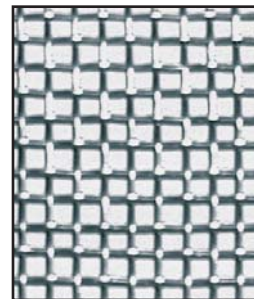
Perforated Basket Sheet Specifications

Perforation Size Inches	Sheet Thickness USS Gauge #	Hole Pattern	% Open Area
0.020	26	Straight	16.0
1/32	26	Straight	28.0
3/64	26	Straight	30.2
0.045	26	Staggered	36.0
1/16	26	Straight	31.0
1/8	26	Staggered	47.9
5/32	26	Staggered	63.0
1/4	26	Staggered	42.0
3/8	26	Staggered	52.0
1/2	26	Staggered	47.9

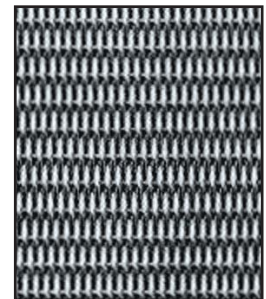
Mesh Basket Sheet Specifications

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

TECHNICAL INFORMATION

Standard Cast Pipeline Strainers

Basket Effective Area

Strainer Model	Pipe Size	Perforation Size	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	3/4	1/32	0.53	19.5	5.2	9.8
50	1	1/32	0.86	19.5	5.2	6.1
50	1-1/4	1/8	1.49	39.7	19.0	12.8
50	1-1/2	1/8	2.03	39.7	19.0	9.4
50	2	1/8	3.35	64.0	30.7	9.2
50	2-1/2	1/8	4.78	64.0	30.7	6.4
50	3	3/16	7.39	85.6	42.8	5.8
50	4	3/16	12.73	146.1	73.0	5.7
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
50	10	3/16	78.8	800	400	5.1
50	12	3.16	113.1	1200	600	5.3
50	14	3/16	137.9	2000	1000	7.3
50	16	3/16	182.6	2000	1000	5.5
50	18	3/16	182.6	2000	1000	5.5
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

Strainer Model	Pipe Size	Perforation Size	Nominal Area of Pipe (sq in)	Gross Screen Area (sq in)	Free Area (sq in)	Ratio Free Area to Pipe Area
72	3/8	1/32	0.19	12.7	3.4	18.0
72	1/2	1/32	0.30	12.7	3.4	11.3
72	3/4	1/32	0.53	19.5	5.2	9.9
72	1	1/32	0.86	19.5	5.2	6.1
72	1-1/4	1/8	1.49	30.1	14.4	9.7
72	1-1/2	1/8	2.03	49.7	19.0	9.4
72	2	1/8	3.35	50.9	24.4	7.3
72	2-1/2	1/8	4.78	80.2	38.4	8.0
72	3	3/16	7.39	114.5	57.2	7.8
72	4	3/16	12.73	168.3	84.1	6.6
72	5	3.16	20.0	265.4	132.7	6.6
72	6	3/16	28.9	324.2	162.1	5.6
72	8	3/16	50.02	555.3	277.7	5.6
72	10	3/16	78.8	800	400	5.1
72	12	3/16	113.1	1200	600	5.3
72	14	3/16	137.9	2000	1000	7.3
72	16	3/16	182.6	2000	1000	5.5
72	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: 70,000 lb/sq in
 Yield: 36,000 lb/sq in
 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 Elements 1.00% max

Cast Iron – ASTM A-126 Class B

Tensile Strength: 31,000 lb/sq in
 Compressive Strength: 109,000 lbs/sq in
 Tensile Modulus: 15 x 10⁶ lb/sq in
 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%

Aluminum Bronze – ASTM B-148

Grade C95400
 Tensile Strength: 75,000 lb/sq in
 Yield: 30,000 lb/sq in
 Elongation: 12%
 Chemical Composition:
 Cu (Copper) 85%
 Fe (Iron) 4%
 Al (Aluminum) 11%

Ductile Iron - ASTM A-395

Grade 60-40-18
 Tensile Strength: 60,000 lb/sq in
 Yield: 40,000 lb/sq in
 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.

Stainless Steel – ASTM A-351

Grade CF8M
 Tensile Strength: 70,000 lb/sq in
 Yield: 30,000 lb/sq in
 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%



Powering Business Worldwide

Pressure Drop Calculations

Pressure drops for Eaton strainers are shown on each product page. The curves are based on the flow of water through clean, perforated baskets or screens. For mesh-lined baskets or screens and/or for fluids other than water, use the correction factors listed on this page. To accurately calculate the pressure loss for filters and strainers in a pipeline, proceed as follows:

1. First calculate pressure loss using C_v factor formula at right.
2. Take the pressure loss figure obtained in (1) and recalculate it using the appropriate correction factor from the following table.

Correction Factors for Mesh-Lined Baskets

First – Multiply the pressure drop for water shown in charts by the specific gravity of the liquid.

Second – Multiply the corrected pressure drop figure by the following correction factors for more viscous liquids. (Water has a viscosity of 30 SSU.)

Viscosity (SSU)	Unlined Perforated Basket	40 Mesh Lined Basket	60 Mesh Lined Basket	80 Mesh Lined Basket	100 Mesh Lined Basket	200 Mesh Lined Basket	325 Mesh Lined Basket
30 (water)	0	1.2	1.4	1.6	1.7	2.0	2.5
500	1.6	1.9	2.1	2.4	2.6	3.1	3.6
1000	1.7	2.2	2.4	2.6	2.8	3.3	3.8
2000	1.9	2.4	2.7	2.9	3.2	3.8	4.0
3000	2.0	2.6	2.9	3.2	3.5	4.1	4.3
5000	2.2	3.0	3.5	4.0	4.5	5.3	6.3
10000	2.5	3.5	4.2	5.0	6.0	7.1	8.5

Strainer Basket Opening Equivalents

Mesh	Inches	Millimeters	Microns	Perf	Inches	Millimeters	Microns
400	0.0015	0.0381	38	1/32	0.033	0.838	838
300	0.0018	0.0457	45	3/64	0.045	1.143	1143
250	0.0024	0.0609	60	1/16	0.070	1.778	1776
200	0.0027	0.0686	68	3/32	0.094	2.387	2387
150	0.0041	0.1041	104	1/8	0.125	3.175	3175
100	0.0065	0.1651	165	5/32	0.150	3.810	3810
80	0.007	0.1778	177	3/16	0.1875	4.762	4762
60	0.009	0.2286	228	1/4	0.250	6.350	6350
40	0.015	0.8636	380	3/8	0.375	9.525	9525
20	0.034	0.8636	862	1/2	0.500	12.700	12700

Pressure Loss Calculation Using C_v Factor

Metric Units

$$\Delta P = \left[\frac{Q}{C_v} \right]^2 (133.6)$$

ΔP = Pressure Drop in kPa

Q = Flow in M³/hr

C_v = Flow Coefficient

Standard Units

$$\Delta P = \left[\frac{Q}{C_v} \right]^2$$

ΔP = Pressure Drop in psi

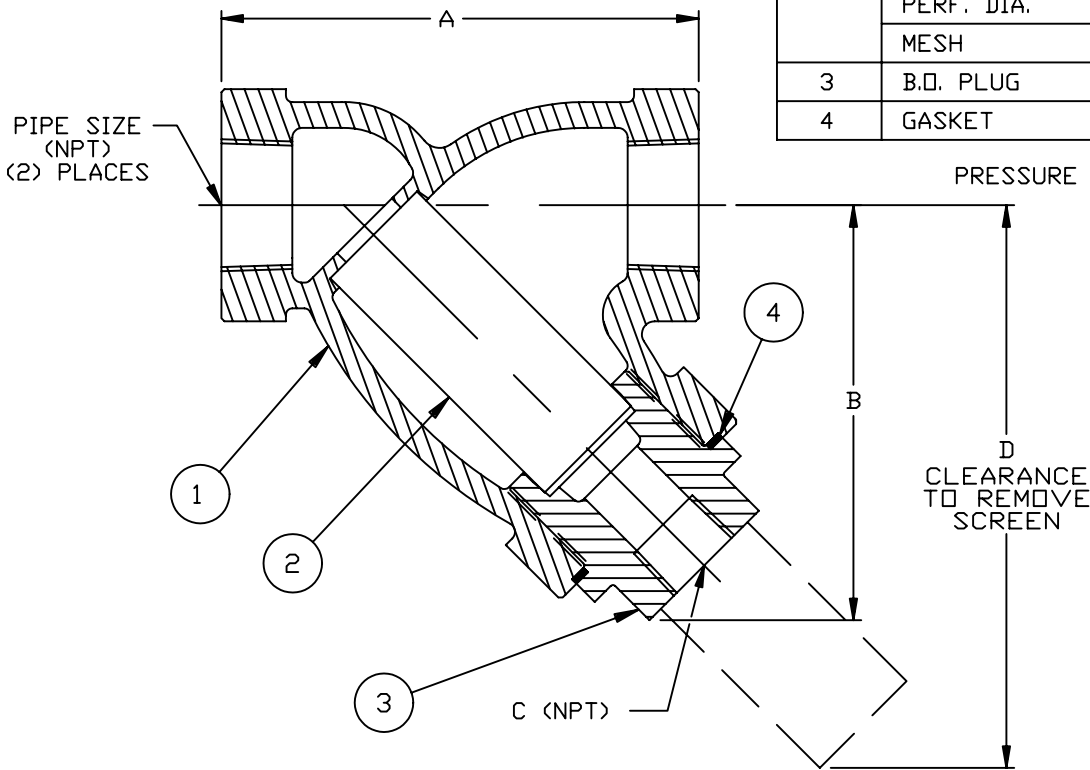
Q = Flow in gpm

C_v = Flow Coefficient

The pressure loss across a strainer can be calculated using the system's flow rate and the C_v factor for that strainer.

For example, a 1" Model 72 simplex strainer with a perforated basket has a C_v factor of 22.5. In water service with a 30 gpm flow rate, it will have a 1.7 psi pressure drop $(30 \div 22.5)^2 = 1.7$. For mesh-lined baskets and/or fluids with a viscosity greater than water, multiply the pressure drop by the correction factors in the chart "Correction Factors for mesh-lined baskets."

NO.	PART NAME	MATERIAL
1	BODY	CSTL ASTM A216 GR. WCB
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. PLUG	CSTL ASTM A216 GR. WCB
4	GASKET	NON-ASBESTOS



PRESSURE RATING: 1480 PSI @ 100° F
(102 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS								WEIGHT (APPROX.) (DRY)		PART NO.
	A		B		C (NOM.)		D		LBS.	KGS.	
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/4" (8mm)	3.00	76	3.00	76	3/8 (10)		4.00	102	2	0.9	SY085002ET30A
3/8" (10mm)	3.00	76	3.00	76	3/8 (10)		4.00	102	2	0.9	SY085003ET30A
1/2" (15mm)	3.00	76	3.00	76	3/8 (10)		4.00	102	2	0.9	SY085005ET30A
3/4" (20mm)	3.75	95	3.50	89	3/8 (10)		4.75	121	4	1.8	SY085007ET30A
1" (25mm)	4.63	118	4.00	102	1/2 (15)		5.75	146	6	2.7	SY085010ET30A
1-1/4" (32mm)	5.00	127	4.63	118	3/4 (20)		6.50	165	8	3.6	SY085012ET30A
1-1/2" (40mm)	5.63	143	5.25	133	3/4 (20)		7.50	191	10	4.5	SY085015ET30A
2" (50mm)	7.00	178	5.75	146	1 (25)		8.75	222	15	6.8	SY085020ET30A

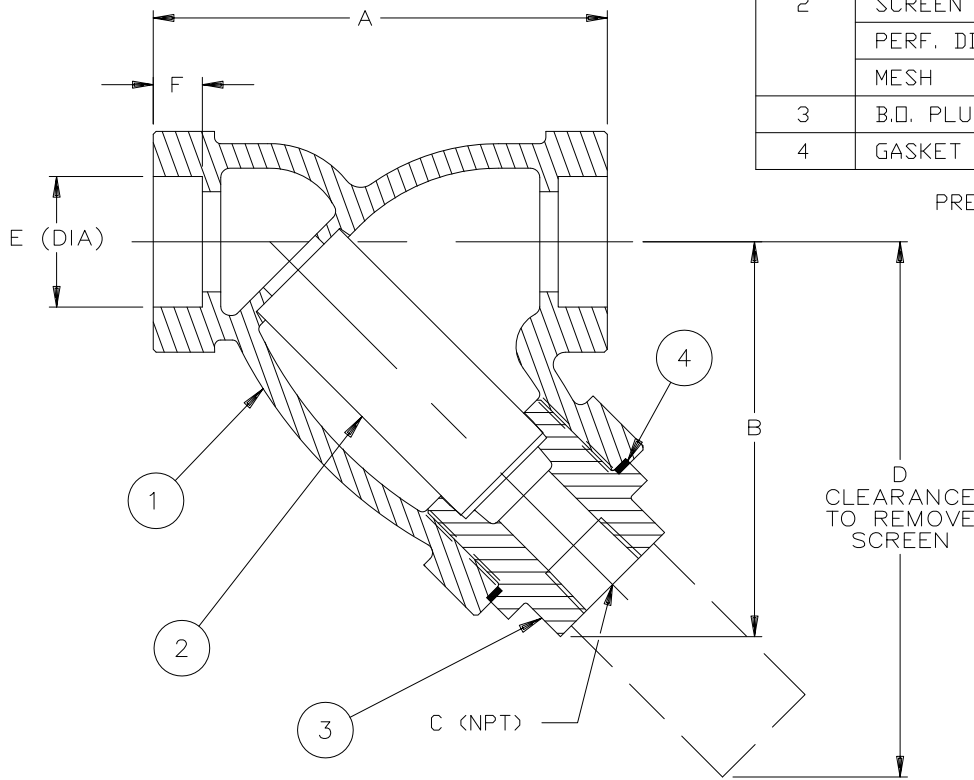
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EATON		EATON FILTRATION, LLC			
		900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207			
NAME		MODEL 85 Y-STRAINER CLASS 600 NPT THREADED CONNECTIONS SIZES 1/4" THRU 2" CARBON STEEL			
DRAWN	FC	DATE	7/7/93	CERT.	FM
DATE	7/7/93	DATE	7/7/93	REV	D
SIZE	DWG NO	SD085173			
A					

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ELECTRONIC FILE NAME: SD085173.DWG
REF. ECR D507 DATE 11/1/05

NO.	PART NAME	MATERIAL
1	BODY	CSTL ASTM A216 GR. WCB
2	SCREEN	
	PERF. DIA. MESH	
3	B.D. PLUG	CSTL ASTM A216 GR. WCB
4	GASKET	NON-ASBESTOS



PRESSURE RATING: 1480 PSI @ 100° F
(102 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS						WEIGHT (APPROX.) (DRY) LBS. KGS.	PART NO.						
	A		B		C (NOM.)	D			E		F			
	IN.	MM.	IN.	MM.	IN. MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/4" (8mm)	3.00	76	3.00	76	3/8 (10)	4.00	102	0.56	14	0.38	10	2	0.9	SY085002ES30A
3/8" (10mm)	3.00	76	3.00	76	3/8 (10)	4.00	102	0.69	18	0.38	10	2	0.9	SY085003ES30A
1/2" (15mm)	3.00	76	3.00	76	3/8 (10)	4.00	102	0.86	22	0.38	10	2	0.9	SY085005ES30A
3/4" (20mm)	3.75	95	3.50	89	3/8 (10)	4.75	121	1.07	27	0.50	13	4	1.8	SY085007ES30A
1" (25mm)	4.63	118	4.00	102	1/2 (15)	5.75	146	1.33	34	0.50	13	6	2.7	SY085010ES30A
1-1/4" (32mm)	5.00	127	4.63	118	3/4 (20)	6.50	165	1.68	43	0.50	13	8	3.6	SY085012ES30A
1-1/2" (40mm)	5.63	143	5.25	133	3/4 (20)	7.50	191	1.92	49	0.50	13	10	4.5	SY085015ES30A
2" (50mm)	7.00	178	5.75	146	1 (25)	8.75	222	2.41	61	0.62	16	15	6.8	SY085020ES30A

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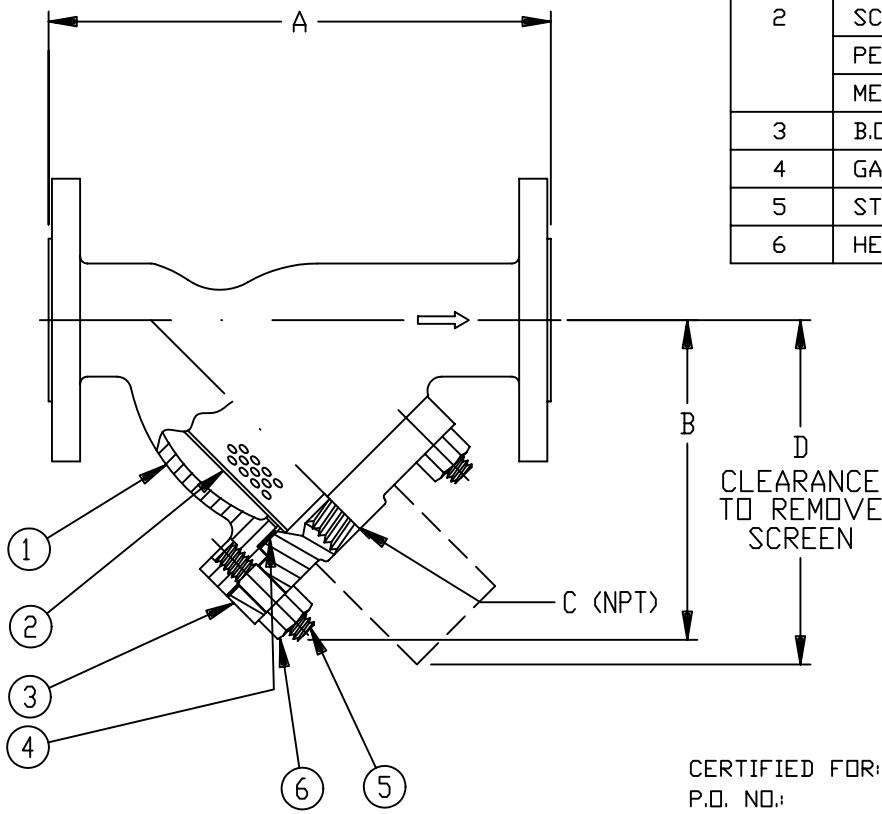
EATON		EATON FILTRATION, LLC 70 WOOD AVENUE SOUTH, ISELIN, NEW JERSEY 08830					
		NAME MODEL 85 Y-STRAINER CLASS 600 SOCKETWELD CONNECTIONS SIZES 1/4" THRU 2" CARBON STEEL					
DRAWN	FC	DATE	7/6/93	CERT.	FM	DATE	7/6/93
SIZE	DWG NO	SD085171				REV	D

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ELECTRONIC FILE NAME: SD085171.DWG

REF. ECR D507 DATE 11/1/05

NO.	PART NAME	MATERIAL
1	BODY	CSTL ASTM A216 GR. WCB
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. FLANGE	CSTL ASTM A216 GR. WCB
4	GASKET	NON-ASBESTOS
5	STUD	STEEL ASTM A193 GR. B7
6	HEX NUT	STEEL ASTM A194 GR. 2H



- NOTES:
1. INLET/OUTLET FLANGE CONNECTIONS PER ANSI B16.5
 2. BOLT HOLES STRADDLE CENTERLINE.
 3. SIZES 6" TO 10" HAVE FLAT FACE B.O. FLANGE, SMALLER SIZES HAVE RECESSED SEAL AS SHOWN.
 4. SIZES 1/2" TO 1-1/4" HAVE 2 BOLT OVAL B.O. FLANGES.
 5. SIZES 2" TO 4" HAVE 4 BOLT SQUARE B.O. FLANGES.
 6. ALL OTHERS HAVE CIRCULAR B.O. FLANGES.
 7. PRESSURE RATING: 285 PSI @ 100° F (19.6 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS				WEIGHT (APPROX.) (DRY)		PART NO.				
	A		B		C (NOM.)			D			
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.	LBS.	KGS.	
1/2" (15mm)	5.00	127	2.75	70	3/8	(10)	3.50	89	5	2.3	SY085005BR30A
3/4" (20mm)	5.63	143	3.00	76	3/8	(10)	4.00	102	7	3.2	SY085007BR30A
1" (25mm)	6.38	162	3.62	92	1/2	(15)	5.00	127	9	4.1	SY085010BR30A
1-1/4" (32mm)	7.25	184	4.25	108	3/4	(20)	5.75	146	14	6.3	SY085012BR30A
1-1/2" (40mm)	8.88	226	5.75	146	3/4	(20)	6.50	165	18	8.2	SY085015BR30A
2" (50mm)	7.88	200	6.00	152	1	(25)	8.25	210	16	7.3	SY085020BR30A
2-1/2" (65mm)	9.75	248	6.50	165	1	(25)	9.25	235	25	11.4	SY085025BR30A
3" (80mm)	10.00	254	7.25	184	1-1/4	(32)	10.50	267	35	16.0	SY085030BR30A
4" (100mm)	12.13	308	9.75	248	1-1/2	(40)	14.75	375	70	31.8	SY085040BR30A
6" (150mm)	18.50	470	14.25	362	2	(50)	21.00	533	130	59.1	SY085060BR30A
8" (200mm)	21.63	549	18.00	457	2	(50)	26.75	679	240	109.1	SY085080BR30A
10" (250mm)	26.00	660	22.25	565	2	(50)	33.75	857	300	136.4	SY085100BR30A

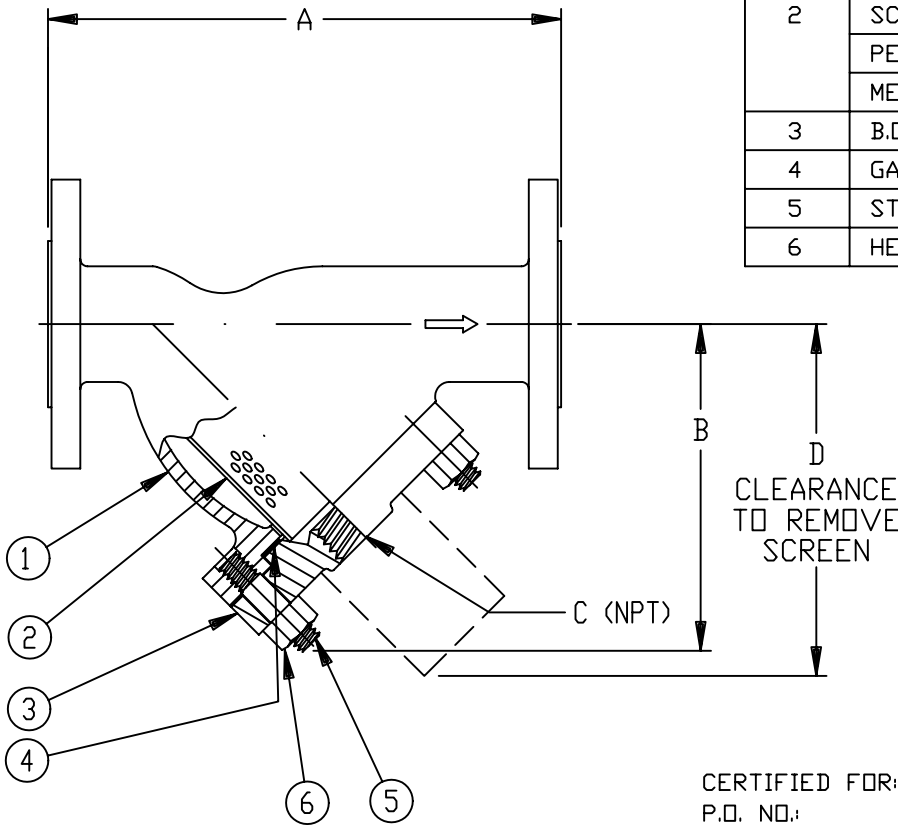
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		EATON FILTRATION, LLC 900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207					
		NAME MODEL 85 Y-STRAINER 150# RAISED FACE FLANGE SIZES 1/2" THRU 10" CARBON STEEL					
DRAWN	FM	DATE	7/1/93	CERT.	FC	DATE	7/2/93
SIZE	DWG NO	SD085272				REV	E

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ELECTRONIC FILE NAME: SD085272.DWG
REF. ECR D507 DATE 11/1/05

NO.	PART NAME	MATERIAL
1	BODY	CSTL ASTM A216 GR. WCB
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. FLANGE	CSTL ASTM A216 GR. WCB
4	GASKET	NON-ASBESTOS
5	STUD	STEEL ASTM A193 GR. B7
6	HEX NUT	STEEL ASTM A194 GR. 2H



NOTES:

1. INLET/OUTLET FLANGE CONNECTIONS PER ANSI B16.5
2. BOLT HOLES STRADDLE CENTERLINE.
3. SIZES 4" TO 10" HAVE FACE B.O. FLANGE. SMALLER SIZES HAVE RECESSED SEAL AS SHOWN.
4. SIZES 1/2" TO 1-1/4" HAVE 2 BOLT OVAL B.O. FLANGES.
5. SIZES 2" TO 3" HAVE 4 BOLT SQUARE B.O. FLANGES.
6. ALL OTHERS HAVE CIRCULAR B.O. FLANGES.
7. PRESSURE RATING: 740 PSI @ 100° F (51 BAR @ 37.8° C)

CERTIFIED FOR:
P.D. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS						WEIGHT (APPROX.) (DRY)		PART NO.		
	A		B		C (NOM.)		D			LBS.	KGS.
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/2" (15mm)	5.25	133	2.75	70	3/8 (10)		3.50	89	6	2.7	SY085005DR30A
3/4" (20mm)	6.00	152	3.00	76	3/8 (10)		4.00	102	9	4.1	SY085007DR30A
1" (25mm)	6.88	175	3.62	92	1/2 (15)		5.00	127	13	6.0	SY085010DR30A
1-1/4" (32mm)	7.75	197	4.25	108	3/4 (20)		5.75	146	18	8.2	SY085012DR30A
1-1/2" (40mm)	9.38	238	5.75	146	3/4 (20)		6.50	165	24	11.0	SY085015DR30A
2" (50mm)	8.63	219	6.25	159	1 (25)		8.25	210	30	13.6	SY085020DR30A
2-1/2" (65mm)	10.63	270	7.00	178	1 (25)		9.25	235	40	18.2	SY085025DR30A
3" (80mm)	12.00	305	7.75	197	1-1/4 (32)		10.50	267	55	25.0	SY085030DR30A
4" (100mm)	14.50	368	10.50	267	1-1/2 (40)		14.75	375	105	47.7	SY085040DR30A
6" (150mm)	20.00	508	14.75	375	2 (50)		21.00	533	200	91.0	SY085060DR30A
8" (200mm)	23.38	594	18.75	476	2 (50)		27.00	686	360	164.0	SY085080DR30A
10" (250mm)	27.38	695	22.75	578	2 (50)		34.50	876	430	195.5	SY085100DR30A

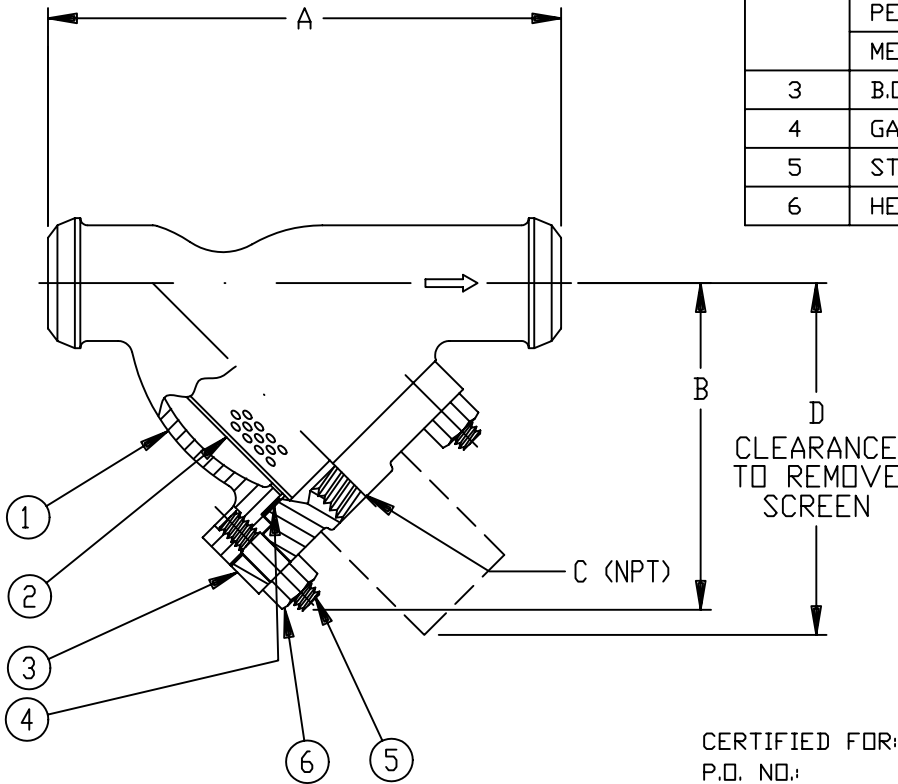
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		EATON FILTRATION, LLC				
		900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207				
NAME		MODEL 85 Y-STRAINER 300# RAISED FACE FLANGE SIZES 1/2" THRU 10" CARBON STEEL				
DRAWN	FM	DATE	7/1/93	CERT.	FC	
DATE	7/2/93	SD085282			REV	E

ELECTRONIC FILE NAME: SD085282.DWG
REF. ECR D507 DATE 11/1/05

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NO.	PART NAME	MATERIAL
1	BODY	CSTL ASTM A216 GR. WCB
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. FLANGE	CSTL ASTM A216 GR. WCB
4	GASKET	NON-ASBESTOS
5	STUD	STEEL ASTM A193 GR. B7
6	HEX NUT	STEEL ASTM A194 GR. 2H



NOTES:

1. INLET/OUTLET B.W.E CONNECTIONS SCH STD. WGT. BORE.
2. BOLT HOLES STRADDLE CENTERLINE.
3. SIZES 6" TO 10" HAVE FLAT FACE B.O. FLANGE. SMALLER SIZES HAVE RECESSED SEAL AS SHOWN.
4. SIZES 1/2" TO 1-1/4" HAVE 2 BOLT OVAL B.O. FLANGES.
5. SIZES 2" TO 4" HAVE 4 BOLT SQUARE B.O. FLANGES.
6. ALL OTHERS HAVE CIRCULAR B.O. FLANGES.
7. PRESSURE RATING: 285 PSI @ 100° F (19.6 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS						WEIGHT (APPROX.) (DRY)		PART NO.		
	A		B		C (NOM.)		D			LBS.	KGS.
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/2" (15mm)	5.00	127	2.75	70	3/8 (10)		3.50	89	5	2.3	SY085005BB30A
3/4" (20mm)	5.63	143	3.00	76	3/8 (10)		4.00	102	7	3.2	SY085007BB30A
1" (25mm)	6.38	162	3.62	92	1/2 (15)		5.00	127	9	4.1	SY085010BB30A
1-1/4" (32mm)	7.25	184	4.25	108	3/4 (20)		5.75	146	14	6.3	SY085012BB30A
1-1/2" (40mm)	8.88	226	5.75	146	3/4 (20)		6.50	165	18	8.2	SY085015BB30A
2" (50mm)	7.88	200	6.00	152	1 (25)		8.25	210	16	7.3	SY085020BB30A
2-1/2" (65mm)	9.75	248	6.50	165	1 (25)		9.25	235	25	11.4	SY085025BB30A
3" (80mm)	10.00	254	7.25	184	1-1/4 (32)		10.50	267	35	16.0	SY085030BB30A
4" (100mm)	12.13	308	9.75	248	1-1/2 (40)		14.75	375	70	31.8	SY085040BB30A
6" (150mm)	18.50	470	14.25	362	2 (50)		21.00	533	130	59.1	SY085060BB30A
8" (200mm)	21.63	549	18.00	457	2 (50)		26.75	679	240	109.1	SY085080BB30A
10" (250mm)	26.00	660	22.25	565	2 (50)		33.75	857	300	136.4	SY085100BB30A

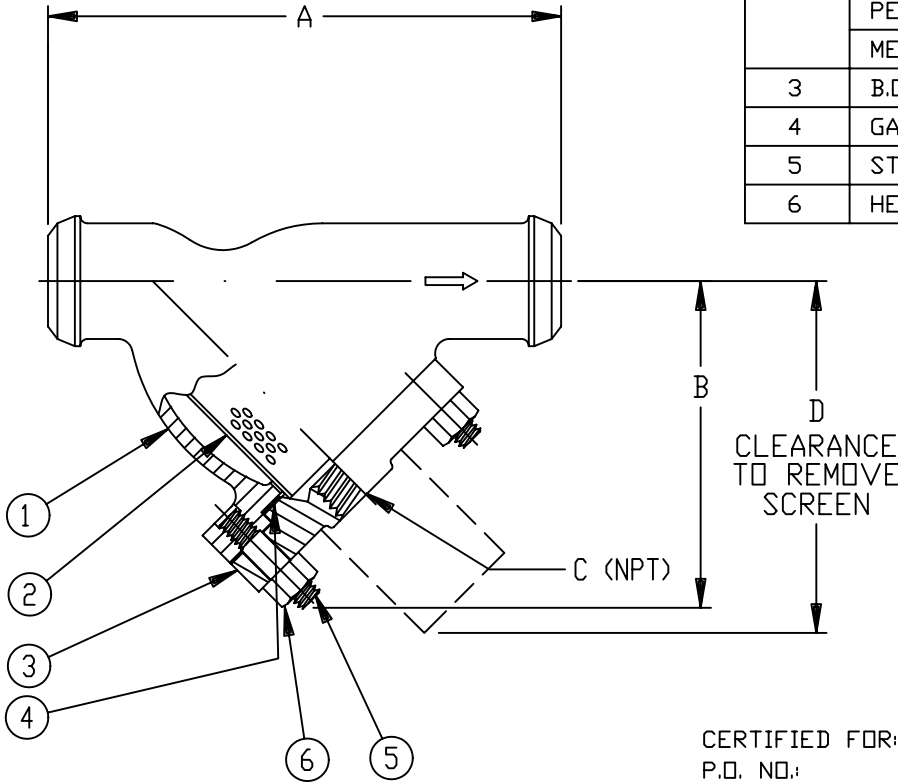
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EATON		EATON FILTRATION, LLC 900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207					
		NAME MODEL 85 Y-STRAINER 150# BUTTWELD END CONNECTIONS SIZES 1/2" THRU 10" CARBON STEEL					
DRAWN	FM	DATE	7/1/93	CERT.	FC	DATE	7/2/93
SIZE	DWG NO	SD085276				REV	B

ELECTRONIC FILE NAME: SD085276.DWG
REF. ECR D507 DATE 11/1/05

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NO.	PART NAME	MATERIAL
1	BODY	CSTL ASTM A216 GR. WCB
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. FLANGE	CSTL ASTM A216 GR. WCB
4	GASKET	NON-ASBESTOS
5	STUD	STEEL ASTM A193 GR. B7
6	HEX NUT	STEEL ASTM A194 GR. 2H



NOTES:

1. INLET/OUTLET B.W.E CONNECTIONS SCH STD. WGT. BORE.
2. BOLT HOLES STRADDLE CENTERLINE.
3. SIZES 4" TO 10" HAVE FLAT FACE B.O. FLANGE. SMALLER SIZES HAVE RECESSED SEAL AS SHOWN.
4. SIZES 1/2" TO 1-1/4" HAVE 2 BOLT OVAL B.O. FLANGES.
5. SIZES 2" TO 3" HAVE 4 BOLT SQUARE B.O. FLANGES.
6. ALL OTHERS HAVE CIRCULAR B.O. FLANGES.
7. PRESSURE RATING: 740 PSI @ 100° F (51 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS						WEIGHT (APPROX.) (DRY)		PART NO.		
	A		B		C (NOM.)		D			LBS.	KGS.
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/2" (15mm)	5.25	133	2.75	70	3/8	(10)	3.50	89	6	2.7	SY085005DB30A
3/4" (20mm)	6.00	152	3.00	76	3/8	(10)	4.00	102	9	4.1	SY085007DB30A
1" (25mm)	6.88	175	3.62	92	1/2	(15)	5.00	127	13	6.0	SY085010DB30A
1-1/4" (32mm)	7.75	197	4.25	108	3/4	(20)	5.75	146	18	8.2	SY085012DB30A
1-1/2" (40mm)	9.38	238	5.75	146	3/4	(20)	6.50	165	24	11.0	SY085015DB30A
2" (50mm)	8.63	219	6.25	159	1	(25)	8.25	210	30	13.6	SY085020DB30A
2-1/2" (65mm)	10.63	270	7.00	178	1	(25)	9.25	235	40	18.2	SY085025DB30A
3" (80mm)	12.00	305	7.75	197	1-1/4	(32)	10.50	267	55	25.0	SY085030DB30A
4" (100mm)	14.50	368	10.50	267	1-1/2	(40)	14.75	375	105	47.7	SY085040DB30A
6" (150mm)	20.00	508	14.75	375	2	(50)	21.00	533	200	91.0	SY085060DB30A
8" (200mm)	23.38	594	18.75	476	2	(50)	27.00	686	360	164.0	SY085080DB30A
10" (250mm)	27.38	695	22.75	578	2	(50)	34.50	876	430	195.5	SY085100DB30A

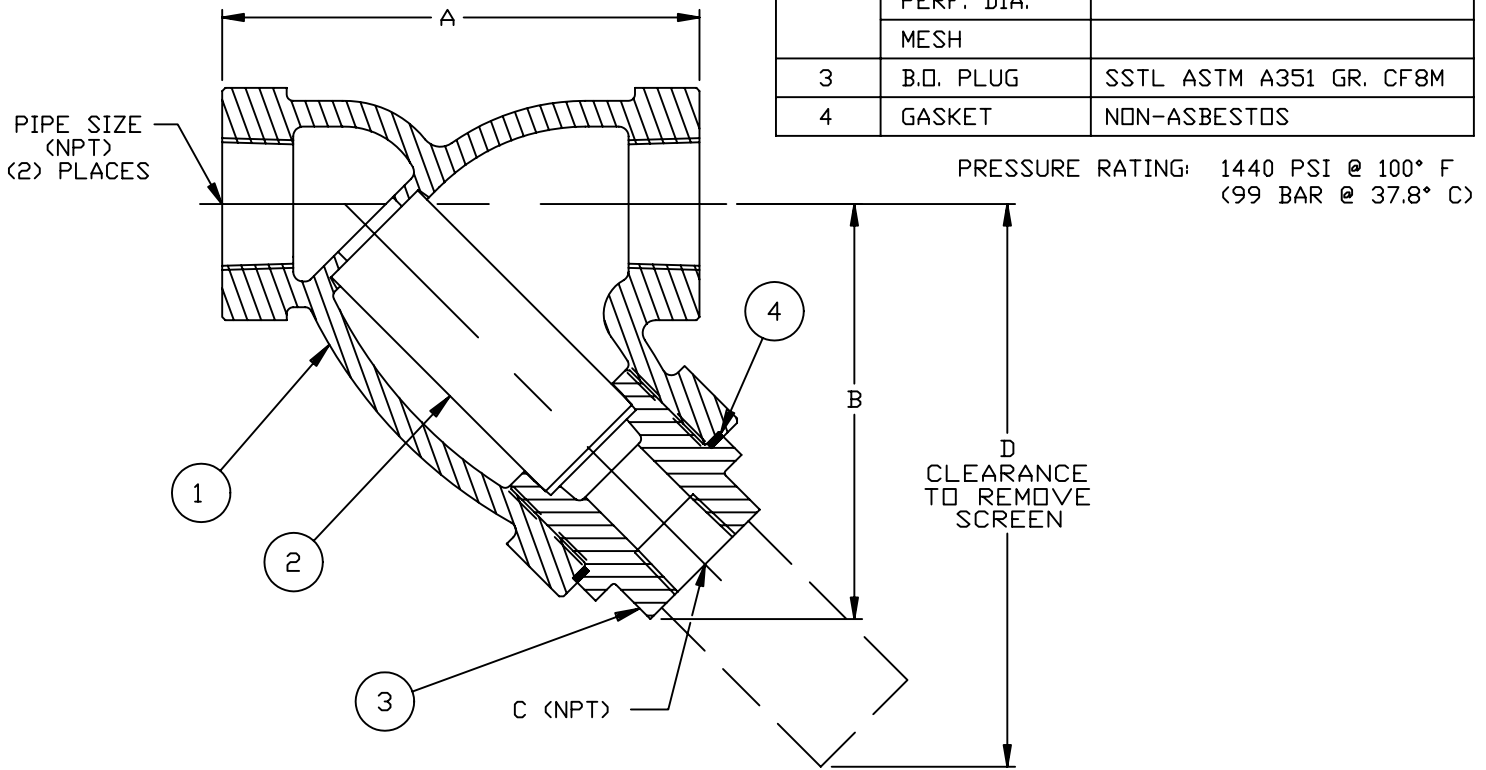
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		EATON FILTRATION, LLC			
		900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207			
NAME		MODEL 85 Y-STRAINER 300# BUTTWELD END CONNECTIONS SIZES 1/2" THRU 10" CARBON STEEL			
DRAWN	FM	DATE	7/1/93	CERT.	FC
DATE	7/2/93	SIZE			DWG NO
A			SD085283		REV E

ELECTRONIC FILE NAME: SD085283.DWG
REF. ECR D507 DATE 11/1/05

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NO.	PART NAME	MATERIAL
1	BODY	SSTL ASTM A351 GR. CF8M
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. PLUG	SSTL ASTM A351 GR. CF8M
4	GASKET	NON-ASBESTOS



CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS								WEIGHT (APPROX.) (DRY)		PART NO.
	A		B		C (NOM.)		D		LBS.	KGS.	
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/4" (8mm)	3.00	76	3.00	76	3/8 (10)		4.00	102	2	0.9	SY085002ET20A
3/8" (10mm)	3.00	76	3.00	76	3/8 (10)		4.00	102	2	0.9	SY085003ET20A
1/2" (15mm)	3.00	76	3.00	76	3/8 (10)		4.00	102	2	0.9	SY085005ET20A
3/4" (20mm)	3.75	95	3.50	89	3/8 (10)		4.75	121	4	1.8	SY085007ET20A
1" (25mm)	4.63	118	4.00	102	1/2 (15)		5.75	146	6	2.7	SY085010ET20A
1-1/4" (32mm)	5.00	127	4.63	118	3/4 (20)		6.50	165	8	3.6	SY085012ET20A
1-1/2" (40mm)	5.63	143	5.25	133	3/4 (20)		7.50	191	10	4.5	SY085015ET20A
2" (50mm)	7.00	178	5.75	146	1 (25)		8.75	222	15	6.8	SY085020ET20A

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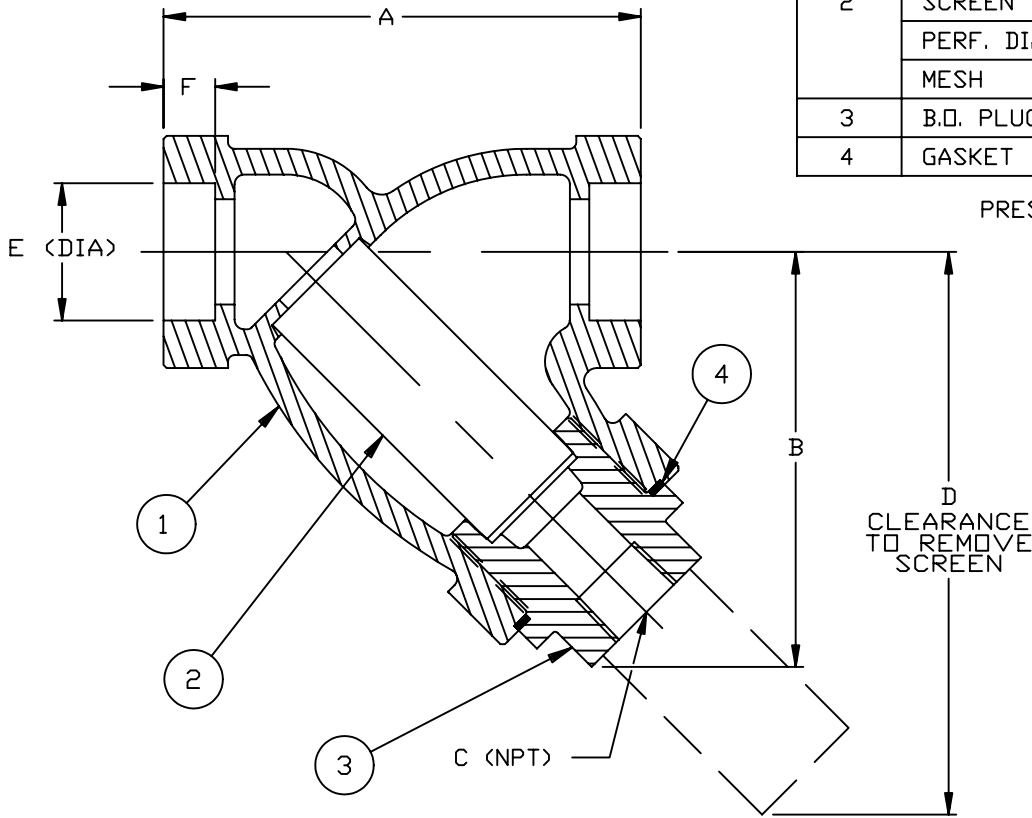
EATON		EATON FILTRATION, LLC			
		900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207			
NAME		MODEL 85 Y-STRAINER			
		CLASS 600 NPT THREADED CONNECTIONS			
		SIZES 1/4" THRU 2" STAINLESS STEEL			
DRAWN	FC	DATE	7/7/93	CERT.	FM
DATE	7/7/93			DATE	7/7/93
SIZE	DWG NO	SD085174			REV
A					D

ELECTRONIC FILE NAME: SD085174.DWG
REF. ECR D507 DATE 11/1/05

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NO.	PART NAME	MATERIAL
1	BODY	SSTL ASTM A351 GR. CF8M
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. PLUG	SSTL ASTM A351 GR. CF8M
4	GASKET	NON-ASBESTOS

PRESSURE RATING: 1440 PSI @ 100° F
(99 BAR @ 37.8° C)



CERTIFIED FOR:
P.D. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS						WEIGHT (APPROX.) (DRY) LBS. KGS.	PART NO.						
	A		B		C (NOM.)				D		E		F	
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.		
1/4" (8mm)	3.00	76	3.00	76	3/8	(10)	4.00	102	0.56	14	0.38	10	2 / 0.9	SY085002ES20A
3/8" (10mm)	3.00	76	3.00	76	3/8	(10)	4.00	102	0.69	18	0.38	10	2 / 0.9	SY085003ES20A
1/2" (15mm)	3.00	76	3.00	76	3/8	(10)	4.00	102	0.86	22	0.38	10	2 / 0.9	SY085005ES20A
3/4" (20mm)	3.75	95	3.50	89	3/8	(10)	4.75	121	1.07	27	0.50	13	4 / 1.8	SY085007ES20A
1" (25mm)	4.63	118	4.00	102	1/2	(15)	5.75	146	1.33	34	0.50	13	6 / 2.7	SY085010ES20A
1-1/4" (32mm)	5.00	127	4.63	118	3/4	(20)	6.50	165	1.68	43	0.50	13	8 / 3.6	SY085012ES20A
1-1/2" (40mm)	5.63	143	5.25	133	3/4	(20)	7.50	191	1.92	49	0.50	13	10 / 4.5	SY085015ES20A
2" (50mm)	7.00	178	5.75	146	1	(25)	8.75	222	2.41	61	0.62	16	15 / 6.8	SY085020ES20A

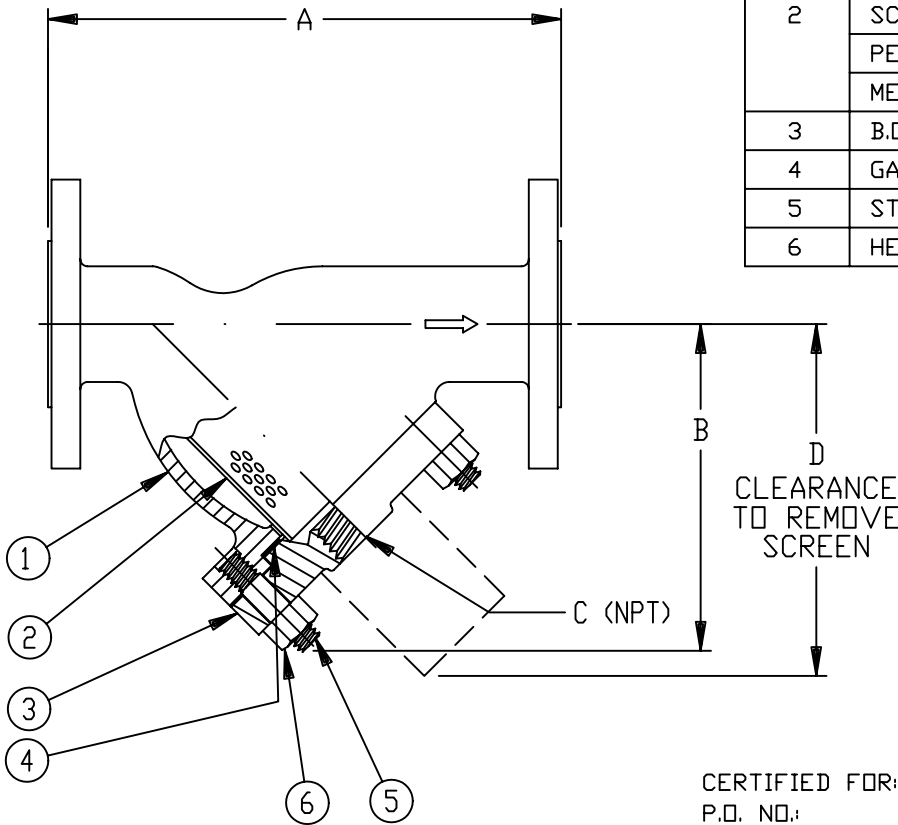
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EATON		EATON FILTRATION, LLC 900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207			
NAME		MODEL 85 Y-STRAINER CLASS 600 SOCKETWELD CONNECTIONS SIZES 1/4" THRU 2" STAINLESS STEEL			
DRAWN	FC	DATE	7/6/93	CERT.	FM
DATE	7/6/93	SD085172			REV
SIZE	DWG	SD085172			REV
A	NO	SD085172			D

ELECTRONIC FILE NAME: SD085172.DWG
REF. ECR D507 DATE 11/1/05

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NO.	PART NAME	MATERIAL
1	BODY	SSTL ASTM A351 GR. CF8M
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. FLANGE	SSTL ASTM A351 GR. CF8M
4	GASKET	NON-ASBESTOS
5	STUD	STEEL ASTM A193 GR. B7
6	HEX NUT	STEEL ASTM A194 GR. 2H



NOTES:

1. INLET/OUTLET FLANGE CONNECTIONS PER ANSI B16.5
2. BOLT HOLES STRADDLE CENTERLINE.
3. SIZES 6" TO 10" HAVE FLAT FACE B.O. FLANGE. SMALLER SIZES HAVE RECESSED SEAL AS SHOWN.
4. SIZES 1/2" TO 1-1/4" HAVE 2 BOLT OVAL B.O. FLANGES.
5. SIZES 2" TO 4" HAVE 4 BOLT SQUARE B.O. FLANGES.
6. ALL OTHERS HAVE CIRCULAR B.O. FLANGES.
7. PRESSURE RATING: 275 PSI @ 100° F (19 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS						WEIGHT (APPROX.) (DRY)		PART NO.		
	A		B		C (NOM.)		D			LBS.	KGS.
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.			
1/2" (15mm)	5.00	127	2.75	70	3/8	(10)	3.50	89	5	2.3	SY085005BR20A
3/4" (20mm)	5.63	143	3.00	76	3/8	(10)	4.00	102	7	3.2	SY085007BR20A
1" (25mm)	6.38	162	3.62	92	1/2	(15)	5.00	127	9	4.1	SY085010BR20A
1-1/4" (32mm)	7.25	184	4.25	108	3/4	(20)	5.75	146	14	6.3	SY085012BR20A
1-1/2" (40mm)	8.88	226	5.75	146	3/4	(20)	6.50	165	18	8.2	SY085015BR20A
2" (50mm)	7.88	200	6.00	152	1	(25)	8.25	210	16	7.3	SY085020BR20A
2-1/2" (65mm)	9.75	248	6.50	165	1	(25)	9.25	235	25	11.4	SY085025BR20A
3" (80mm)	10.00	254	7.25	184	1-1/4	(32)	10.50	267	35	16.0	SY085030BR20A
4" (100mm)	12.13	308	9.75	248	1-1/2	(40)	14.75	375	70	31.8	SY085040BR20A
6" (150mm)	18.50	470	14.25	362	2	(50)	21.00	533	130	59.1	SY085060BR20A
8" (200mm)	21.63	549	18.00	457	2	(50)	26.75	679	240	109.1	SY085080BR20A
10" (250mm)	26.00	660	22.25	565	2	(50)	33.75	857	300	136.4	SY085100BR20A

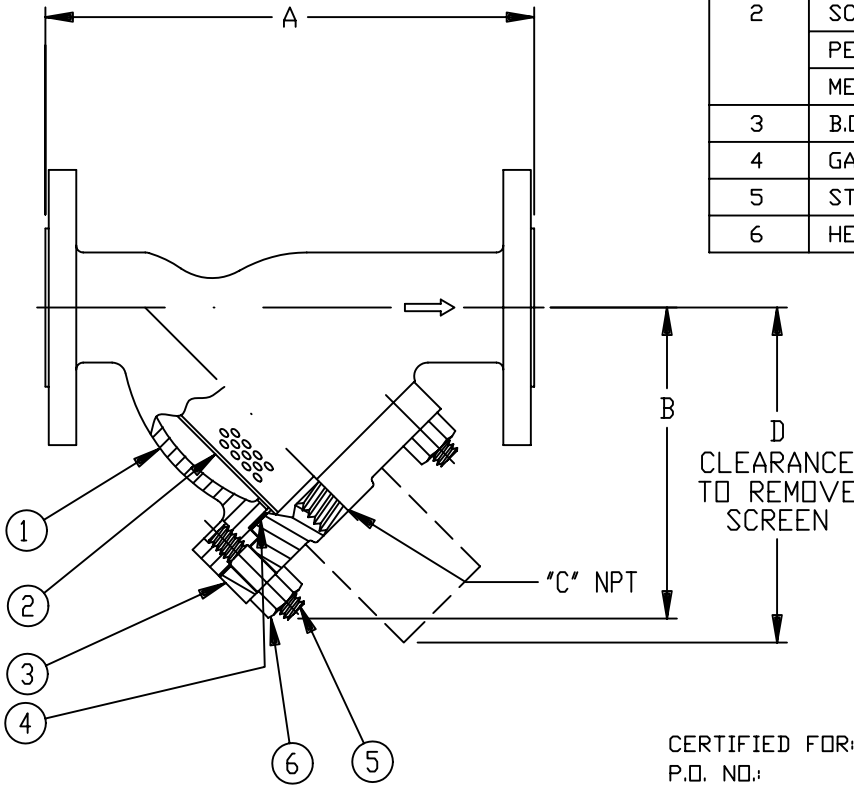
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EATON		EATON FILTRATION, LLC 900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207					
		NAME: MODEL 85 Y-STRAINER 150# RAISED FACE FLANGE SIZES 1/2" THRU 10" STAINLESS STEEL					
DRAWN	FM	DATE	7/1/93	CERT.	FC	DATE	7/2/93
SIZE	DWG NO	SD085271				REV	E

ELECTRONIC FILE NAME: SD085271.DWG
REF. ECR D507 DATE 11/1/05

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NO.	PART NAME	MATERIAL
1	BODY	SSTL ASTM A351 GR. CF8M
2	SCREEN	
	PERF. DIA.	
	MESH	
3	B.O. FLANGE	SSTL ASTM A351 GR. CF8M
4	GASKET	NON-ASBESTOS
5	STUD	STEEL ASTM A193 GR. B7
6	HEX NUT	STEEL ASTM A194 GR. 2H



NOTES:

1. INLET/OUTLET FLANGE CONNECTIONS PER ANSI B16.5
2. BOLT HOLES STRADDLE CENTERLINE.
3. SIZES 4" TO 10" HAVE FLAT FACE B.O. FLANGE. SMALLER SIZES HAVE RECESSED SEAL AS SHOWN.
4. SIZES 1/2" TO 1-1/4" HAVE 2 BOLT OVAL B.O. FLANGES.
5. SIZES 2" TO 3" HAVE 4 BOLT SQUARE B.O. FLANGES.
6. ALL OTHERS HAVE CIRCULAR B.O. FLANGES.
7. PRESSURE RATING: 720 PSI @ 100° F (49.6 BAR @ 37.8° C)

CERTIFIED FOR:
P.O. NO.:
REG. NO.:
TAG NO.:

QUOTE NO.:

PIPE SIZE (NOMINAL)	DIMENSIONS				WEIGHT (APPROX.) (DRY)		PART NO.				
	A		B		C (NOM.)			D			
	IN.	MM.	IN.	MM.	IN.	MM.	IN.	MM.	LBS.	KGS.	
1/2" (15mm)	5.25	133	2.75	70	3/8 (10)	3.50	89		6	2.7	SY085005DR20A
3/4" (20mm)	6.00	152	3.00	76	3/8 (10)	4.00	102		9	4.1	SY085007DR20A
1" (25mm)	6.88	175	3.62	92	1/2 (15)	5.00	127		13	6.0	SY085010DR20A
1-1/4" (32mm)	7.75	197	4.25	108	3/4 (20)	5.75	146		18	8.2	SY085012DR20A
1-1/2" (40mm)	9.38	238	5.75	146	3/4 (20)	6.50	165		24	11.0	SY085015DR20A
2" (50mm)	8.63	219	6.25	159	1 (25)	8.25	210		30	13.6	SY085020DR20A
2-1/2" (65mm)	10.63	270	7.00	178	1 (25)	9.25	235		40	18.2	SY085025DR20A
3" (80mm)	12.00	305	7.75	197	1-1/4 (32)	10.50	267		55	25.0	SY085030DR20A
4" (100mm)	14.50	368	10.50	267	1-1/2 (40)	14.75	375		105	47.7	SY085040DR20A
6" (150mm)	20.00	508	14.75	375	2 (50)	21.00	533		200	91.0	SY085060DR20A
8" (200mm)	23.38	594	18.75	476	2 (50)	27.00	686		360	164.0	SY085080DR20A
10" (250mm)	27.38	695	22.75	578	2 (50)	34.50	876		430	195.5	SY085100DR20A

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EATON		EATON FILTRATION, LLC 900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207					
		NAME MODEL 85 Y-STRAINER 300# RAISED FACE FLANGE SIZES 1/2" THRU 10" STAINLESS STEEL					
DRAWN	FM	DATE	7/1/93	CERT.	FC	DATE	7/2/93
SIZE	DWG	SD085281				REV	E
A	NO						

ELECTRONIC FILE NAME: SD085281.DWG
REF. ECR D507 DATE 11/1/05

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Read all instructions before installation or operation of equipment. Failure to comply with these instructions could result in bodily injury or property damage.



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Start-Up	3
Screen Cleaning	3
Shut-Down Periods	3
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Introduction

The Eaton Models 80 & 85 Y-Strainers are devices installed in a pipeline to remove dirt and other unwanted debris from fluids. They are designed for the full ANSI pressure rating @ 100°F that is shown on the strainer. Straining is accomplished by directing the fluid through sized openings in a screen. Y-Strainers are installed where fluid flow can be interrupted while the screen is removed for cleaning. Y-Strainers are designed to withstand the pressures of the piping system.

Receiving, Handling and Inspection

Unpack the strainer and inspect for damage occurring during transit. Report damage to the carrier. If the strainer is not installed immediately, see "Storage" instructions.

Remove any preservatives with solvent dampened cloths. Exercise care when using solvent and follow solvent manufacturer's instructions.

Verify that the rating of the strainer is greater than or equal to the maximum pressure & temperature of the installation.

Inspect strainer by checking for and removing any foreign or loose material that could be carried down stream when fluid is introduced into the strainer.

Storage

Replace protective wrap, flange protectors etc. which may have been removed during receiving, handling and inspection. Store the strainer in a clean, dry environment.

Installation

CAUTION: Before installation, review the application and chemical compatibility of the process fluid to the materials of construction of the strainer.

Remove protective wraps etc. before installing the strainer. Position the strainer in the pipeline so that the fluid enters the connection marked "IN", "INLET" or in the direction of the Arrow cast into the strainer.

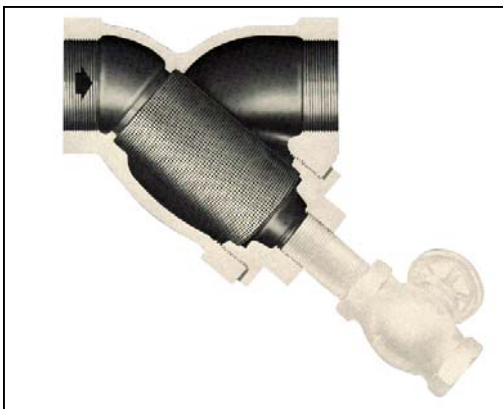


Figure 1. Cross-section of threaded Y-Strainer with blow-off valve connected for quick clean-out.

Installation, Continued

Always install the strainer with the blow-off (drain) in the lowest position. Flow must be downward into the inlet of the strainer for satisfactory operation for vertical piping installations.

CAUTION: To lift the strainer, put slings under the inlet and outlet connections.

Be sure sufficient clearance is provided for easy opening of the cover (blow-off) and screen removal. Refer to the Sales Drawing for removal clearances.

For larger sized strainers, support the strainer firmly in the pipeline. Piping must allow for adjustments due to strainer connection tolerances. Strainer supports must prevent piping forces and movements from acting on the strainer.

Connect the strainer to the pipeline. On flanged strainers, be sure to use the same type of flange faces. **Do not bolt a raised face flange to a flat face flange.** Be sure flange gaskets are in place and fasteners are tight.

On strainers with other line connections use standard piping practice when installing the strainer.

CAUTION: Eaton Y-Strainers are not designed to be anchor supports in the piping line. Be sure to properly support process piping on both sides of the strainer. Use care to prevent piping forces and movements from acting on the strainer connections. Damage may occur to the strainer if improperly connected.

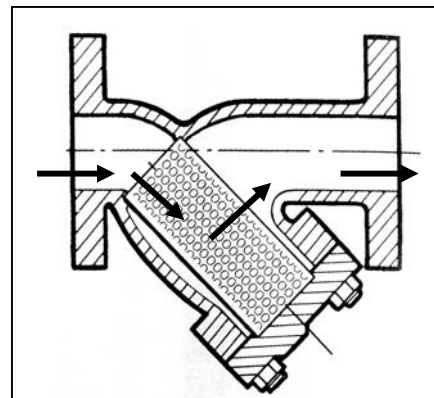


Figure 2. Direction of flow through a typical Y-Strainer

Installation, Continued

Y-strainers have no provision to accept gauges. Pressure gauges near the strainer inlet & outlet are required to determine differential pressure across the strainer and cleaning frequency. Pressure gauges are essential for the safe operation of the strainer and should be installed using standard piping practices.

It is recommended that a compatible valve (and piping as needed) be installed in the cover (blow-off) for safe, quick clean out (normal blow-off cleaning).

CAUTION: To protect the operator during draining and clean-out, the fluid must be piped to a safe area by using the valve installed on the cover as described above. This requirement is for all fluids and water (temperatures above 120° F). The operator should wear appropriate protective equipment (goggles, gloves, vests, clothing etc.) consistent with the process fluid for strainer operation and servicing.

Start-Up

Open the blow-off valve to expel air from the strainer and slowly allow fluid to enter the strainer.

CAUTION: Start system GRADUALLY. This eliminates sudden shock to the strainer and other equipment in the line. This is EXTREMELY important for steam service.

Close vent when air is expelled and fluid begins to flow.

Shut-Down Periods

Slowly close the pipeline valves upstream and downstream from the strainer. Make sure these valves are tightly closed.

Relieve fluid pressure in the strainer by first opening the drain, then vent if provided. The strainer must be drained and internal pressure relieved prior to cleaning. Proceed to clean the screen.

When to Clean the Screen

A differential pressure increase of 5 to 10 psi across the strainer indicates that the screen is full of debris and needs to be cleaned.

When to Clean the Screen, Continued

CAUTION: To prevent screen damage, DO NOT permit differential pressure across the strainer to exceed 20 psi.

Normal Blow-Down Cleaning

To avoid shutting down the piping system when possible, clean the screen of debris by opening the blow-down valve. Valve is to stay open until all debris has been blown out from the screen. Then close the valve and resume normal operation.

Screen Removal, Cleaning and Replacement

Follow the shut-down procedures above. When the strainer's internal pressure is relieved, drain the fluid and loosen fasteners. Remove the cover (blow-off) and remove the debris laden screen.

Note: Do not permit the screen debris to dry, as it would be difficult to remove and clean the screen.

Invert the screen and wash out debris by directing a stream of air or water against the screen exterior. Use solvent if stained fluid is fuel or a chemical. Follow manufacturer's instructions when using a solvent to clean the screen.

Inspect screen at each cleaning for holes or tears. Replace as required. Inspect sealing surfaces and cover gasket. Clean sealing surfaces and cover (blow-off) seat. Replace cover (blow-off) gasket as necessary.

Note: If Model 80 Strainers have spiral wound gaskets, these gaskets must be replaced using only a genuine Eaton part each time the cover (blow-off) is removed.

Place the cleaned/new screen squarely on the seat in the cover (blow-off). Replace cover (blow-off) and tighten the fasteners uniformly. Close the valve (if provided) and follow the start-up instructions.

Recommended Spare Parts

1 Eaton Replacement Screen

1 Eaton Replacement Gasket

When ordering spare parts specify all nameplate data as well as the description and quantity of parts. Always use genuine Eaton replacement parts for guaranteed fit and performance.