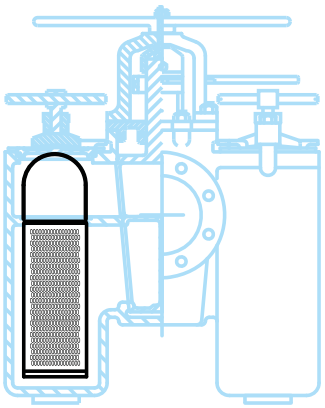
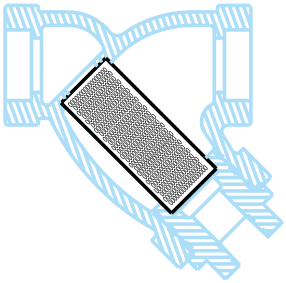
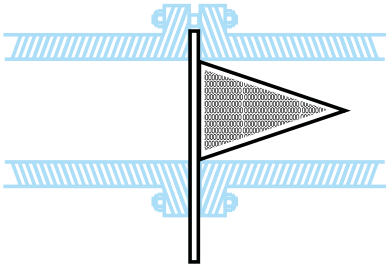


Partial cutaway of plug type duplex strainer showing basket in position



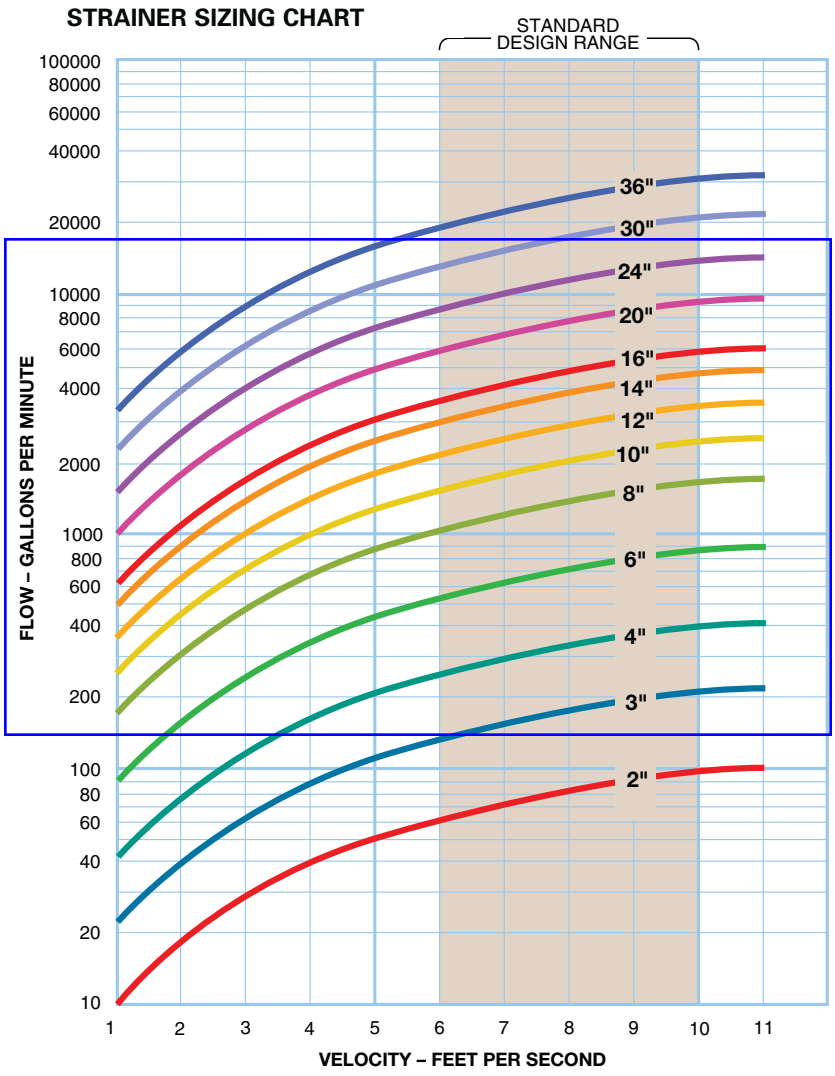
Cutaway of Y strainer shows strainer screen in position



Cone type temporary strainer is shown bolted between two pipe flanges

## Basic Sizing Guidelines

1. Ensure that the pipeline flow velocity falls within the standard design range of the strainer.
2. Select the correct screen and opening size, do not make smaller than necessary.
3. The quantity, type, and nature of debris to be removed are considered.
4. The strainer meets the design pressure and temperature requirements of the pipeline.

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3-2013

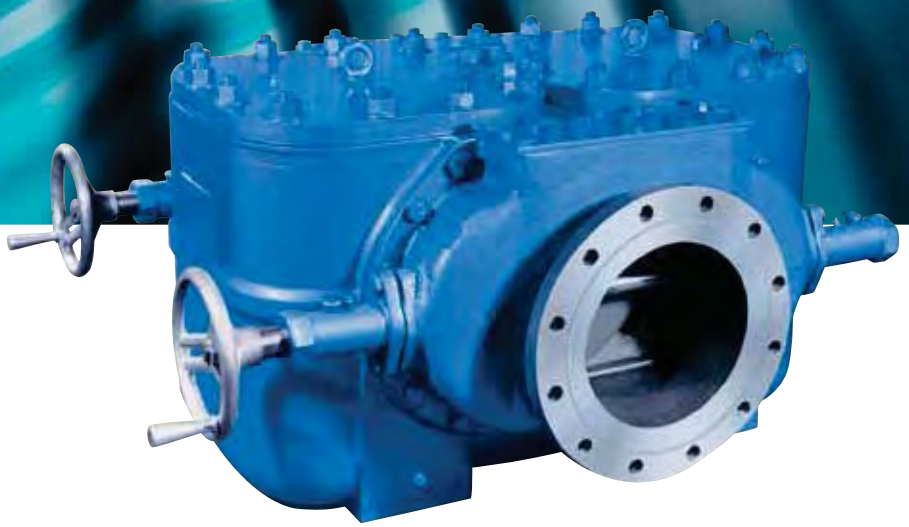
Multi-Basket Duplex Strainer

Pipeline Strainer

Cast Construction

Permanent Media

# Model 570



- 8" to 24"
- Iron or carbon steel
- Flanged

## Features

- Continuous flow, no shutdown for basket cleaning
- Sliding gate design
- Eight baskets per strainer (four per side)
- Bolted cover
- Compact
- Threaded drain
- Perforated or mesh stainless steel baskets standard
- Synchronized chain drive
- Pressure equalization assembly

## Options

- Stainless steel construction
- Basket perforations from 1/32" to 1/2"
- Basket mesh of 20, 40 or 60
- MONEL® baskets
- Drain valves
- Cover lift davit
- Pressure differential gauge and switch connections
- Basket flange gaskets
- Magnetic basket inserts
- Left hand drive



EATON

*Powering Business Worldwide*

**Continuous operation while straining up to 30,000 GPM (6,840 m³/h)**

The Eaton Model 570 duplex basket strainer, specifically designed to remove potential damage causing particles from large volumes of water and other process media, strains up to 30,000 gpm (6,840 m³/h) efficiently and cost effectively. The strainer operates continuously and the pipeline flow never has to shut down for strainer basket cleaning.

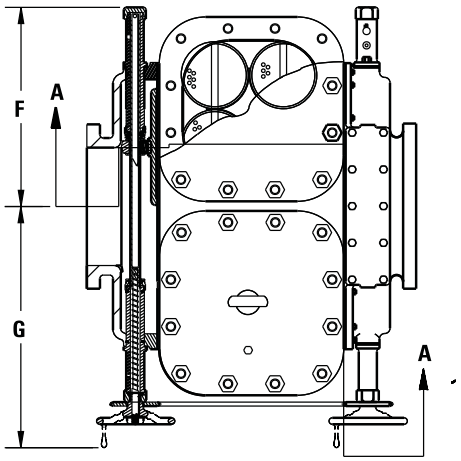
A sliding gate mechanism operated by hand wheels, switches the flow from one basket chamber to the other. The free-floating valve disc mechanism moves easily and does not bind. The fully enclosed, valve-operating stem protects it from the fluid flow.

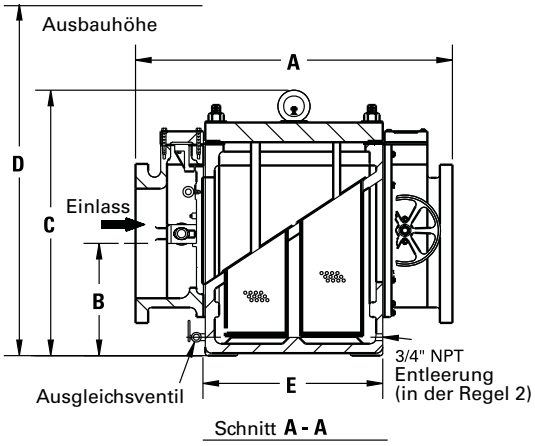
Multi-basket strainer

The Model 570 contains four baskets in each of the two straining chambers for a total of eight per duplex strainer. It is a very compact unit for its size with a low profile–ideal for tight installations in which space is a problem. Because of the multi-basket design, the individual baskets are smaller and lighter than would be possible with just one basket. One person can easily and rapidly remove and clean the baskets without lifting tackle.

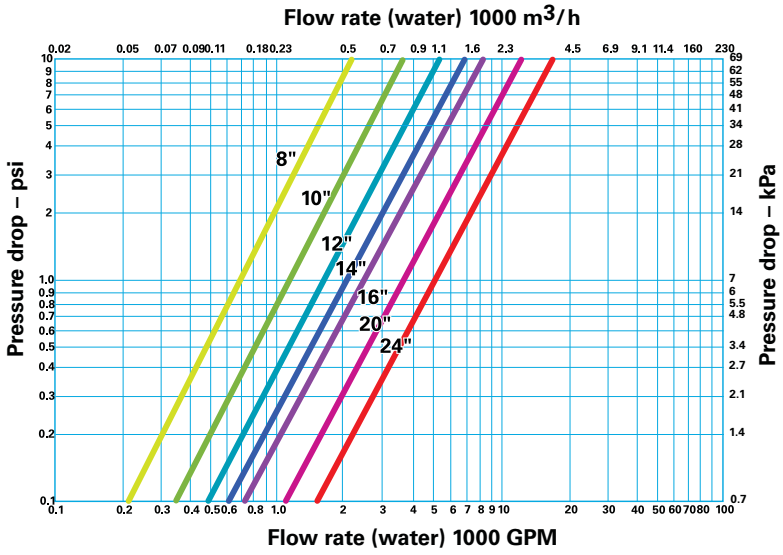
The baskets feature an angled top to permit direct fluid entry that contributes to the strainer's low-pressure drop. Because of the large open area ratio in the baskets, they have an unusually high dirt holding capacity, which results in a longer cycle between basket cleaning. Over time, the savings in labor and downtime for basket cleaning will be considerable.

# Model 570 Multi-Basket Duplex Strainer




Dimensions and weights are for reference only. Contact Eaton for certified drawings.




Selection chart

| Size | Material | End connection | Gaskets | Pressure rating* |
|---|---|---|---|---|
| 8" to 24" | Iron | Flanged 125# | Non-asbestos | 125 psi (8.6 bar) |
| 8" to 24" | Carbon steel | Flanged 150# | Non-asbestos | 175 psi (12.0 bar) |
| 8" to 16" | Carbon steel | Flanged 300# | Non-asbestos | 300 psi (20.7 bar) |

DIN flanges available. * @ 100 °F (38 °C)

$C_V$ factors*

| Size | Value | Size | Value |
|---|---|---|---|
| 8" | 700 | 16" | 2500 |
| 10" | 1250 | 20" | 3600 |
| 12" | 1600 | 24" | 5200 |
| 14" | 2000 | | |

* For water with clean, perforated basket

Dimensions (in/mm)

| Pipe size | A | B | C | D | E | F | G | Weight–iron (lb / kg) | Weight–carbon steel (lb / kg) |
|---|---|---|---|---|---|---|---|---|---|
| 8 | 38.50 / 978 | 8.25 / 210 | 20.50 / 521 | 38.00 / 965 | 18.25 / 464 | 18.00 / 457 | 28.50 / 724 | 1410 / 641 | 1565 / 711 |
| 10 | 40.50 / 1029 | 10/38 / 264 | 23.75 / 603 | 44.00 / 1118 | 20.50 / 521 | 20.25 / 514 | 30.50 / 775 | 1880 / 855 | 2087 / 949 |
| 12 | 43.50 / 1105 | 13.50 / 343 | 29.25 / 743 | 52.00 / 1321 | 23.00 / 584 | 23.38 / 594 | 32.50 / 826 | 2604 / 1184 | 2890 / 1314 |
| 14 | 46.25 / 1175 | 15.75 / 400 | 31.63 / 803 | 60.00 / 1524 | 24.88 / 632 | 25.56 / 649 | 35.00 / 889 | 3006 / 1366 | 3337 / 1517 |
| 16 | 49.63 / 1261 | 17.81 / 458 | 35.00 / 889 | 66.00 / 1676 | 28.13 / 715 | 27.75 / 705 | 37.50 / 953 | 4350 / 1977 | 4826 / 2197 |
| 20 | 64.00 / 1626 | 26.63 / 676 | 45.75 / 1162 | 88.00 / 2235 | 33.75 / 857 | 34.00 / 864 | 43.75 / 1111 | 10,000 / 4545 | 11,100 / 5045 |
| 24 | 67.75 / 1721 | 29.50 / 749 | 53.00 / 1346 | 98.00 / 2489 | 36.63 / 930 | 40.38 / 1026 | 49.50 / 1257 | 11,440 / 5200 | 12,698 / 5772 |

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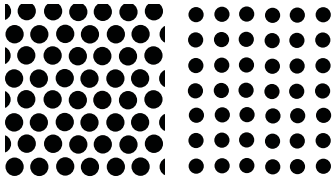
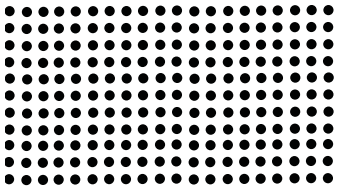
# Basket and screen data

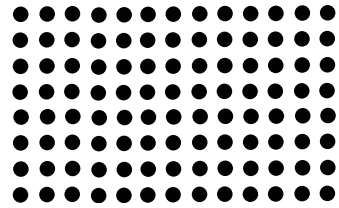
## Pattern examples



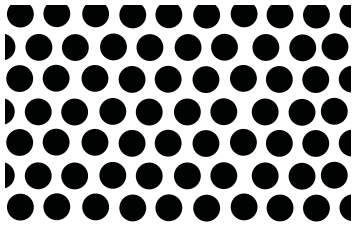
Staggered holes  Straight holes



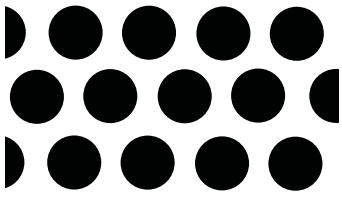
1/32" – Actual size



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 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.

# 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 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.

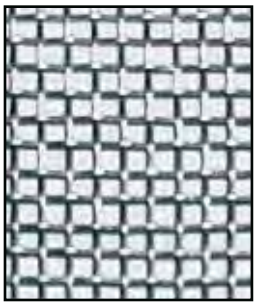
Perforated basket sheet specifications

| Perforation size inches | Sheet thickness uss gauge # | Hole pattern | % Open area |
|---|---|---|---|
| 0.020 | 26 (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) | Straight | 37.0 |
| 1/16 | 26 (0.018 mm) | Straight | 31.0 |
| 1/8 | 26 (0.018 mm) | Staggered | 40.0 |
| 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 | 0.0010 | 0.0015 | 38 | 36.0 |

Wire mesh weaves



Plain square weave

Plain dutch weave

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# 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 |
| 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 |
| 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 (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 |
|---|---|---|---|---|---|---|
| 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 |
| 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: . . . . . 70,000 lb/sq (480 N/mm²)
Yield: . . . . 36,000 lb/sq in (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 Elements . . . . 1.00% max

**Cast iron – ASTM A-126 class B**

Tensile strength: 31,000 lb/sq in (214 N/mm²)
Compressive strength: 109,000 lb/sq in (750 N/mm²)
Tensile modulus: . . . . $15 \times 10^6$ 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 (517 N/mm²)
Yield:. . . . 30,000 lb/sq in (206 N/mm²)
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 (413 N/mm²)
Yield:. . . . . 40,000 lb/sq in (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.

**Stainless steel – ASTM A-351 grade CF8M**

Tensile strength: . . . . . 70,000 lb/sq in (480 N/mm²)
Yield:. . . . 30,000 lb/sq in (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%

# 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) | 1 | 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

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

$\Delta p$ = Pressure drop in kPa
$Q$ = Flow in m³/h
$C_V$ = Flow coefficient

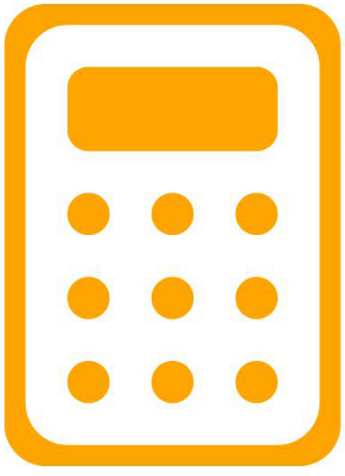
### Standard units

$$\Delta p = \left[\frac{Q}{C_V}\right]^2$$

$\Delta p$ = 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 (6.8 m³/h) flow rate, it will have a 1.7 psi (117 mbar) 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."

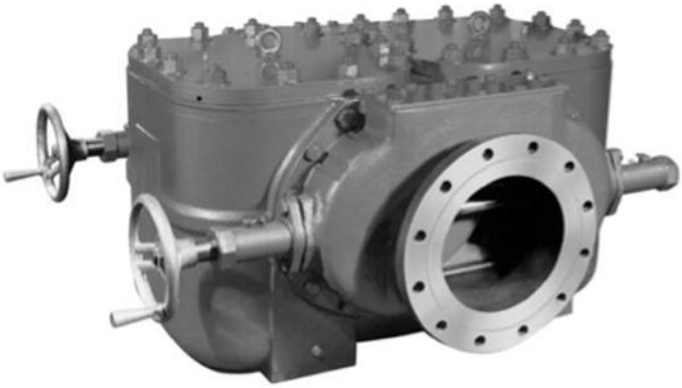


CLICK HERE FOR THE ONLINE DIFFERENTIAL PRESSURE DROP CALCULATOR

US
EF-SSEA-17
6-2014

Powering Business Worldwide

**Read all the following information and instructions prior to installing and operating the equipment. Failure to comply with these instructions could result in bodily injury or property damage.**



## TABLE OF CONTENTS



## INTRODUCTION

A duplex strainer is a device installed in a pipeline to remove dirt and other unwanted debris from fluids. Straining is accomplished by directing the fluid through sized openings in a basket. Duplex strainers are installed where fluid flow cannot be interrupted while the basket is removed for cleaning. Duplex strainers are designed to withstand the rated pressure of the piping system.

For additional information on Duplex Basket Strainers, visit our website at filtration.eaton.com.

## RECEIVING, HANDLING AND INSPECTION

1. After unpacking, inspect strainer for damage incurred during transit. Report any damage to the carrier immediately. If the strainer is not to be installed immediately, store indoors in a clean, dry environment. Replace protective wrap, flange protectors, etc. which may have been removed during receiving, handling and inspection.

2. Remove preservative with solvent-dampened cloth. Exercise care when using solvent and follow solvent manufacturer's instructions.

3. Check to be sure the rated pressure and temperature on the strainer nameplate is not less than the maximum pressure and temperature of the installation. The rated pressure shown on the nameplate is the maximum pressure, including shock, at which the strainer may be operated.

4. Remove body covers. Check for and remove any foreign or loose materials that could be carried downstream when fluid is introduced into the strainer.

5. Be sure shorter baskets are toward the inlet side of the strainer. Replace strainer cover. Tighten fasteners uniformly. Baskets are held in place by the pressure of the cover on the basket handles. If the baskets are loose, spring the handles to a higher position to insure greater compression when the cover is seated.

## INSTALLATION

**CAUTION:** Lift strainer with slings under the inlet and outlet connections. DO NOT lift the strainer by the lift eye located on the strainer cover. The lift eye is used to lift ONLY the cover.

1. Position the strainer in the line so that the fluid enters the connection marked inlet and be sure sufficient headroom is provided for easy removal of cover and baskets.

2. Support the strainer in the line as follows. Using the bosses on the bottom of the strainer, place the unit on concrete or steel pads. DO NOT support the strainer, or the piping coming to and from the strainer, by the strainer flanges and flange bolting.

3. Connect the strainer to the line. Use the same type flange faces. For example, DO NOT bolt raised face flanges to iron

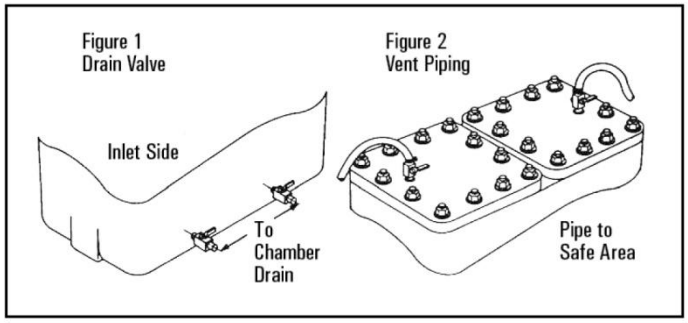
## INSTALLATION (CONTINUED)

flat face flanges. Iron flanges must be flat face with full-face gaskets.

4. Cast strainers are subject to face-to-face variations due to shrinkage and machining tolerances. Prefabricated piping systems must allow for adjustments to compensate. Be sure flange gaskets are in place and fasteners are tight.

**CAUTION:** When strainer handles fluids other than water and with temperatures in excess of 120°F, the vent cock must be removed and the vent piped to a safe discharge point to protect the operator (see Figure 2). Wear protective clothing that includes gloves, vests and goggles when handling dangerous fluids.

5. An external "equalizer line" is provided between the two basket chambers. Eaton furnishes the ball valve and piping components. However, on "suction" applications DO NOT use this arrangement.




## RECOMMENDATIONS

1. Eaton recommends the removal of the drain plugs on the outlet side of the body and installation of drain valves as shown in Figure 1.

2. Pressure gauges, connected a minimum of four pipeline diameters from the strainer inlet and outlet, are recommended.

3. Cleaning frequency can be determined by the pressure drop across the strainer. Clean the baskets when there is a 5 PSI increase in pressure loss across the strainer.

## OPERATION

1. Determine the location of the valve disc, or "gate," by observing the operation spindle through the sight holes at the end of the spindle mountings (see drawing page 6). The stainless steel operating spindle (1-1/2" diameter) can be seen through the sight hole on the isolated side. The torque bar (15/16" diameter) and/or the operating screw (acme threaded) can be seen through the sight hole on the operating side.

## START UP

1. Open both chamber vents. Rotate hand wheels a minimum of 20 turns to locate valve discs such that both chambers start to fill.

2. Close vents when chambers are filled and rotate hand wheels in the same direction until stop is reached. This way, only half the baskets are in service.

3. Close pressure equalizer valve.

4. Slowly introduce fluid to be strained.

**CAUTION:** Start system GRADUALLY. This eliminates sudden shock to strainer and other equipment in the line.

**CAUTION:** Recheck "Operation" procedure to ensure that both valve discs are sealing the same chamber. There should be NO SIGNIFICANT AMOUNT OF FLOW from vent in chamber that is isolated.

**NOTE:** The valve discs or "gates" are not designed or intended to provide absolute tight shut-off. Manufacturing standards require valve seepage to be low enough to provide time for basket exchange only.

## SHUTDOWN: TEMPORARY

1. Tightly close valves on inlet and outlet connections of the strainer.

2. Open vents to relieve liquid pressure in the strainer.

**CAUTION:** DO NOT loosen covers while there is significant liquid or airflow from the vent.

## SHUTDOWN: EXTENDED PERIOD

If the system is to be shutdown for an extended period:

1. Drain fluid from the strainer.

2. Clean the baskets.

3. Lubricate operating mechanism, the chain drive and, if so equipped, the cover lift according to directions in section on lubrication.

4. Unseat the valve discs by turning hand wheels 15 to 20 turns.

5. Open pressure equalizer valve.

## SWITCHING FLOW

1. Open vent on inoperative chamber. Open pressure equalizer valve.
2. Close vent on inoperative chamber when air is expelled and fluid begins to flow.
3. Transfer valve discs by turning hand wheels. Both hand wheels must be turned simultaneously, clockwise to put the far basket chamber in operation, counterclockwise to put the near chamber in operation. The unit is equipped with a chain drive, so it is necessary to operate one hand wheel only. However, final seating and initial unseating should be done independently with each hand wheel. The reason being that the chain drive mechanism always has some "slack."
4. Close pressure equalizer valve.

## BASKET REMOVAL

1. Switch flow from dirty to clean chamber (see Switching Flow).
2. Open vent on dirty chamber to relieve liquid pressure.
3. After air and water flow from vent stops, remove cover nuts and body cover and drain fluid through bottom drain to a lever below the basket seat.
4. Remove dirty baskets and clean or exchange them.

## BASKET REPLACEMENT

1. Place new or clean basket squarely on basket seat.
2. Be sure basket handle is sufficiently high to be compressed by body cover.
3. Inspect body cover gasket and seal surface, clean seat or replace gasket as necessary. Always keep spare body cover gaskets in stock.
4. Replace body cover, tighten fasteners uniformly. If strainer is on suction service, fill basket chamber from outside source before installing body cover.
5. Make sure vent is open, close drain valve and refill chamber.

## TO REFILL THE CHAMBER WITH EQUALIZER

1. Open equalizer valve.
2. Close vent when air is expelled and fluid begins to flow.
3. Close equalizer valve.

## TO REFILL THE CHAMBER WITHOUT EQUALIZER

1. Rotate hand wheels 12 to 15 turns to admit fluid to chamber.
2. Close vent when air is expelled and fluid begins to flow.
3. Return valve disc to extreme position. Reseat valves individually.

## BASKET CLEANING

**CAUTION:** To prevent damage to the baskets, DO NOT permit strainer pressure differential between the inlet and outlet connections to exceed 20 PSI.

1. Clean baskets when there is a 5 PSI increase in pressure across the strainer.
2. During shutdown for a temporary period, drain fluid and clean baskets.

## HOW TO CLEAN

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

2. Inspect basket at each cleaning for holes or tears. Replace as required. Always keep spare baskets in stock.

## MAINTENANCE: GENERAL

1. Inspect baskets at each cleaning for holes or damage.

2. Replace as required. Inspect body cover seats and body cover gaskets. Clean seats and replace gaskets as required.

## MAINTENANCE: LUBRICATION

1. Lubricate operating mechanism every six months. Apply heavy grease through the lube fittings located on the operating spindles (see drawing on page 6).

2. Lubricate chain drive and cover lift mechanism (if so equipped). Apply light grade grease to moving parts every three months or as indicated by operating conditions.

## MAINTENANCE: FLUID LEAKS

1. Shut down strainer completely before inspecting valve discs and valve seats or replacing spindle mounting O-rings and gaskets, or O-ring nut seals.

2. Remove header covers only after inlet and outlet pipeline valves are closed, both cover vents are open and there is no flow of air or fluid through the vents.

| Location of Leak | Correction |
|---|---|
| Spindle mounting-header joint | Replace spindle mounting 0-ring and/or spindle mounting gasket |
| Spindle mounting sight holes | Replace O-ring on O-ring nut |
| Excessive leakage past the valve discs | Replace valve seat. Repair or replace valve disc |

## HOW TO DISASSEMBLE SPINDLE MOUNTINGS

1. Remove spindle-mounting cap screws.

2. Pull spindle mounting (guide end), including torque bar, out of header.

3. Rotate hand wheel counterclockwise to disengage operating screw from operating spindle. Pull spindle mounting (operating end), hand wheel and operating screw out of the header as a unit.

4. Replace gaskets and O-rings as required.

5. Reassemble spindle mounting reversing the process used for disassembly.

6. Refer to the assembly drawing to be sure components are in proper order.

## HOW TO DISASSEMBLE VALVE DISC

1. Remove cap screws and lift cover from header.

2. Remove disc-retaining bar.

3. Rotate disc-mounting block out of recess on valve disc.

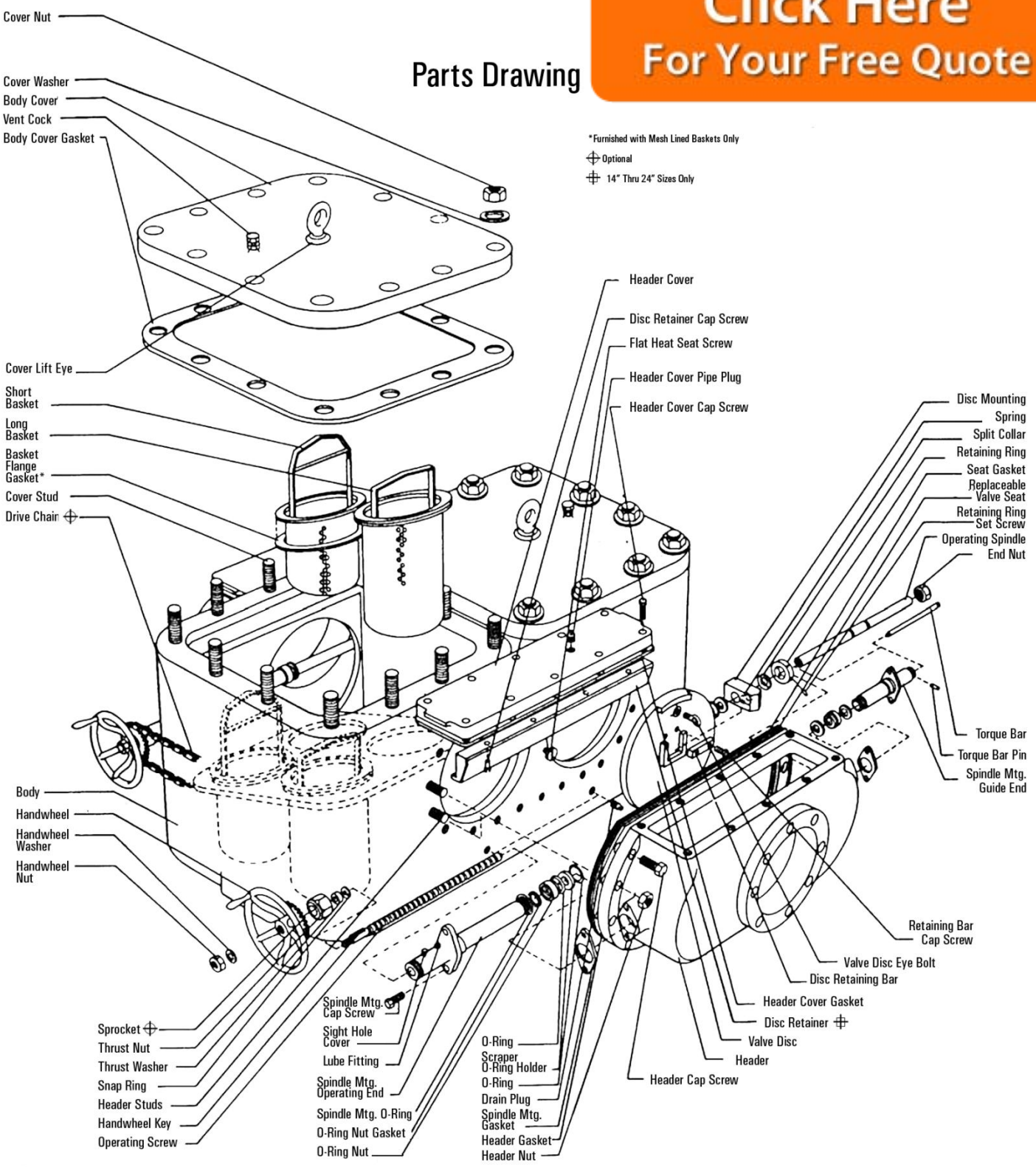
4. Attach hoist to valve disc eyebolt. Remove disc through header opening.

5. Clean and inspect valve seat and valve disc for scoring or wear. Wipe with a solvent dampened cloth. Scrape sealing surfaces if required for examination. Worn or scored valve seats must be replaced.

6. Reassemble valve disc to the operating mechanism by reversing the process used for disassembly.

7. Refer to assembly drawing to be sure components are in proper order.

## Parts Drawing



## RECOMMENDED SPARE PARTS

| Quantity | Description |
|---|---|
| 2 | Short Basket |
| 2 | Long Basket |
| 2 | Header Cover Gasket |
| 3 | Body Cover Gasket |
| 8 | O-ring |
| 4 | O-ring Spindle Mounting |
| 2 | Snap Ring |
| 2* | Basket Flange Gasket |



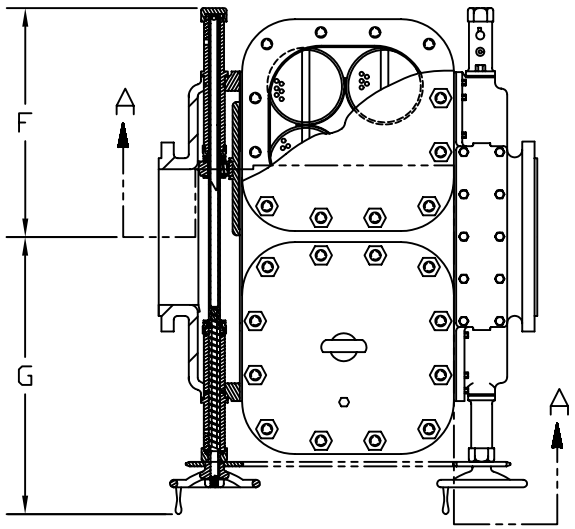
*Mesh lined baskets only.

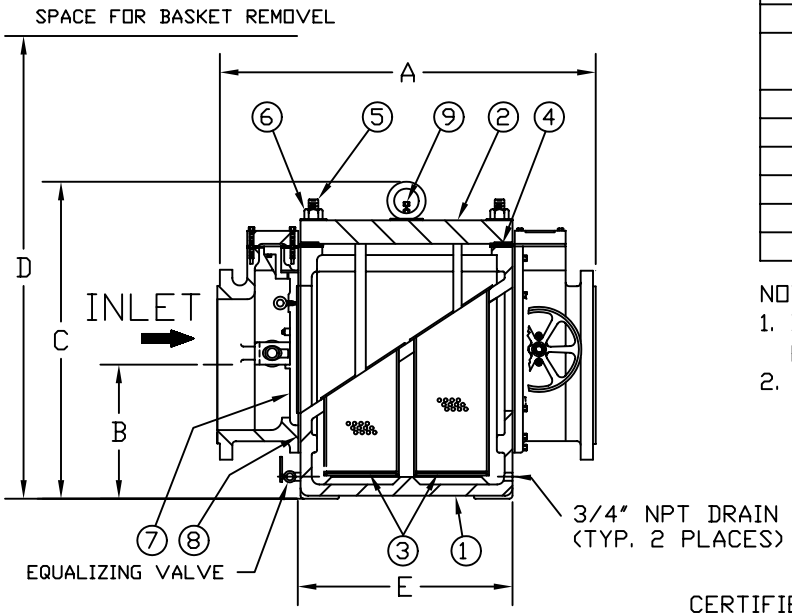
When ordering spare parts, be sure to specify all nameplate data as well as description and quantity of parts.

Always use genuine Eaton replacement parts for guaranteed fit and performance.

Visit our web site www.eaton.com/filtration for information about the different types of Eaton Duplex Basket Strainers.

| PIPE SIZE (NOMINAL) | DIMENSIONS | | | | | | | | | | WEIGHTS | | PART NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A IN. | A MM. | B IN. | B MM. | C IN. | C MM. | D IN. | D MM. | E IN. | E MM | F IN. | F MM. | G IN. | G MM. | LBS. | KGS. | |
| 8" (200mm) | 38.50 | 978 | 8.25 | 210 | 20.50 | 521 | 38.00 | 965 | 18.25 | 464 | 18.00 | 457 | 28.50 | 724 | 1410 | 641 | 5700800170 |
| 10" (250mm) | 40.50 | 1029 | 10.38 | 264 | 23.75 | 603 | 44.00 | 1118 | 20.50 | 521 | 20.25 | 514 | 30.50 | 775 | 1880 | 855 | 5701000170 |
| 12" (300mm) | 43.50 | 1105 | 13.50 | 343 | 29.25 | 743 | 52.00 | 1321 | 23.00 | 584 | 23.38 | 594 | 32.50 | 826 | 2604 | 1184 | 5701200170 |
| 14" (350mm) | 46.25 | 1175 | 15.75 | 400 | 31.63 | 803 | 60.00 | 1524 | 24.88 | 632 | 25.56 | 649 | 35.00 | 889 | 3006 | 1366 | 5701400171 |
| 16" (400mm) | 49.63 | 1261 | 17.81 | 458 | 35.00 | 889 | 66.00 | 1676 | 28.13 | 715 | 27.75 | 705 | 37.50 | 953 | 4350 | 1977 | 5701600171 |
| 20" (500mm) | 64.00 | 1626 | 26.63 | 676 | 45.75 | 1162 | 88.00 | 2235 | 33.75 | 857 | 34.00 | 864 | 43.75 | 1111 | 10000 | 4545 | 5702000170 |
| 24" (600mm) | 69.75 | 1772 | 29.50 | 749 | 53.00 | 1346 | 98.00 | 2489 | 36.63 | 930 | 40.38 | 1026 | 49.50 | 1257 | 12350 | 5614 | 5702400171 |




SECT. A - A

| NO. | PART NAME | MATERIAL |
|---|---|---|
| 1. | BODY | CARBON STEEL |
| 2. | COVER | CARBON STEEL |
| 3. | BASKET | |
| | PERF. | |
| | MESH | |
| 4. | GASKET | NON-ASBESTOS |
| 5. | STUDS | STEEL |
| 6. | NUTS | STEEL |
| 7. | VALVE DISC | CAST IRON |
| 8. | VALVE SEAT | STAINLESS STEEL |
| 9. | VENT VALVE | BRONZE |

NOTES:
1. INLET/OUTLET 150# RAISED FACE FLANGE PER ANSI B16.5 STANDARDS.
2. MAX. WORKING PRESSURE: 175 PSI @ 100° F (12 BAR @ 37.8° C)
   FOR SIZE 24" ONLY:
   MAX. WORKING PRESSURE: 125 PSI @ 100° F (8.6 BAR @ 37.8° C)

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

**EATON FILTRATION, LLC**
900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207

NAME: MODEL 570 DUPLEX STRAINER
150# RAISED FACE FLANGE
SIZES 8" THRU 24" CARBON STEEL

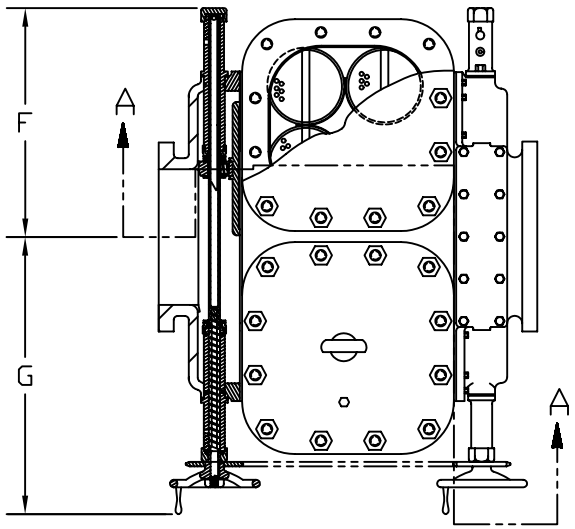
| DRAWN | FM | DATE | 1/25/95 | CERT. | LF | DATE | 1/25/95 |
|---|---|---|---|---|---|---|---|

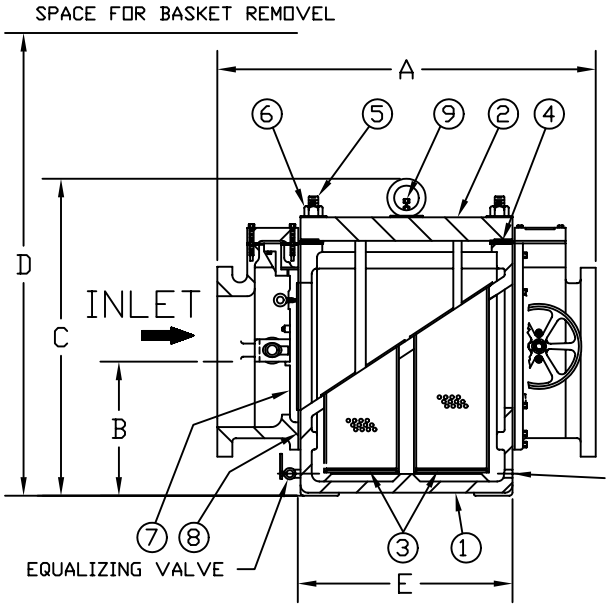
| SIZE | DWG NO | REV |
|---|---|---|
| A | SD570112 | D |

ELECTRONIC FILE NAME: SD570112.DWG

| REF. ECR | D783 | DATE | 3/6/06 |
|---|---|---|---|

| PIPE SIZE (NOMINAL) | DIMENSIONS | | | | | | | | | | WEIGHTS | | PART NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A IN. | A MM. | B IN. | B MM. | C IN. | C MM. | D IN. | D MM. | E IN. | E MM | F IN. | F MM. | G IN. | G MM. | LBS. | KGS. | |
| 8" (200mm) | 38.50 | 978 | 8.25 | 210 | 20.50 | 521 | 38.00 | 965 | 18.25 | 464 | 18.00 | 457 | 28.50 | 724 | 1410 | 641 | 5700800050 |
| 10" (250mm) | 40.50 | 1029 | 10.38 | 264 | 23.75 | 603 | 44.00 | 1118 | 20.50 | 521 | 20.25 | 514 | 30.50 | 775 | 1880 | 855 | 5701000050 |
| 12" (300mm) | 43.50 | 1105 | 13.50 | 343 | 29.25 | 743 | 52.00 | 1321 | 23.00 | 584 | 23.38 | 594 | 32.50 | 826 | 2604 | 1184 | 5701200050 |
| 14" (350mm) | 46.25 | 1175 | 15.75 | 400 | 31.63 | 803 | 60.00 | 1524 | 24.88 | 632 | 25.56 | 649 | 35.00 | 889 | 3006 | 1366 | 5701400050 |
| 16" (400mm) | 49.63 | 1261 | 17.81 | 458 | 35.00 | 889 | 66.00 | 1676 | 28.13 | 715 | 27.75 | 705 | 37.50 | 953 | 4350 | 1977 | 5701600051 |
| 20" (500mm) | 64.00 | 1626 | 26.63 | 676 | 45.75 | 1162 | 88.00 | 2235 | 33.75 | 857 | 34.00 | 864 | 43.75 | 1111 | 10000 | 4545 | 5702000050 |
| 24" (600mm) | 67.75 | 1721 | 29.50 | 749 | 53.00 | 1346 | 98.00 | 2489 | 36.63 | 930 | 40.38 | 1026 | 49.50 | 1257 | 11440 | 5200 | 5702400051 |




SECT. A - A

| NO. | PART NAME | MATERIAL |
|---|---|---|
| 1. | BODY | CAST IRON |
| 2. | COVER | CARBON STEEL |
| 3. | BASKET | |
| | PERF. | |
| | MESH | |
| 4. | GASKET | NON-ASBESTOS |
| 5. | STUDS | STEEL |
| 6. | NUTS | STEEL |
| 7. | VALVE DISC | CAST IRON |
| 8. | VALVE SEAT | STAINLESS STEEL |
| 9. | VENT VALVE | BRONZE |

NOTES:
1. INLET/OUTLET 125# FLAT FACE FLANGE PER ANSI B16.1 STANDARDS.
2. MAX. WORKING PRESSURE: 125 PSI @ 100° F (8.6 BAR @ 37.8° C)

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

**EATON FILTRATION, LLC**
900 FAIRMOUNT AVENUE, ELIZABETH, NEW JERSEY 07207

NAME: MODEL 570 DUPLEX STRAINER
125# FLAT FACE FLANGE
SIZES 8" THRU 24" CAST IRON

| DRAWN | FM | DATE | 1/25/95 | CERT. | LF | DATE | 1/25/95 |
|---|---|---|---|---|---|---|---|

| SIZE | DWG NO | REV |
|---|---|---|
| A | SD570111 | C |

ELECTRONIC FILE NAME: SD570111.DWG

| REF. ECR | D783 | DATE | 3/6/06 |
|---|---|---|---|