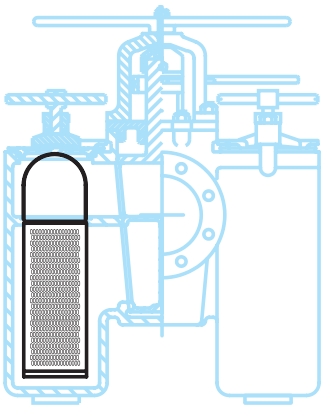
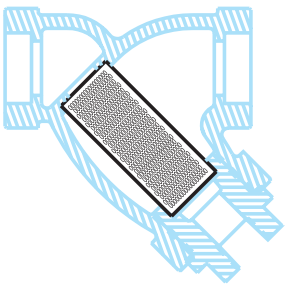
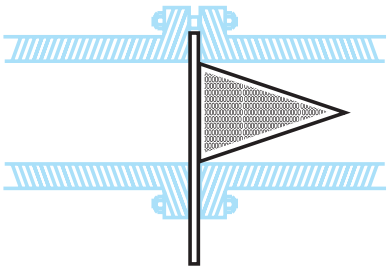


Partial cutaway of plug type duplex strainer showing basket in position



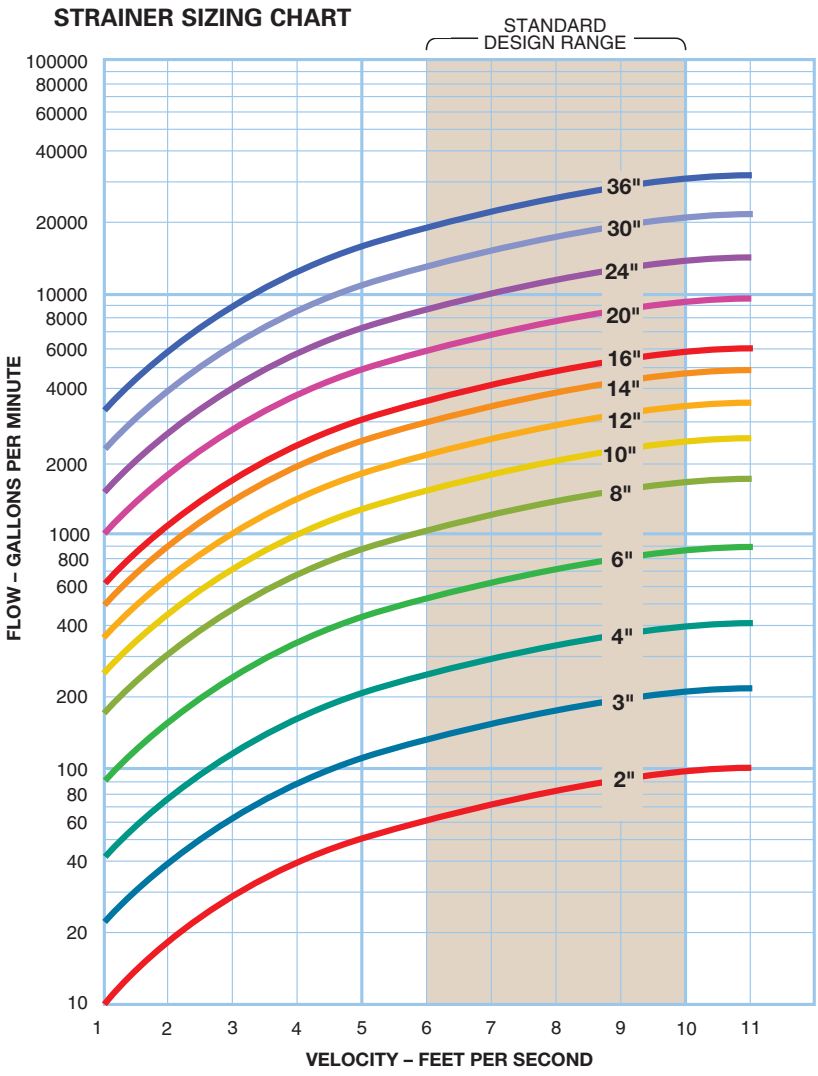
Cutaway of Y strainer shows strainer screen in position



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.




Powering Business Worldwide

Economy Basket Strainer

# Model 30R

Pipeline Strainer | Cast Construction | Permanent Media

- Sizes 1- 1/2" to 8"
- Iron
- Threaded or Flanged

## FEATURES

- Hand removable cover
- Drain plug
- Machined basket seat
- Perforated or mesh 316 stainless steel basket

## OPTIONS:

- Basket perforations from 1/32" to 1/2"
- Basket mesh from 20 to 400
- Monel baskets
- Vent valves
- Drain valves
- Gauge/vent taps - 1/4" NPT
- Magnetic basket inserts
- Pressure differential gauges and switches

The Eaton Model 30R is a high quality, low cost simplex basket strainer—perfect for cost sensitive applications.

Whereas the cost of the Model 30R is low, its design incorporates many features found only on more expensive units, including machined basket seats to protect against bypass, ensuring all of the flow is strained. The cover of the Model 30R is a clamp type, and is hand removable without the need for tools. This makes access to the basket quick and easy for cleanings or changeouts and every size strainer comes standard with a drain plug.

The Model 30R is the best choice simplex strainer for low or moderate pressure applications such as swimming pools, cooling towers, and large air conditioning installations.

**Selection Chart**

| Size | Material | End Connections | Seals | Pressure Rating |
|---|---|---|---|---|
| 1-1/2" to 3" | Iron | Threaded | Buna-N | 200 psi at 100°F |
| 1-1/2" to 8" | Iron | Flanged 125# | Buna-N | 200 psi at 100°F |

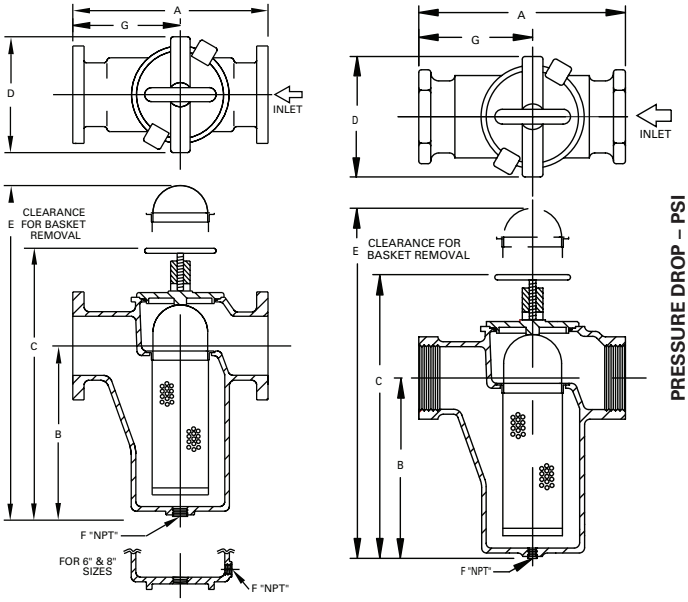


**$C_V$ Factors***

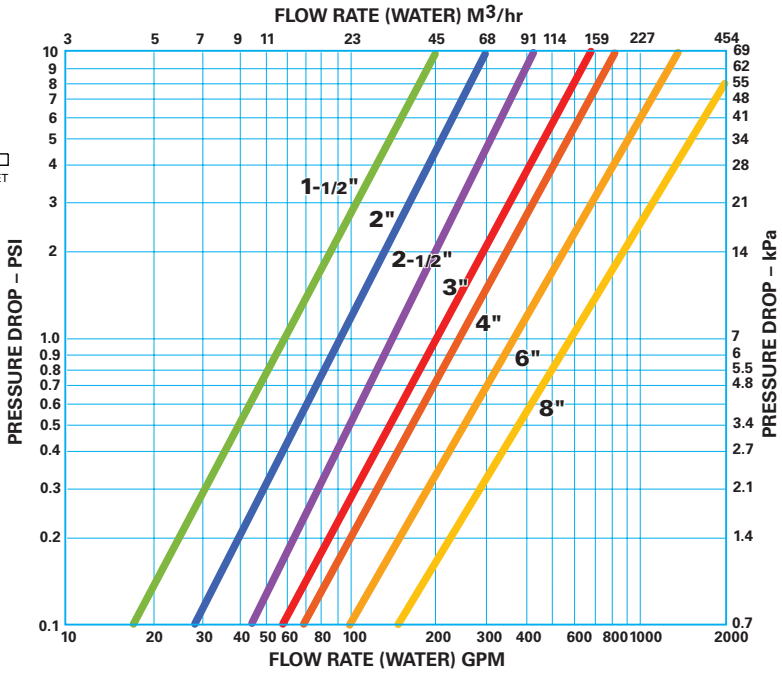
| Size | Value | Size | Value |
|---|---|---|---|
| 1-1/2" | 58 | 4" | 240 |
| 2" | 90 | 6" | 370 |
| 2-1/2" | 140 | 8" | 600 |
| 3" | 200 | | |

* For water with clean, perforated basket

# Model 30R Economy Basket Strainer




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




## Dimensions (in/mm) Flanged

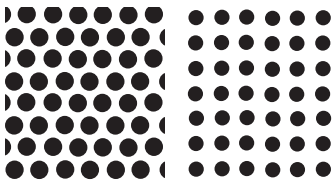
| Pipe Size | A | B | C | D | E | F | G | Dry Wt (lb / kg) |
|---|---|---|---|---|---|---|---|---|
| 1-½ | 7.75 / 197 | 6.50 / 165 | 10.63 / 270 | 6.00 / 152 | 14.88 / 378 | ¾ | 4.44 / 113 | 12 / 5.5 |
| 2 | 9.63 / 245 | 7.50 / 191 | 11.63 / 295 | 7.50 / 191 | 17.38 / 441 | 1-¼ | 5.63 / 143 | 27 / 12.3 |
| 2-½ | 11.00 / 279 | 9.13 / 232 | 15.25 / 387 | 8.00 / 203 | 22.38 / 568 | 1-¼ | 5.88 / 149 | 45 / 20.5 |
| 3 | 11.88 / 302 | 9.13 / 232 | 15.25 / 387 | 8.00 / 203 | 22.38 / 568 | 1-¼ | 6.50 / 165 | 59 / 26.6 |
| 4 | 13.75 / 349 | 9.63 / 245 | 16.63 / 422 | 9.25 / 235 | 30.00 / 762 | 1-½ | 8.44 / 214 | 71 / 32.2 |
| 6 | 17.50 / 445 | 12.38 / 315 | 26.13 / 664 | 14.75 / 375 | 35.00 / 889 | 2 | 10.31 / 262 | 150 / 68.1 |
| 8 | 23.63 / 600 | 17.75 / 451 | 32.63 / 829 | 14.75 / 375 | 48.00 / 1219 | 2 | 14.50 / 368 | 230 / 104.3 |

## Dimensions (in/mm) Threaded

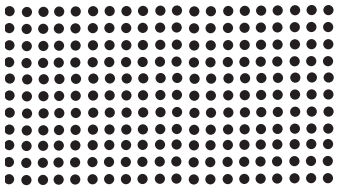
| Pipe Size | A | B | C | D | E | F | G | Dry Wt (lb / kg) |
|---|---|---|---|---|---|---|---|---|
| 1-½ | 7.00 / 178 | 6.50 / 165 | 10.63 / 270 | 6.00 / 152 | 14.88 / 378 | ¾ / 20 | 3.88 / 99 | 7 / 3.2 |
| 2 | 8.50 / 216 | 7.50 / 191 | 11.63 / 295 | 7.50 / 191 | 17.38 / 441 | 1-¼ / 32 | 4.81 / 122 | 20 / 9.1 |
| 2-½ | 11.50 / 292 | 9.13 / 232 | 15.25 / 387 | 8.00 / 203 | 22.38 / 568 | 1-¼ / 32 | 6.00 / 152 | 34 / 15.5 |
| 3 | 11.50 / 292 | 9.13 / 232 | 15.25 / 387 | 8.00 / 203 | 22.63 / 575 | 1-¼ / 32 | 6.00 / 152 | 34 / 15.5 |

# Basket and Screen Data

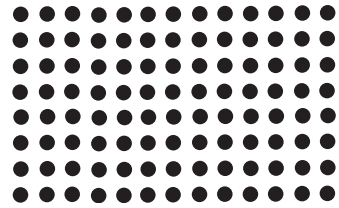
## Pattern Examples



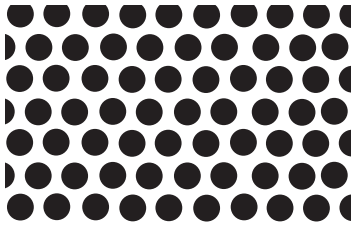
Staggered Holes  Straight Holes



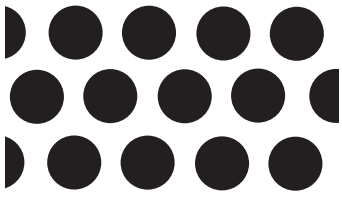
1/32" – Actual Size



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.

# 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.

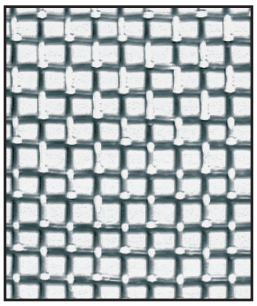
### Perforated Basket Sheet Specifications

| 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

# 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

**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%

**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%

**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 $10^6$ 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%

**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.

# 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 |
|---|---|---|---|
| 400 | 0.0015 | 0.0381 | 38 |
| 300 | 0.0018 | 0.0457 | 45 |
| 250 | 0.0024 | 0.0609 | 60 |
| 200 | 0.0027 | 0.0686 | 68 |
| 150 | 0.0041 | 0.1041 | 104 |
| 100 | 0.0065 | 0.1651 | 165 |
| 80 | 0.007 | 0.1778 | 177 |
| 60 | 0.009 | 0.2286 | 228 |
| 40 | 0.015 | 0.8636 | 380 |
| 20 | 0.034 | 0.8636 | 862 |

| Perf | Inches | Millimeters | Microns |
|---|---|---|---|
| 1/32 | 0.033 | 0.838 | 838 |
| 3/64 | 0.045 | 1.143 | 1143 |
| 1/16 | 0.070 | 1.778 | 1776 |
| 3/32 | 0.094 | 2.387 | 2387 |
| 1/8 | 0.125 | 3.175 | 3175 |
| 5/32 | 0.150 | 3.810 | 3810 |
| 3/16 | 0.1875 | 4.762 | 4762 |
| 1/4 | 0.250 | 6.350 | 6350 |
| 3/8 | 0.375 | 9.525 | 9525 |
| 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 $M^3/hr$
$C_V$ = Flow Coefficient

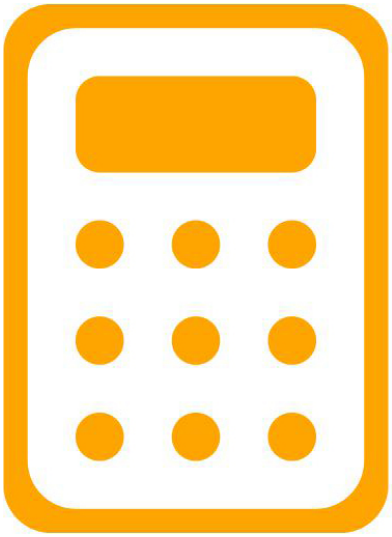
### Standard Units

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

$\Delta P$ = 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.

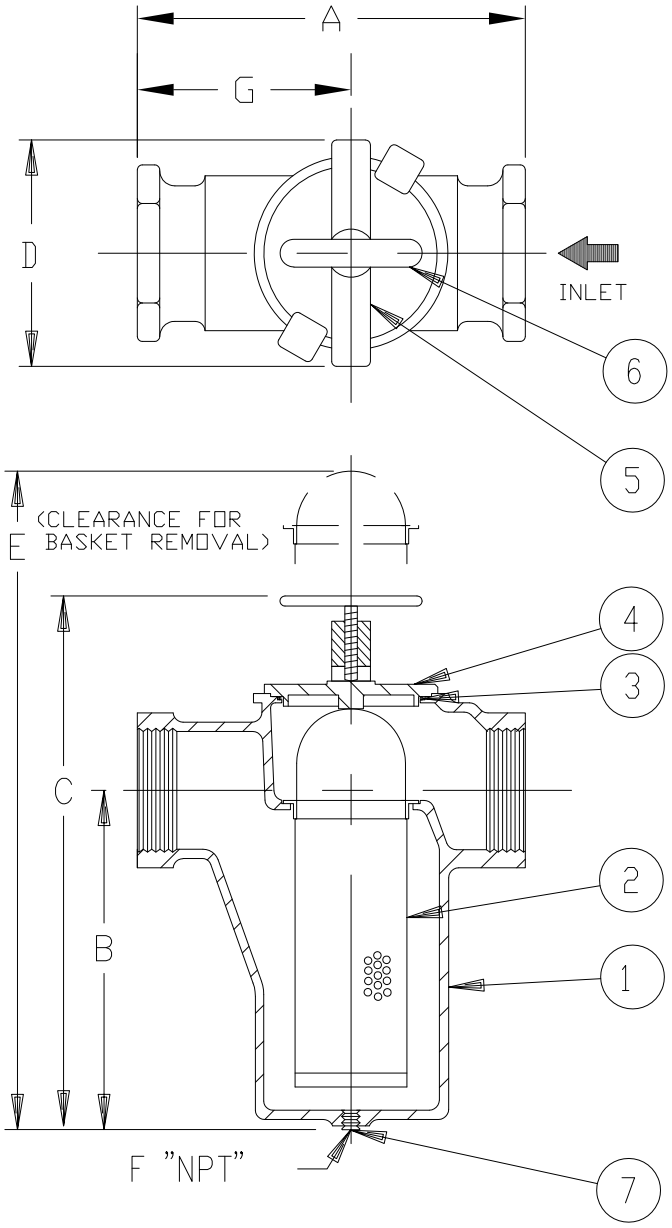
For example, a 1" Model 72 simplex strainer with a perforated basket has a $C_V$ factor of 22.5. In water service with a 30 gpm flow rate, it will have a 1.7 psi pressure drop $(30 \div 22.5)^2 = 1.7$. For mesh-lined baskets and/or fluids with a viscosity greater than water, multiply the pressure drop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



CLICK HERE FOR THE ONLINE DIFFERENTIAL PRESSURE DROP CALCULATOR

Powering Business Worldwide

| REVISIONS | | | | |
|---|---|---|---|---|
| REV | DESCRIPTION | BY | ECO | DATE |
| E | UPDATE TITLE BLOCK | FM | 0105339 | 08/12/2014 |




| NO. | PART NAME | MATERIAL |
|---|---|---|
| 1 | BODY | CAST IRON ASTM A126 CL B |
| 2 | SCREEN | |
| | PERF. DIA. | |
| | MESH | |
| 3 | O-RING | BUNA-N |
| 4 | COVER | CAST IRON ASTM A126 CL B |
| 5 | YOKE | DUCTILE IRON |
| 6 | YOKE SCREW | CARBON STEEL |
| 7 | DRAIN PLUG | CAST IRON ASTM A48 CL 30 |

NOTES:

1. INLET/OUTLET "NPT" THREADED CONNECTIONS PER ASME B1.20.1.
2. MAX. WORKING PRESSURE: 200 PSI @ 100° F (13.8 BAR @ 37.8° C)



| PIPE SIZE (NOMINAL) | DIMENSIONS | | | | | | | | | | | | WEIGHT (DRY) | | PART NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | | B | | C | | D | | E | | F (NOM.) | | G | | | | |
| | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | LBS. | KGS. | |
| 1-1/2" (40mm) | 7.00 | 178 | 6.50 | 165 | 10.63 | 270 | 6.00 | 152 | 14.88 | 378 | 3/4 | (20) | 3.88 | 99 | 7 | 3.2 | ST30R015AT40A |
| 2" (50mm) | 8.50 | 216 | 7.50 | 191 | 11.63 | 295 | 7.50 | 191 | 17.38 | 441 | 1-1/4 | (32) | 4.81 | 122 | 20 | 9.1 | ST30R020AT40A |
| 2-1/2" (65mm) | 11.50 | 292 | 9.13 | 232 | 15.25 | 387 | 8.00 | 203 | 22.38 | 568 | 1-1/4 | (32) | 6.00 | 152 | 34 | 15.5 | ST30R025AT40A |
| 3" (80mm) | 11.50 | 292 | 9.13 | 232 | 15.25 | 387 | 8.00 | 203 | 22.63 | 575 | 1-1/4 | (32) | 6.00 | 152 | 34 | 15.5 | ST30R030AT40A |

| CUSTOMER INFO | |
|---|---|
| NAME | |
| P.O. NO. | |
| TAG NO. | |
| S.O. NO. | |
| PART NO. | SEE TABLE |

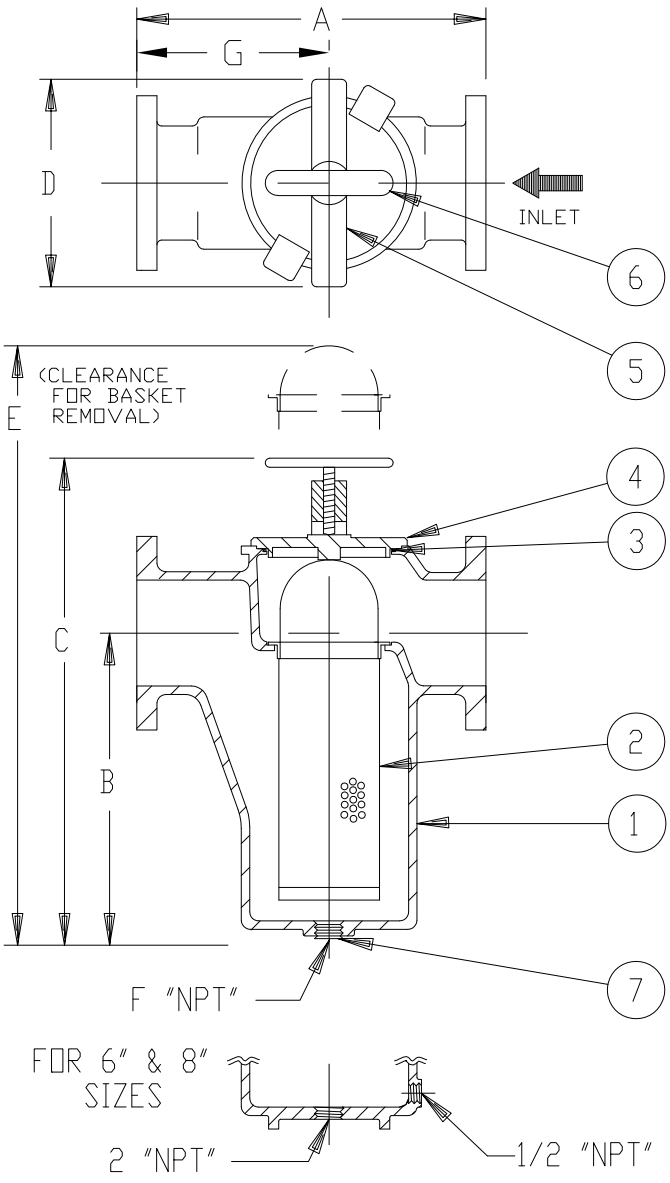
DRAWN BY: VAA
SCALE: AS DRAWN
RESTRICTION: RESTRICTED
SHEET: 1 OF 1
PROJECTION: THIRD ANGLE

EATON
HYDRAULICS GROUP
FILTRATION DIVISION
GALESBURG, MICHIGAN, USA • TINTON FALLS, NEW JERSEY, USA

TITLE: MODEL 30R SIMPLEX STRAINER NPT CONNECTION SIZES 1-1/2" THRU 3" CAST IRON

| DATE | SIZE | DWG FILENAME | REV |
|---|---|---|---|
| 5/8/92 | A | SD30R051 | E |

| REVISIONS | | | | |
|---|---|---|---|---|
| REV | DESCRIPTION | BY | ECO | DATE |
| F | UPDATE TITLE BLOCK | FM | 0105339 | 12/8/2014 |







| NO. | PART NAME | MATERIAL |
|---|---|---|
| 1 | BODY | CAST IRON ASTM A126 CL B |
| 2 | BASKET | |
| | PERF. DIA. | |
| | MESH | |
| 3 | O-RING | BUNA-N |
| 4 | COVER | CAST IRON ASTM A126 CL B |
| 5 | YOKE | DUCTILE IRON |
| 6 | YOKE SCREW | CARBON STEEL |
| 7 | DRAIN PLUG | CAST IRON ASTM A48 CL 30 |

NOTES:
1. INLET/OUTLET 125 LB. FLANGED CONNECTIONS PER ASME B16.1.
2. MAX. WORKING PRESSURE: 200 PSI @ 100° F (13.8 BAR @ 37.8° C)



| PIPE SIZE (NOMINAL) | DIMENSIONS | | | | | | | | | | WEIGHT (DRY) | | PART NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | | B | | C | | D | | E | | F (NOM.) | | G | | LBS. | KGS. | |
| | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | | | |
| 1-1/2" (40mm) | 7.75 | 197 | 6.50 | 165 | 10.63 | 270 | 6.00 | 152 | 14.88 | 378 | 3/4 | (20) | 4.44 | 113 | 12 | 5.5 | ST30R015AF40A |
| 2" (50mm) | 9.63 | 245 | 7.50 | 191 | 11.63 | 295 | 7.50 | 191 | 17.38 | 441 | 1-1/4 | (32) | 5.63 | 143 | 27 | 12.3 | ST30R020AF40A |
| 2-1/2" (65mm) | 11.00 | 279 | 9.13 | 232 | 15.25 | 387 | 8.00 | 203 | 22.38 | 568 | 1-1/4 | (32) | 5.88 | 149 | 45 | 20.5 | ST30R025AF40A |
| 3" (80mm) | 11.88 | 302 | 9.13 | 232 | 15.25 | 387 | 8.00 | 203 | 22.63 | 568 | 1-1/4 | (32) | 6.50 | 165 | 59 | 26.6 | ST30R030AF40A |
| 4" (100mm) | 13.75 | 349 | 9.63 | 245 | 16.63 | 422 | 9.25 | 235 | 30.00 | 762 | 1-1/2 | (40) | 8.44 | 214 | 71 | 32.2 | ST30R040AF40A |
| 6" (150mm) | 17.50 | 445 | 12.38 | 315 | 26.13 | 664 | 14.75 | 375 | 35.00 | 889 | 2 | (50) | 10.31 | 262 | 150 | 68.1 | ST30R060AF40A |
| 8" (200mm) | 23.63 | 600 | 17.75 | 451 | 32.63 | 829 | 14.75 | 375 | 48.00 | /1219 | 2 | (50) | 14.50 | 368 | 230 | /104.3 | ST30R080AF40A |

| CUSTOMER INFO | |
|---|---|
| NAME | |
| P.O. NO. | |
| TAG NO. | |
| S.O. NO. | |
| PART NO. | SEE TABLE |

DRAWN BY: VAA
SCALE: AS DRAWN
RESTRICTION: RESTRICTED
SHEET: 1 OF 1
PROJECTION: THIRD ANGLE

EATON
HYDRAULICS GROUP
FILTRATION DIVISION
GALESBURG, MICHIGAN, USA • TINTON FALLS, NEW JERSEY, USA

TITLE: MODEL 30R SIMPLEX STRAINER 125#FF FLANGE SIZES 1-1/2" THRU 8" CAST IRON

| DATE | SIZE | DWG FILENAME | REV |
|---|---|---|---|
| 5/8/92 | A | SD30R061 | F |

# Eaton Filtration, LLC

**Operating Instructions**

**Model 30R Simplex Basket Strainers**

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

## Installation

Each strainer is shipped completely assembled and ready for installation. Note that the "Inlet " must be correctly oriented during service. Although all Eaton Strainers are 100% hydrostatically tested at the factory, it is recommended that you inspect all strainer closures prior to putting the strainer into service. Check that all hardware is secure and that the gaskets and/or o-rings seal properly.

## Operation

Be sure the cover and drain are tightly closed. Open the valve on the outlet side of the strainer. Slowly open the valve on the inlet side of the strainer (to prevent damage from water hammer). The strainer is now in service.

### Basket Cleaning

Close the valve on the inlet and outlet side of the strainer and open the drain. To remove the basket from the strainer, loosen the cover clamp T-bolt and remove the cover from the top of the strainer.
The basket handle will protrude slightly out of the strainer well. (This unique design offers both a means of removing the basket easily and also allows the basket to be firmly seated around the machined seating surface when closed.) Remove the basket from the well by pulling straight up on the basket handle.

Clean the basket by using a brush or by soaking in a solvent or cleaning solution. Avoid striking baskets to loosen their contents. This will dent them out of shape and eventually break the welds. Baskets should be cleaned as soon as possible after removal from the strainer. Otherwise, the contents may harden and become difficult to remove. It is recommended that one spare basket be kept on hand at all times. When changing baskets for cleaning, we suggest that the spare or cleaned basket be installed in the strainer so your start up is not delayed cleaning the used basket.

Install the basket in the strainer. Be sure the cover O-ring is on the cover. The basket should be properly centered in the well and firmly seated. Replace the cover. The cover should be centered before the T-bolt is tightened. Tighten only until a seal is made between the cover and the strainer body. The O-ring should be periodically inspected for nicks and tears. A spare O-ring should also be kept on hand. Check the O-ring seating surface, it should be kept free of dirt and grit. The strainer is now ready to be put back in operation. Follow the steps listed above under "Operation"

### Recommended Spare Parts

1 Eaton Replacement Screen and 1 Eaton Replacement Gasket or O-Ring.

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

Visit our web site www.filtration.eaton.com for more information about Eaton Strainers.