

PRESSURE DROP CALCULATIONS

For Simplex and Duplex Strainers

In the following pages, pressure drops for Eaton Models 30, 50, 510, 570 and 72 strainers are shown. 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.

Pressure Loss Calculation Using C_V Factor Example

Standard Units

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

ΔP = Pressure Drop in psi
 Q = Flow in gpm
 C_V = Flow Coefficient

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

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."

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

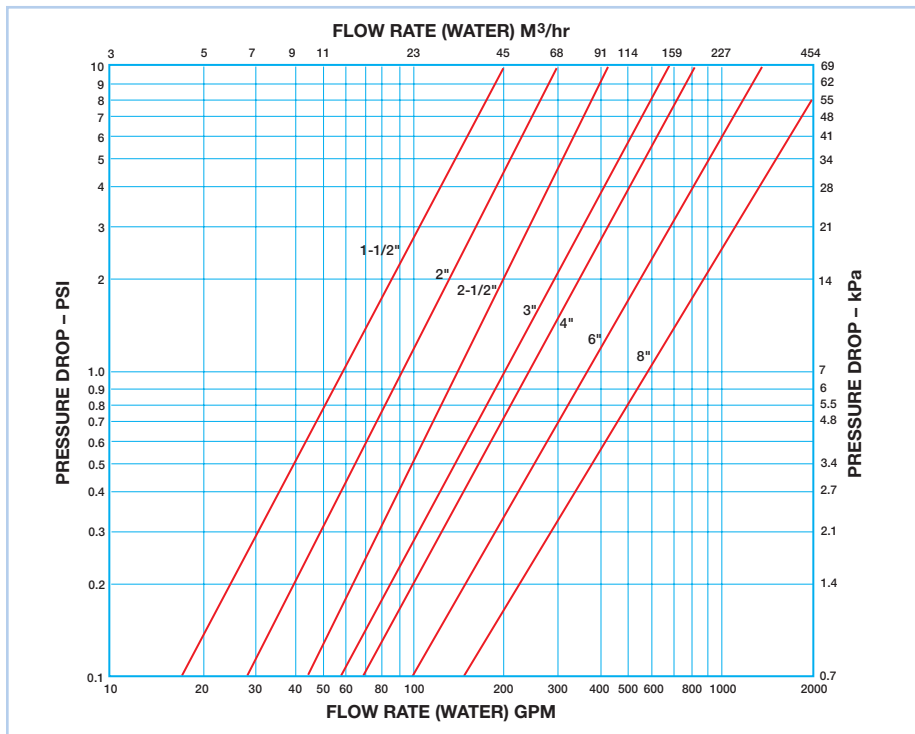
MODEL 30 & 72 PRESSURE DROP CURVES

Pressure Drop vs Flow Rate

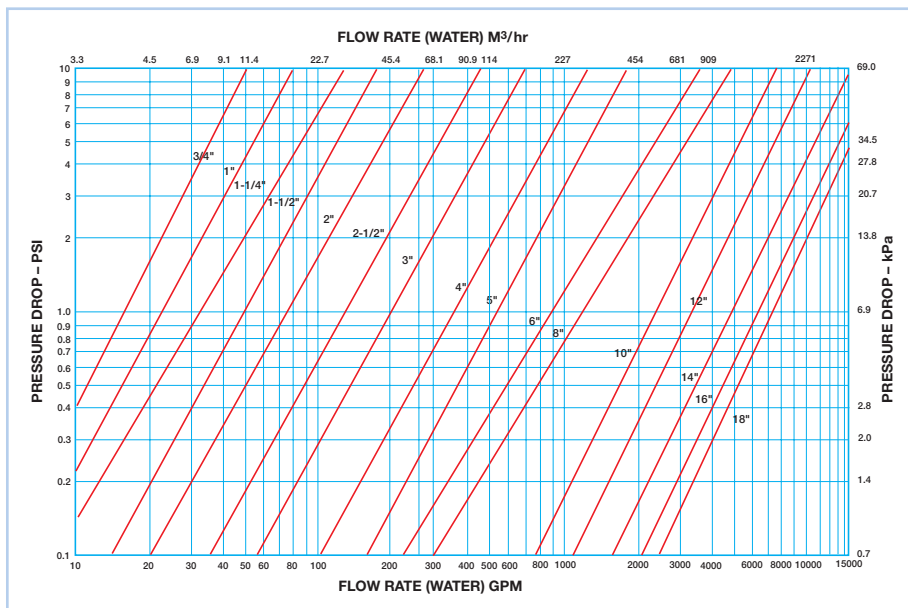
These curves are for clean baskets, without mesh liners – and with WATER flowing through the strainer.

For mesh-lined baskets and/or for other fluids, you must first compute a correction factor. See Page 47 for full details.

Model 30R Simplex – 1-1/2" through 8"



Model 72 Simplex – 3/4" through 18"

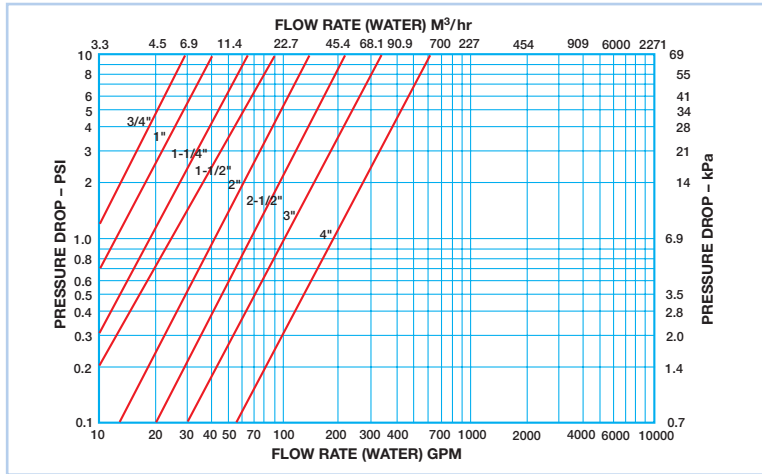


MODEL 50 PRESSURE DROP CURVES

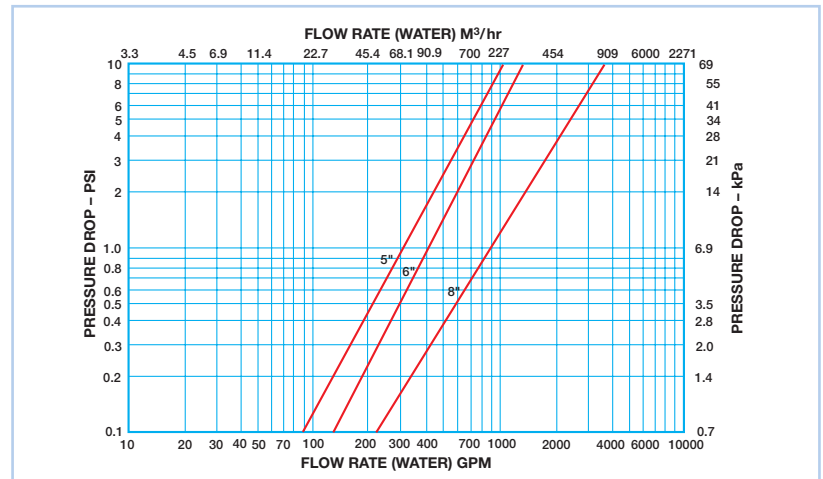
Pressure Drop vs Flow Rate

These curves are for clean baskets, without mesh liners – and with WATER flowing through the strainer. For mesh-lined baskets and/or for other fluids, you must first compute a correction factor. See Page 47 for full details.

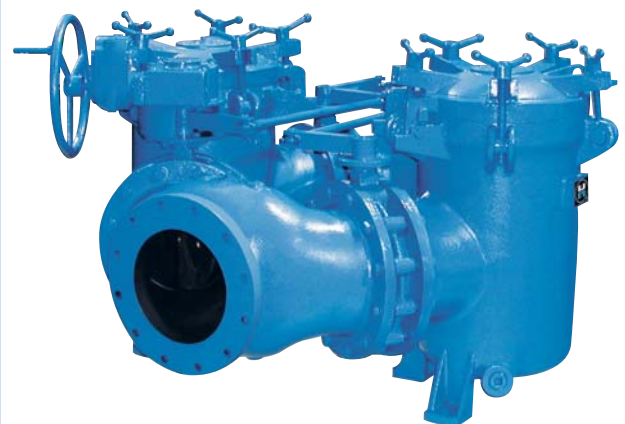
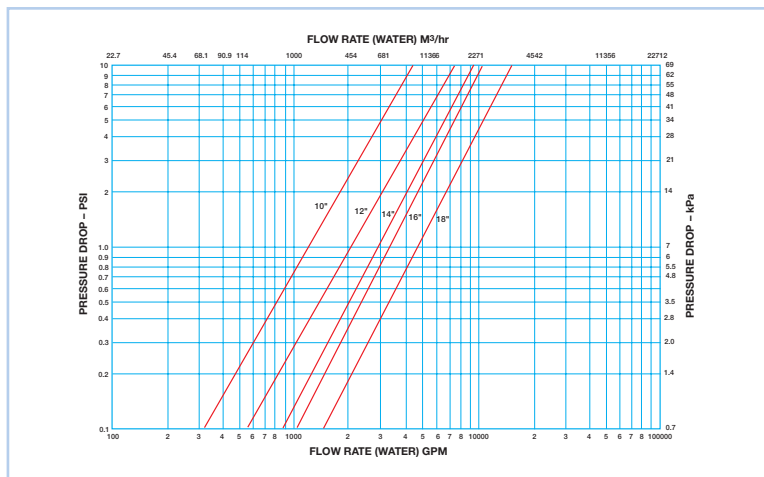
Model 53BTX Duplex – 3/4" Through 4"



Model 50 Duplex – 5" Through 8"



Model 50 Multi-basket Duplex – 10" Through 18"

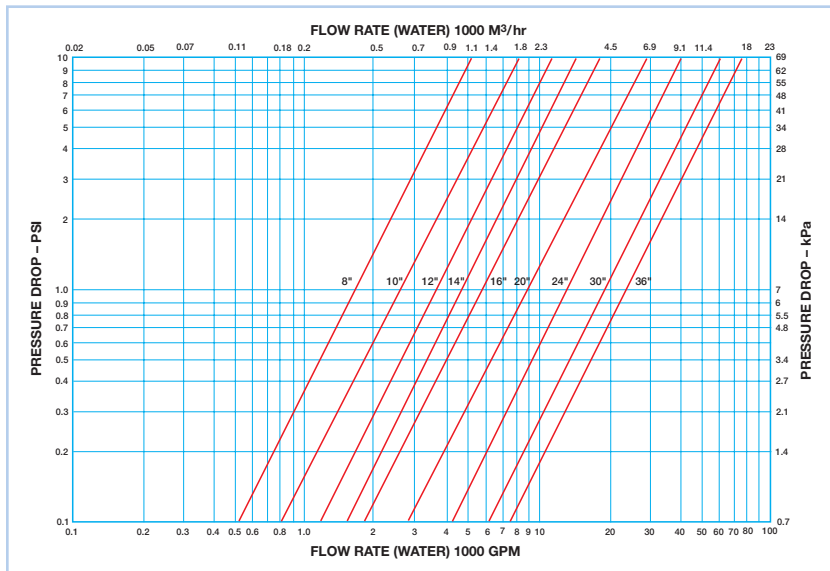


MODEL 510 & 570 PRESSURE DROP CURVES

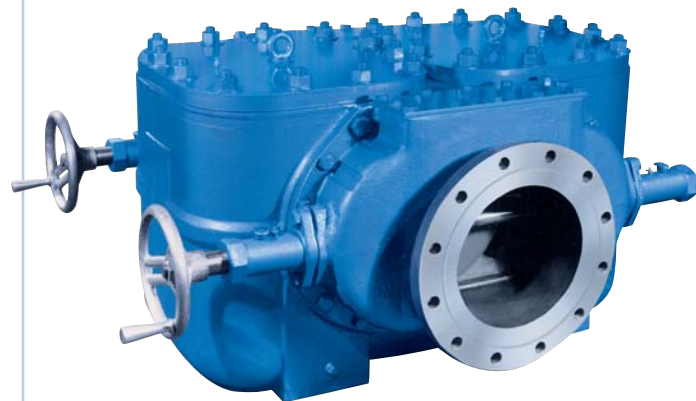
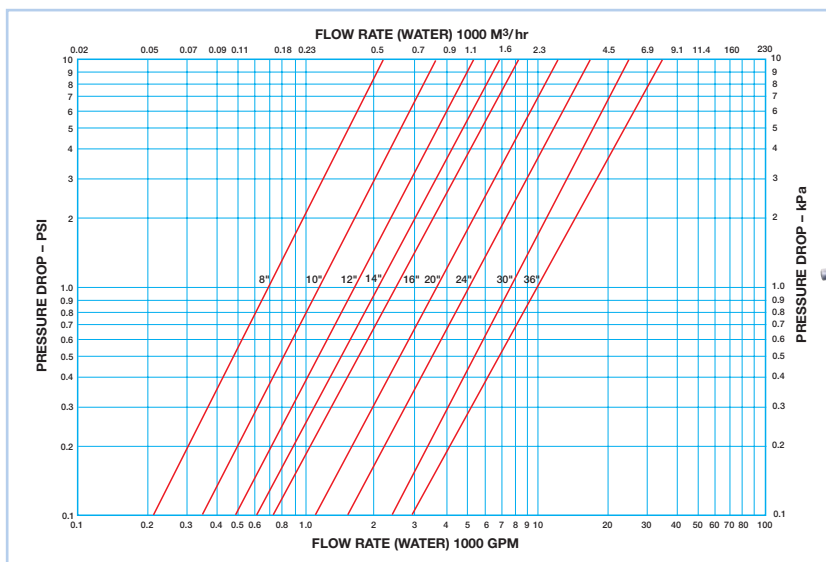
Pressure Drop vs Flow Rate

These curves are for clean baskets, without mesh liners – and with WATER flowing through the strainer.
For mesh-lined baskets and/or for other fluids, you must first compute a correction factor. See Page 47 for full details.

Model 510 Multi-basket Simplex – 8" through 36"



Model 570 Sliding Gate Duplex – 8" Through 36"



PLASTIC STRAINER MATERIAL SPECIFICATIONS/DATA

Plastic Basket Strainers

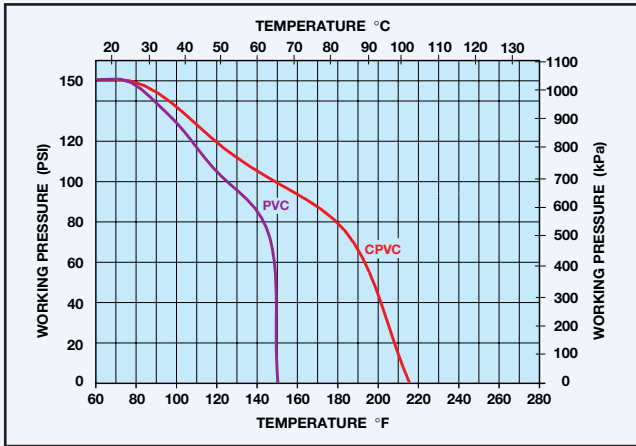
Material Specifications

- PVC (polyvinyl chloride) – Type 1, Cell Classification conforming to ASTM D-1784
- CPVC (chlorinated polyvinyl chloride) – Type 4, Grade 1, Cell Classification conforming to ASTM D-1784
- Polypropylene – Type 1, ultra-high strength, highly chemical coupled, glass reinforced conforming to ASTM D-4101

End Connection Specifications

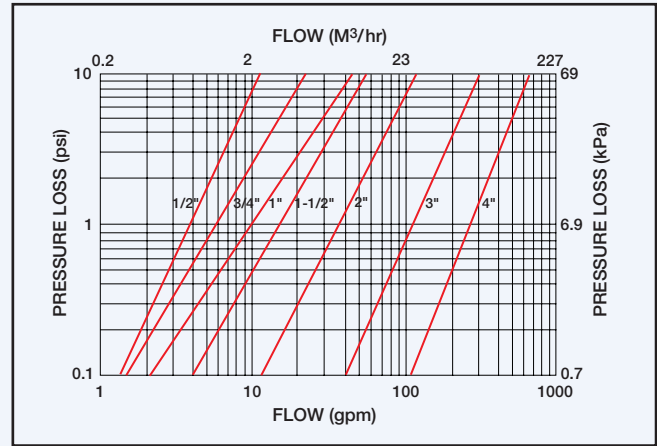
- All flanges have bolt hole pattern to meet ANSI 150 lb dimensions
- Polypropylene strainers available threaded and flanged only
- All 1/2" and 3/4" basket strainers are 1" strainers with reducer bushings
- All 1-1/2" basket strainers are 2" strainers with reducer bushings

Operating Pressures and Temperatures 150 psi Rated Plastic Basket Strainers



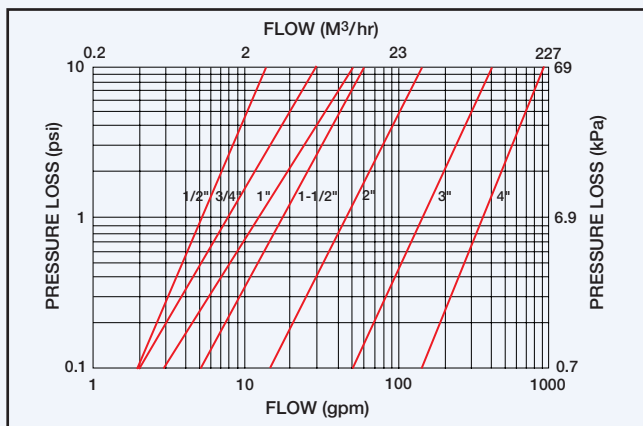
Pressure-Temperature relationship of Eaton pipeline strainer materials. Working pressure (non-shock) figures are the maximum recommended for the indicated temperatures.

Pressure Drop Curves Duplex Basket Strainers



Pressure Drop Curves – Simplex Basket Strainers

1/2" to 4" Plastic Basket Strainers



6" and 8" Plastic Basket Strainers

