



Simplex Basket Strainers

1/2" to 8" - PVC, Corzan® CPVC and Eastar® Clear Polyester



6" and 8" Design



Eastar® Clear Polyester

Features

- External Body Threads
- Low Pressure Drop
- Wide Choice of Baskets
- In-line or Loop Piping Design
- True Union Connections
- Ergonomic Hand Removable Cover
- FPM Seals
- Integral, Flat Mounting Base
- Hand Removable Vent On Cover
- Hand Removable Drain On Body
- Liquid Displacing Cover

Options

- Stainless Steel Mesh Strainer Baskets
- EPDM Seals
- Pressure Differential Gauge and Switch

Protect System Components

When pipeline system components require protection from dirt and debris and the line can be shut down for basket cleaning, a Hayward All Plastic Simplex Basket Strainer is the ideal choice. Unwanted particles are removed as the process media passes through a perforated strainer basket contained inside the strainer body. The basket traps the unwanted material while allowing the process media to flow freely.

Easy Basket Cleaning

Changing or cleaning the strainer basket is quick and easy. The hand removable, spin-off cover features two angled handles for easy access to the strainer basket. The housing features external cover threads that do not contact the process media and never need cleaning. Venting and draining are made possible by two hand removable, threaded plugs, one on the top of the cover and the other on the housing side.

Choice of Piping Connections

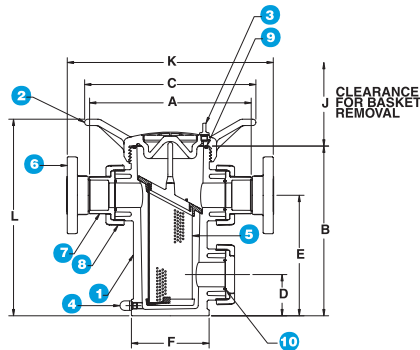
Hayward Simplex Basket Strainers can be installed either in-line or with loop piping configurations. This is made possible by a unique design that incorporates three piping connections on the strainer body that are used as inlets and outlets. The unused connection is plugged using a blind fitting (included). True union connections make it possible to remove the strainer from the piping system without disassembling the piping connections.

Wide Range of Strainer Baskets

Plastic baskets in perforation sizes from 1/32" to 3/16" are available. Stainless steel perforated baskets are available from 1/2" to 1/32". Mesh stainless steel baskets for very fine straining applications are available in sizes from 20 mesh down to 325 mesh.



Technical Information



Parts List Simplex Basket Strainer

1. Body
2. Cover
3. Vent Plug
4. Drain Plug
5. Basket
6. Flange
7. End Connector
8. Nut
9. Cover O-Ring
10. End Connector O-Ring

Dimensions - Inches / Millimeters

Size	WEIGHT (lb/kg)										VOLUME	
	A	B	C	D	E	F	J	K	L	Skt/Thd	Flange	GAL / LT
1/2"	8.64 / 219	9.63 / 245	11.0 / 279	2.25 / 57	6.75 / 171	4.31 / 109	8.00 / 203	10.77 / 274	10.77 / 274	8.0 / 3.4	9.0 / 4	0.20 / 0.8
3/4"	8.64 / 219	9.63 / 245	11.0 / 279	2.25 / 57	6.75 / 171	4.31 / 109	8.00 / 203	11.02 / 280	10.77 / 274	8.0 / 3.4	9.0 / 4	0.20 / 0.8
1"	8.64 / 219	9.63 / 245	11.0 / 279	2.25 / 57	6.75 / 171	4.31 / 109	8.00 / 203	11.64 / 296	10.77 / 274	8.0 / 3.4	9.0 / 4	0.20 / 0.8
1-1/4"	12.75 / 324	13.38 / 340	13.5 / 343	3.25 / 83	9.5 / 241	6.13 / 156	12.86 / 327	15.63 / 397	10.77 / 274	14.0 / 6.4	16.5 / 7.5	0.70 / 2.7
1-1/2"	12.69 / 322	13.38 / 340	13.5 / 343	3.25 / 83	9.5 / 241	6.13 / 156	12.86 / 327	15.89 / 404	10.77 / 274	14.0 / 6.4	16.5 / 7.5	0.70 / 2.7
2"	12.75 / 324	13.38 / 340	13.5 / 343	3.25 / 83	9.5 / 241	6.13 / 156	12.86 / 327	16.29 / 414	10.77 / 274	14.0 / 6.4	16.5 / 7.5	0.70 / 2.7
2-1/2"	16.52 / 384	19.83 / 504	16.0 / 406	4.83 / 123	14.83 / 377	7.25 / 184	17.25 / 438	21.02 / 534	10.77 / 274	28.0 / 13	33.0 / 15	2.80 / 10.6
3"	16.40 / 384	19.83 / 504	16.0 / 406	4.83 / 123	14.83 / 377	7.25 / 184	17.25 / 438	20.36 / 517	10.77 / 274	28.0 / 13	33.5 / 15	2.80 / 10.6
4"	17.27 / 384	19.83 / 504	16.0 / 406	4.83 / 123	14.83 / 377	7.25 / 184	17.25 / 438	22.13 / 562	10.77 / 274	28.0 / 13	37.0 / 17	2.80 / 10.6
6"	n/a	34.28 / 871	18.0 / 457	10.66 / 271	27.19 / 691	11.75 / 298	21.80 / 554	22.42 / 569	10.77 / 274	n/a	60.0 / 27	6.8 / 25.7
8"	n/a	34.28 / 871	18.0 / 457	10.66 / 271	27.19 / 691	11.75 / 298	28.75 / 730	25.19 / 640	10.77 / 274	n/a	80.0 / 36	9.0 / 34.1

Cv Factors

Size	Factor	Size	Factor
1/2"	15	2-1/2"	290
3/4"	18	3"	300
1"	20	4"	350
1-1/4"	55	6"	1000
1-1/2"	58	8"	750
2"	60		

The above Cv Factors were determined using a 1/16" perforated plastic basket in 1/2" through 4" strainers and a 5/32" perforated stainless steel basket in 6" and 8" strainers. For other size basket perforations, multiply by the correction factor in the above Correction Factor charts.

Pressure Drop Calculations

Basket Perforation Correction Factors

For 1/2" to 4" Strainers

Plastic Baskets		Stainless Steel Baskets	
1/32"	1.05	1/32"	.82
1/16"	1.00	3/64"	.63
1/8"	.58	1/16"	.74
3/16"	.46	5/64"	.50
		7/64"	.51
		1/8"	.58
		5/32"	.37
		3/16"	.46
		1/4"	.58
		325 Mesh	1.22

For 6" to 8" Strainers

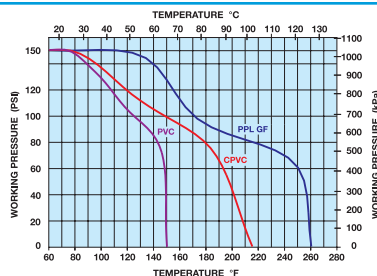
Plastic Baskets		Stainless Steel Baskets	
1/8"	2.00	1/32"	2.25
3/16"	1.50	3/64"	1.73
		1/16"	2.03
		5/64"	1.37
		7/64"	1.40
		1/8"	1.58
		5/32"	1.00
		3/16"	1.26
		1/4"	1.58
		325 Mesh	3.33

The pressure drop across the strainer, for water or fluids with a similar viscosity, can be calculated using the formula at the right:

$$\Delta P = \left[\frac{Q}{Cv} \right]^2 \text{ Where } \Delta P = \text{Pressure Drop}$$

Q = Flow in GPM
Cv = Flow Coefficient

Operating Temperature/Pressure



Selection Chart

Size	Material	End Connection	Seal*	Rating
1/2" to 4"	PVC, CPVC	Thd, Skt, Flg	FPM	150 PSI @ 70°F
1/2" to 2"	EASTAR®	Thd, Skt, Flg	FPM	100 PSI @ 70°F
6" to 8"	PVC, CPVC	Flg	FPM	150 PSI @ 70°F

*EPDM seals POA.

Basket Selection

- The 1/2" to 1" strainers can be ordered with either a 1/32" or 1/16" perf plastic basket.
- The 1 1/2" and 2" with a 1/32", 1/16", 1/8", or 3/16" perf plastic basket.
- The 3" and 4" with a 1/16", 1/8" or 3/16" perf plastic basket.
- The 6" and 8" with a 1/8" or 3/16" perf plastic basket.
- Stainless steel baskets for all size strainers are available in these perfs: 1/32", 3/64", 1/16", 5/64", 7/64", 1/8", 5/32", 3/16", 1/4", 3/8", 1/2"; and in mesh sizes: 20, 40, 60, 80, 100, 200, 325



Basket Strainer Technical Information

Selection Criteria

The first consideration when selecting a Hayward basket strainer is the amount of free open area. This is the ratio of the open area through the strainer basket to the cross sectional area of the pipe. A well-designed basket strainer should have an open area ratio of at least 4 to 1. Anything less may cause excessive pressure drop. The area is calculated with a clean basket – and as the basket begins to clog, the ratio will drop. Unless there is a wide safety margin, the area through the basket may quickly become smaller than the pipe area. This will reduce flow through the strainer and necessitate very frequent cleaning. A small open area ratio also means the holding capacity of the basket is small (an important consideration if there is a lot of solid material to be removed.)

Second, is ease of basket removal. Since a basket strainer is used where cleaning may occur often, it stands to reason that the basket should be able to be removed and replaced as simply as possible. Hayward simplex and duplex strainers feature hand removable, precision machined, threaded covers which can be quickly loosened or tightened by hand without the use of tools.

Another item to look for in selecting a strainer is compactness of design. Is the strainer unnecessarily bulky or tall? In many industrial areas, space is at a premium and the less room a strainer takes the better.

Lastly, a wide variety of basket perforation sizes should be available. This is necessary to cope with the great range of particle sizes which the strainer may be called upon to remove.

Selection and Sizing

Selecting the proper size basket strainer for a particular application is extremely important for optimum performance of the strainer. Factors such as viscosity, specific gravity, and mesh lining size all influence pressure drop of flow through the strainer. As a general rule of thumb, a pressure of greater than 2 PSI through a clean strainer usually indicates the strainer selected is too small for the intended application.

In some cases, the strainer size may not always be the same size as the pipe diameter. For example, the pressure drop of highly viscous liquids passing through a mesh basket can cut flow considerably making it necessary to use a strainer several times larger than pipeline to ensure adequate flow.

Likewise, if an unusually large amount of material needs to be taken out of the process flows, a larger strainer or multiple strainer should be specified. By using two strainers in a series, the first with large openings designed to catch larger particles and the second with a fine mesh lining to trap smaller material, the load is spread over two strainers and time between maintenance for cleaning is also extended.

While the initial investment is slightly more for a larger strainer or multiple strainers, there are no added long term operating costs since basket strainers have no parts to wear out and last indefinitely.

Proper Basket Selection

The question of which perforation or mesh lining size to use comes up regularly. Here again, the basic rule is to use the coarsest size which will strain out the product to be removed. Using a finer mesh than needed will only result in premature clogging. When in doubt about which of two basket screens to use, it is best to choose the larger. As a rule of thumb, size the baskets for one half the particle size to be removed.

Basket Sizes Offered for Hayward Simplex and Duplex Plastic Basket Strainers

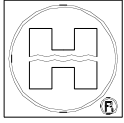
Pressure Drop Correction Factors for Various Size Basket Screens

PLASTIC		STAINLESS STEEL		STAINLESS STEEL	
Perforation	Correction Factor	Perforation	Correction Factor	Mesh	Correction Factor
1/32"	1.05	1/32"	0.82	20	0.79
1/16"	1.00	3/64"	0.63	40	1.01
1/8"	0.58	1/16"	0.74	60	1.20
3/16"	0.46	5/64"	0.50	80	1.16
		7/64"	0.51	100	1.20
		1/8"	0.58	200	1.09
		5/32"	0.37	325	1.22
		3/16"	0.46		
		1/4"	0.58		
		3/8"	0.45		
		1/2"	0.48		

Comparative Particle Size

Mesh	Inches	Microns	Mesh	Inches	Microns	Mesh	Inches	Microns
3250	0.0002	6	130	0.0043	110	24	0.028	718
1600	0.0005	14	120	0.0046	118	20	0.034	872
750	0.0010	25	110	0.0051	131	18	0.039	1000
325	0.0016	40	100	0.0055	149	16	0.045	1154
250	0.0024	62	90	0.0061	156	14	0.051	1308
200	0.0029	74	80	0.0070	179	12	0.060	1538
180	0.0033	85	70	0.0078	200	10	0.075	1923
170	0.0035	90	60	0.0092	238	8	0.097	2488
160	0.0038	97	50	0.0117	300	6	0.132	3385
150	0.0041	100	40	0.015	385	5	0.159	4077
140	0.0042	108	30	0.020	513	4	0.203	5205

Note: Pressure Drop Correction Factors for various size basket screens may be applied to data for 1/16" perforation plastic baskets. Simply multiply the pressure drop shown in the 1/16" basket chart by the appropriate correction factor.



HAYWARD INDUSTRIAL PRODUCTS

INSTALLATION, OPERATION & MAINTENANCE OF SIMPLEX BASKET STRAINER

PLEASE READ THE FOLLOWING INFORMATION PRIOR TO INSTALLING AND USING HAYWARD VALVES, STRAINERS, FILTERS, AND OTHER ASSOCIATED PRODUCTS. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY.

1. Hayward guarantees its products against defective material and workmanship only. Hayward assumes no responsibility for damage or injuries resulting from improper installation, misapplication, or abuse of any product.
2. Hayward assumes no responsibility for damage or injury resulting from chemical incompatibility between its products and the process fluids to which they are subjected. Compatibility charts provided in Hayward literature are based on ambient temperatures of 70 °F and are for reference only. Customer should always test to determine application suitability.
3. Consult Hayward literature to determine operating pressure and temperature limitations before installing any Hayward product. Note that the maximum recommended fluid velocity through any Hayward product is five feet per second. Higher flow rates can result in possible damage due to the water hammer effect. Also note that maximum operating pressure is dependent upon material selection as well as operating temperature.
4. Hayward products are designed primarily for use with non-compressible liquids. They should NEVER be used or tested with compressible fluids such as compressed air or nitrogen.
5. Systems should always be depressurized and drained prior to installing or maintaining Hayward products.
6. Temperature effect on piping systems should always be considered when the systems are initially designed. Piping systems must be designed and supported to prevent excess mechanical loading on Hayward equipment due to system misalignment, weight, shock, vibration, and the effects of thermal expansion and contraction.
7. Because PVC and CPVC plastic products become brittle below 40 °F, Hayward recommends caution in their installation and use below this temperature.
8. Published operating torque requirements are based upon testing of new valves using clean water at 70 °F. Valve torque is affected by many factors including fluid chemistry, viscosity, flow rate, and temperature. These should be considered when sizing electric or pneumatic actuators.
9. Due to differential thermal expansion rates between metal and plastic, transmittal of pipe vibration, and pipe loading forces **DIRECT INSTALLATION OF METAL PIPE INTO PLASTIC CONNECTIONS IS NOT RECOMMENDED.** Wherever installation of plastic valves into metal piping systems is necessary, it is recommended that at least 10 pipe diameter in length of plastic pipe be installed upstream and downstream of the plastic valve to compensate for the factors mentioned above.

SOCKET CONNECTION INSTALLATION:

THE COVER OF THE BASKET STRAINER MUST BE REMOVED TO ALLOW THE CEMENT FUMES TO VENT.

Socket end connections are manufactured to ASTM D2467-94. Solvent cementing of socket end connections to pipe should be performed per ASTM specifications D2855-87. Cut pipe square. Chamfer and deburr pipe. Surfaces must be cleaned and free of dirt, moisture, oil and other foreign material. Apply primer to inside socket surface of the strainer. Use a scrubbing motion. Repeat applications may be necessary to soften the surface of the socket. Next, liberally apply primer to the male end of the pipe to the length of the socket depth. Again apply to the socket, without delay apply cement to the pipe while the surface is still wet with primer. Next apply cement lightly, but uniformly to the inside of the socket. Apply a second coat of cement to the pipe, and assemble the pipe to the end socket of the strainer, rotating the pipe 1/4 turn in one direction as it is slipped to full depth into the socket. The connection should be held in position for approx. 30 seconds to allow the connection to "set". After assembly wipe off excess cement. Full set time is a minimum of 30 minutes at 60 to 100 °F. Full cure time should be based on the chart below.

JOINT CURE SCHEDULE:

The cure schedules are suggested as guides. They are based on laboratory test data, and should not be taken to be the recommendations of all cement manufacturers. Individual manufacturer's recommendations for their particular cement should be followed.

Temperature Range During Cure Period(B) °F(°C)	Test Pressures for Pipe Sizes ½" to 1-1/4"		Test Pressures for Pipe Sizes 1-1/2" to 3"		Test Pressures for Pipe Sizes 4" & 5"		Test Pressures for Pipe Sizes 6" to 8"	
	Up to 180 PSI (1240 kPa)	Above 180 to 370 PSI (1240 to 2550 kPa)	Up to 180 PSI (1240 kPa)	Above 180 to 315 PSI (1240 to 2172 kPa)	Up to 180 PSI (1240 kPa)	Above 180 to 315 PSI (1240 to 2172 kPa)	Up to 180 PSI (1240 kPa)	Above 180 to 315 PSI (1240 to 2172 kPa)
60 to 100 (15 to 40)	1 hour	6 hours	2 hours	12 hours	6 hours	18 hours	8 hours	1 day
40 to 60 (5 to 15)	2 hours	12 hours	4 hours	1 day	12 hours	36 hours	16 hours	4 days
20 to 40 (-7 to 5)	6 hours	36 hours	12 hours	3 days	36 hours (A)	4 days (A)	3 days (A)	9 days (A)
10 to 20 (-15 to 7)	8 hours	2 days	16 hours	4 days	3 days (A)	8 days (A)	4 days (A)	12 days (A)

Colder than 10 (-15) Extreme care should be exercised on all joints made where pipe, fittings or cement is below 10°F.

A: It is important to note that at temperatures colder than 20°F on sizes that exceed 3 in., test results indicate that many variables exist in the actual cure rate of the joint. The data expressed in these categories represent only estimated averages. In some cases, cure will be achieved in less time, but isolated test results indicate that even longer periods of cure may be required.

B: These cure schedules are based on laboratory test data obtained on Net Fit Joints (NET FIT=in a dry fit the pipe bottoms snugly in the fitting socket without meeting interference)

THREADED CONNECTION INSTALLATION:

Threaded end connections are manufactured to ASTM specifications D2464-88. F437-88 and ANSI B2.1. Wrap threads of pipe with Teflon tape of 3 to 3-1/2 mil thickness. The tape should be wrapped in a clockwise direction starting at the first or second full thread. Overlap each wrap by, 1/2 the width of the tape. The wrap should be applied with sufficient tension to allow the threads of a single wrapped area to show through without cutting the tape. The wrap should continue for the full effective length of the thread. Pipe sizes 2" and greater will not benefit with more than a second wrap, due to the greater thread depth. To provide a leak proof joint, the pipe should be threaded into the end connection "hand tight". Using a strap wrench only. (Never use a stillson type wrench) tighten the joint an additional 1/2 to 1-1/2 turns past hand tight. Tightening beyond this point may induce excessive stress that could cause failure.

FLANGED CONNECTION INSTALLATION:

Flange bolts should be tight enough to slightly compress the gasket and make a good seal, without distorting or putting excessive stress on the flanges. Suitable washers should be used between the bolt head and flange and the nut and flange. Bolts should be tightened in alternating sequence.

RECOMMENDED FLANGE BOLT TORQUE

FLANGE SIZE	BOLT DIA.	TORQUE FT. LBS.	FLANGE SIZE	BOLT DIA.	TORQUE FT. LBS.
1/2	1/2	10-15	2	5/8	15-25
3/4	1/2	10-15	2-1/2	5/8	20-25
1	1/2	10-15	3	5/8	20-25
1-1/4	1/2	10-15	4	5/8	20-25
1-1/2	1/2	10-15	6	3/4	30-40

NOTE: USE WELL LUBRICATED METAL BOLTS AND NUTS. USE SOFT RUBBER GASKETS.

METAL PIPING INSTALLATION:

Due to different thermal expansion rates between metal and plastic, transmittal of pipe vibration, and pipe loading forces, direct installation of plastic simplex strainer into metal piping systems can potentially damage the simplex strainer.

IT IS RECOMMENDED THAT AT LEAST 10 PIPE DIAMETERS IN LENGTH OF PLASTIC PIPING BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE SIMPLEX STRAINER.

OPERATION and BASKET CLEANING:

CAUTION: The Simplex basket strainer must be depressurized before proceeding further.

The cover must be installed per Step 5 below on the strainer before the system is pressurized.

The maximum recommended fluid velocity is 5 feet per second. This velocity minimizes the effects of valve closure and pump start up or shut down.

Pressure gauges may be installed on the inlet and the outlet piping to indicate by pressure loss, in excess of 5 psi, when the basket should be cleaned.

- Valves should be installed just upstream and downstream of the Simplex. Basket strainer. **These valves must be closed and/or the system depressurized before proceeding.**
- The drain plug, from the strainer, should carefully be removed to partially drain the strainer. The vent plug can be loosened to allow the liquid to drain more rapidly.
- The strainer cover is removed by turning in a counter-clockwise direction. No tools are required. *Do not use wrenches or hammers.*
- When the process fluid has been completely drained, remove the basket. Clean the basket by using a brush or soaking in an appropriate cleaning solution. **DO NOT USE SOLVENTS ON PLASTIC BASKETS.** Baskets should be cleaned as soon as possible after removal from the strainer, otherwise the contents may harden and become more difficult to remove. *Avoid striking baskets to loosen their contents as this may damage the basket.* To clean the basket strainer body wash the inside of the body with an appropriate cleaning solution. (NOT A SOLVENT)
- Place a clean basket into the basket strainer body. The basket flange should rest squarely on the basket seat inside the body. Before replacing the cover, make sure that the "o"-ring for the cover is undamaged, clean, and lubricated with a lubricant such as KRYTOX GPL203. It is good practice to clean the body threads with a soft brush to remove all foreign material. **TIGHTEN THE COVER USING LIGHT HAND PRESSURE ONLY.** The cover holds the basket in place ensuring no material passes the basket. The cover is forced against the top surface of the body when tightening, the seal is performed with a surface sealing action.
- Reinstall the drain plug, DO NOT FORGET THE O-RING.**
- Slowly open the upstream valve to pressurize the strainer. It is good practice to vent the air vented from the strainer by loosening the vent plug until liquid appears. Tighten the plug after venting.
- Slowly open the downstream valve

