HAYWARD® FILTRATION

AUTOMATIC SELF-CLEANING & FABRICATED PIPELINE STRAINERS

AUTOMATIC SELF-CLEANING STRAINERS

The Hayward automatic self-cleaning strainer is a motorized strainer designed for the continuous removal of entrained solids from liquids in pipeline systems.

It has successfully performed in industrial, process, water, wastewater, power, paper and municipal applications for over 30 years.

With an automated control system monitoring the strainer operation, cleaning is accomplished by an integral backwash system. A small portion of the screen element is isolated and cleaned by reverse flow. The remaining screen area continues to strain – providing uninterrupted flow. With this efficient design, only a small amount of the liquid being strained is used to carry away the debris from the strainer.

All HAYWARD® Automatic Self-Cleaning Strainers feature the idL™ shaft seal that positively prevents leakage from the backwash shaft at the top of the strainer. This unique quad seal replaces older, leak prone packing material. With the idL seal the exterior of the strainer stays dry and clean in service, there's never any bothersome external leakage or weeping of the process media down the sides of the strainer.

Hayward offers two different Models of Automatic Self-Cleaning Strainers, the Model 596 and the Model 2596. They are available in sizes of 2" through 20” in cast construction and 6" through 60" in fabricated construction. Design and construction of these units are in accordance with ANSI and ASME Section VIII, Division 1. A wide range of screen designs are offered from 1/8” perf to 400 mesh, depending on line size and application.

APPLICATIONS

Hayward’s automatic self-cleaning strainers are commonly used on water service where the disposal of debris and backwash water is not a problem. Continuous flow is assured and protection is provided for nozzles, pumps, valves, heat exchangers and other process equipment.

These high quality strainers can also successfully handle other fluids such as white water, black liquor, starch, fuel and lubricating oil, caustic solutions and cooking oils. A determining factor in these cases is the recycling of the backwash fluid. HAYWARD automatic self-cleaning strainers will significantly reduce maintenance costs and provide uninterrupted flow. They are a particularly worthwhile investment where solids loading is high or upset conditions occur. Frequent cleaning and servicing of manual strainers is costly and, if not properly done, serious disruptions to the entire piping system can occur. Also, they are an ideal solution for maintenance problems where the strainer is in an inaccessible or remote location. Automatic strainers can easily replace duplex basket strainers.

36” Model 596 strainer

10” Model 2596 strainer

AUTOMATIC SELF-CLEANING STRAINERS

8" Model 596 strainer

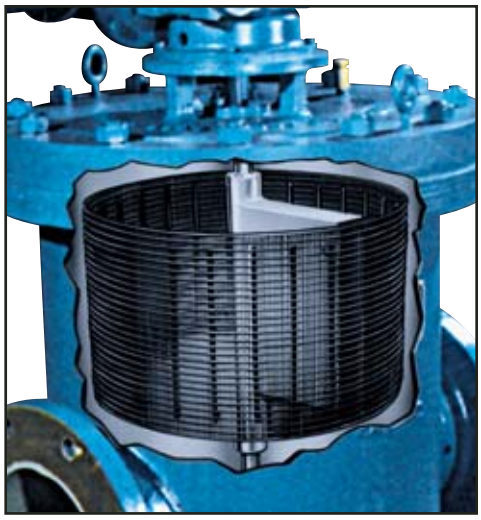
Operation

The debris laden dirty fluid enters the strainer's large bottom chamber where the line velocity is reduced. Flow continues upward, passing radially through the "sealed" screen element. Unwanted material is trapped on the inside of the screen. The flow is uninterrupted and the strained clean fluid continues its path into the correctly proportioned outer annulus of the strainer body and exits through the outlet nozzle.

Backwash cleaning is accomplished by utilizing the pressure differential between line pressure and atmosphere. A hollow, full flow backwash arm extending the full length of the screen element rotates slowly inside of the screen and is piped to atmosphere. The port shoe is in close proximity to the screen, and its opening is equivalent to the "debris collector" sections created by the convolutions and/or the vertical collector bars in the element.

When cleaning is required the automatic backwash valve opens the system to atmosphere, causing a high velocity reverse flow across the isolated section of the screen. Dirt and debris are flushed from this segment of the screen into the backwash arm and out of the strainer via the backwash piping. During the backwashing cycle the main flow is uninterrupted and continues to be strained in the normal manner. A manual throttling valve is recommended after the control valve. Thus, backwash flow can be regulated and balanced for optimum performance and reduction of water loss.

An automatic control system consisting of an electrical panel, actuated valves and a differential pressure switch operates the strainer. The cleaning cycle is set to activate on a timed cycle with a differential pressure override to protect against system upset conditions. The control system will automatically close the backwash valve after the screen element is properly cleaned. The unit can also be operated manually or in the continuous backwash mode. See modes of operation on page 29 for additional information.



Cutaway of Model 596 shows backwash arm and strainer element.

Typical Applications

Automatic self-cleaning strainers are used in nearly every industry to strain fresh, brackish or salt intake water for plant services such as cooling, process, fire protection, etc. They allow water to be recycled within the plant, reducing costs.

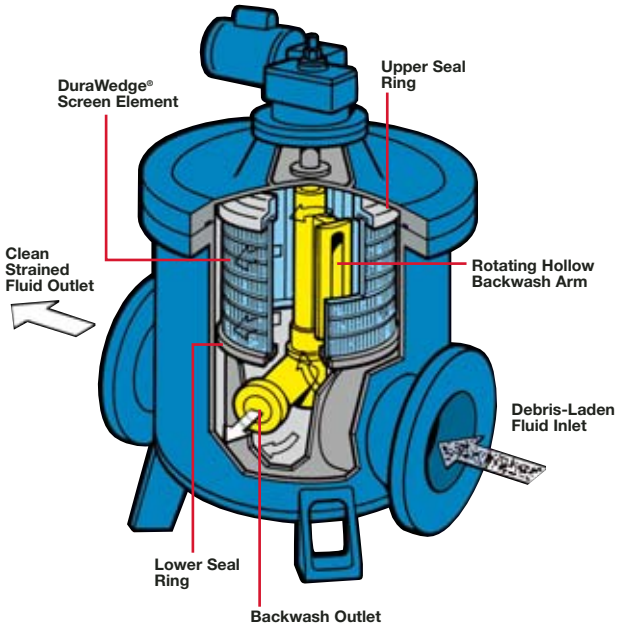
Process Industry: Protect heat exchangers, pumps, valves, and water spray nozzles.

Power Industry: Protect heat exchangers, pump seal water, and traveling screen wash water.

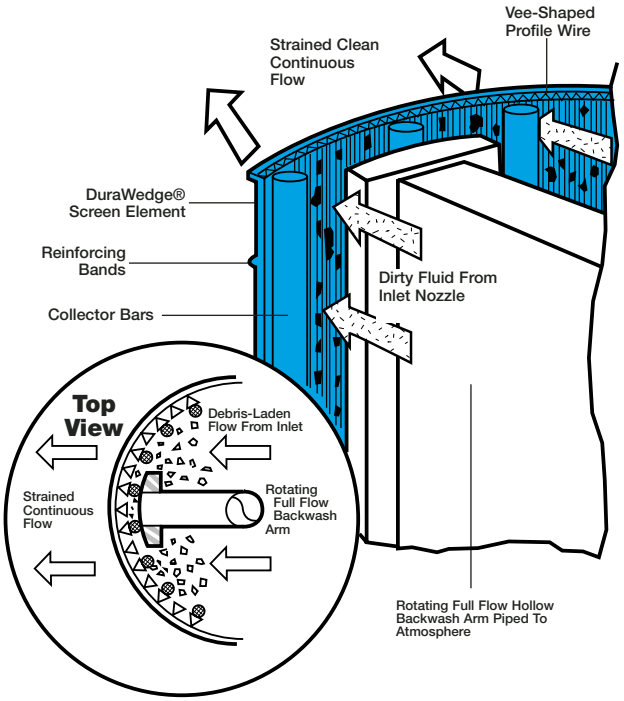
Pulp and Paper: Removing fibers from white water filtrate to prevent clogging of nozzles. Separate bark and chips for recycling.

Sewage/Waste and Water: Straining secondary effluent prior to discharge, and also providing clean plant service water.

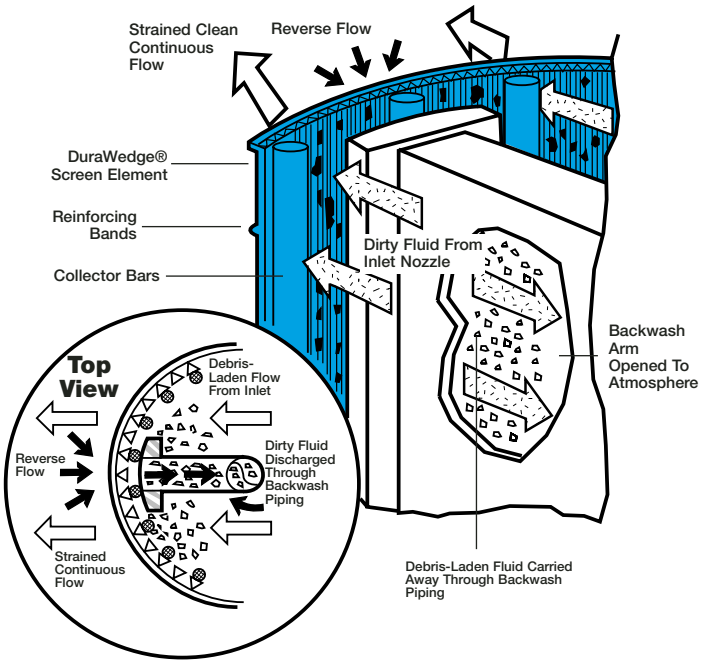
Primary Metal Industry: Provide clean water for quenching, descaling, and blast furnace cooling.



Straining Cycle



Backwashing Cycle



Model 596 Cast Strainers

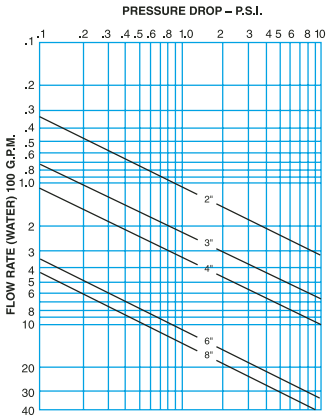
Sizes 2” Thru 8”

Application Limits

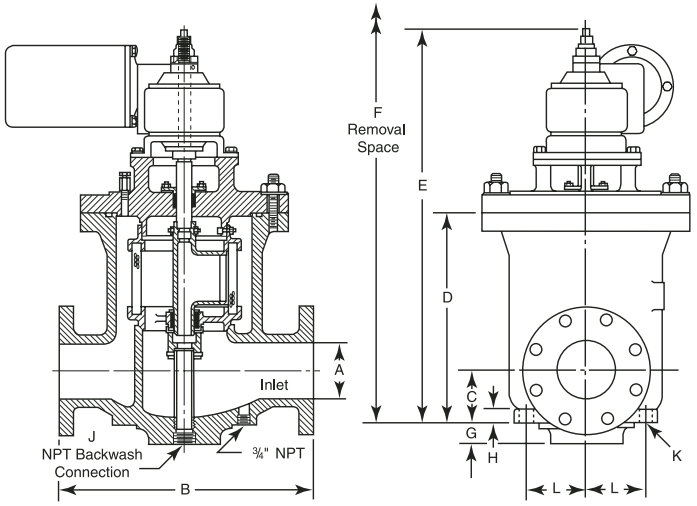
Cast Iron Class 125 Flange (-20° to 150°F) 150 psi
Cast Steel Class 150 Flange (-20° to 100°F) 150 psi
Cast Steel Class 300 Flange (-20° to 150°F) 300 psi
Based on ratings of ANSI and ASME, Section VIII, Div. 1.
Lower pressure ratings at higher temperatures.

Optional Features

- Stainless steel, copper nickel, monel, aluminum bronze and other materials of construction.
- ASME Section VIII, Div. 1. code stamp available.
- Flanged, screwed or socket weld backwash connections (steel unit only).



Pressure drop data indicates results to be expected with clean water, under normal flows, with standard straining media and in clean strainer.



Approximate Dimensions (in) — Approximate Weight (lb)

A	150# B	300# B	C	D	E	F	G	H	J	K	L	Dry	Wet	Cover
2”	17½	18⅛	3⅞	15⅛	28	37	1⅜	1	1	¾	4 3⁄16	285	320	125
3”	17½	18⅛	3⅞	15⅛	28	37	1⅜	1	1	¾	4 3⁄16	285	320	125
4”	17½	18⅛	3⅞	14⅞	28	37	1⅜	1	1	¾	4 3⁄16	290	325	125
6”	28	28⅞	6⅛	22⅝	39	50	1⅞	1¼	1½	1⅛	7½	1,200	1,375	430
8”	26	27	6⅛	22⅝	39	50	1⅞	1¼	1½	1⅛	7½	1,200	1,375	430

Dimensions are for reference only. For installation purposes, request certified drawings

Sizes 10” Thru 20”

Application Limits

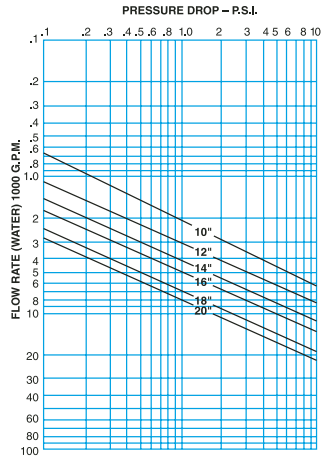
Ductile Iron Class 125 Flange (-20° to 150°F) 150 psi
Cast Steel Class 300 Flange (-20° to 150°F) 300 psi

Application Limit 20” Size

Ductile Iron Class 125 Flange (-20° to 150°F) 150 psi
Based on ratings of ANSI and ASME Section VIII, Div. 1.
Lower pressure ratings at higher temperatures

Optional Features

- Stainless steel, copper nickel, monel, aluminum bronze and other materials of construction.
- ASME Section VIII, Div. 1. code stamp available.
- Flanged, screwed or socket weld backwash connections (steel unit only).



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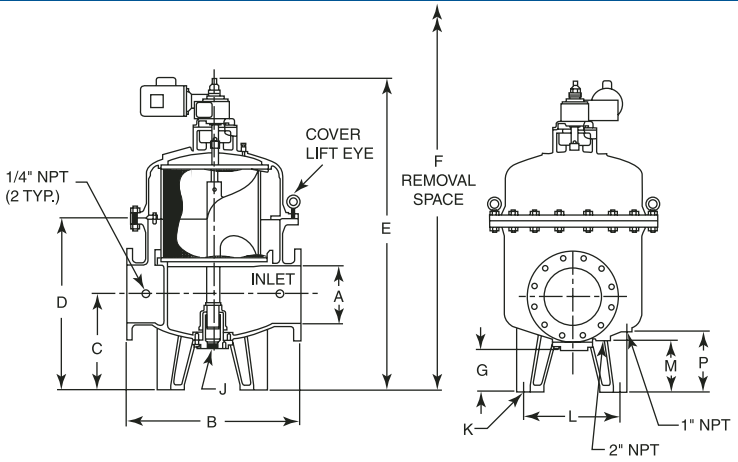


Approximate Dimensions (in) — Approximate Weight (lb)

A	B	C	D	E	F	G	J	K	M	P	L	Dry	Wet	Cover
10”	38¼	19¾	35¾	64¾	90	8 9⁄16	2	⅞	10 11⁄16	12½	24½	1,840	2,615	705
12”	36¼	19¾	35¾	64¾	90	8 9⁄16	2	⅞	10 11⁄16	12½	24½	1,880	2,675	705
14”	44	22 1⁄16	42 5⁄16	76½	112	8 9⁄16	2	⅞	10⅞	13½	29⅝	2,810	4,360	1,050
16”	44	22½	42 5⁄16	76½	112	8 9⁄16	2	⅞	10⅞	13½	29⅝	2,850	4,400	1,050
18”	53	26	52 7⁄16	92¾	135	10¼	3	1⅛	12¾	15⅝	35½	4,325	7,100	1,660
20”	50	26	52 7⁄16	92¾	135	10¼	3	1⅛	12¾	15⅝	35½	4,275	7,050	1,660

Dimensions are for reference only. For installation purposes, request certified drawings

Specific descriptions and construction details illustrated may vary slightly from equipment furnished. We reserve the right to revise or discontinue equipment or design features without notice. We recommend that you review performance and application data with us prior to final design.

LOW-DIFFERENTIAL PRESSURE

The Hayward Model 596LDP, in 6" through 30" sizes has been specifically designed for systems with line pressures less than 20 psi.

Design and Operation

The Model 596LDP configuration is similar to the standard self-cleaning strainer. However, it incorporates an external flushing arm which is attached to the same shaft and motor that drives the regular backwash arm. The two components rotate synchronously.

The external backwash flushing arm directs a high velocity flow of liquid directly onto the back side of the straining element, dislodging the debris, which then flows out the backwash outlet. The action is a "push-pull" effect since the backwash arm is open to atmosphere.

The external backwash fluid should be at a minimum 20 psi greater than the system operating pressure. This backwash fluid can be city water, plant service water or a side stream taken from the pressure side of the strainer line. In remote locations, a small booster pump will do the job.

The automatic control system monitors the operation of the strainer. The cleaning cycle is set to activate on a timed cycle with a differential pressure override to protect against system upset conditions. See modes of operation on page 29 for additional information.

The external backwash inlet valve is opened at the same time as the backwash outlet valve, initiating the backwash cycle. Only a small amount of external backwash fluid is required. This is an extremely effective method of dislodging dirt from the screen element. Continuous flow is maintained at all times.

A Model LDP installed in a piping system

Applications

Irrigation water where low head pressure is commonly encountered.

Fire protections/general service water from ponds and lakes.

Cooling water for commercial buildings on suction side of pumps.

Secondary effluent in treatment plants for spray nozzles and service water.

Intake cooling water for power plants and industrial plants from rivers, bays, etc. where head variations occur.

Features

Quality of Construction

Designed and constructed in general accordance with ANSI and ASME Section VIII, Division 1. Code Stamp is available.

Materials of Construction

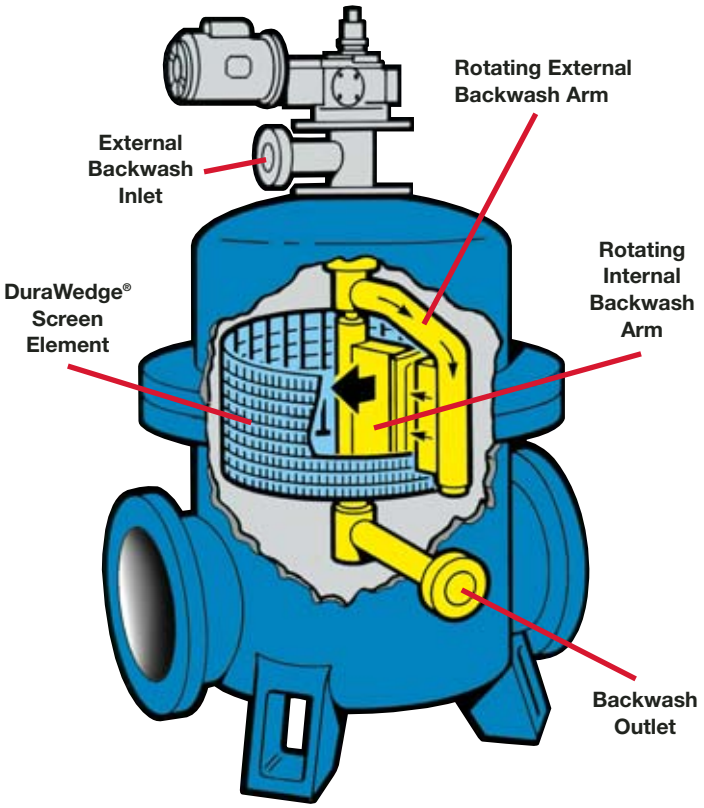
Cast iron in 6" and 8", 10" and larger in fabricated carbon or stainless steel. Flanged connections, ANSI 125# or 150#. Other materials available.

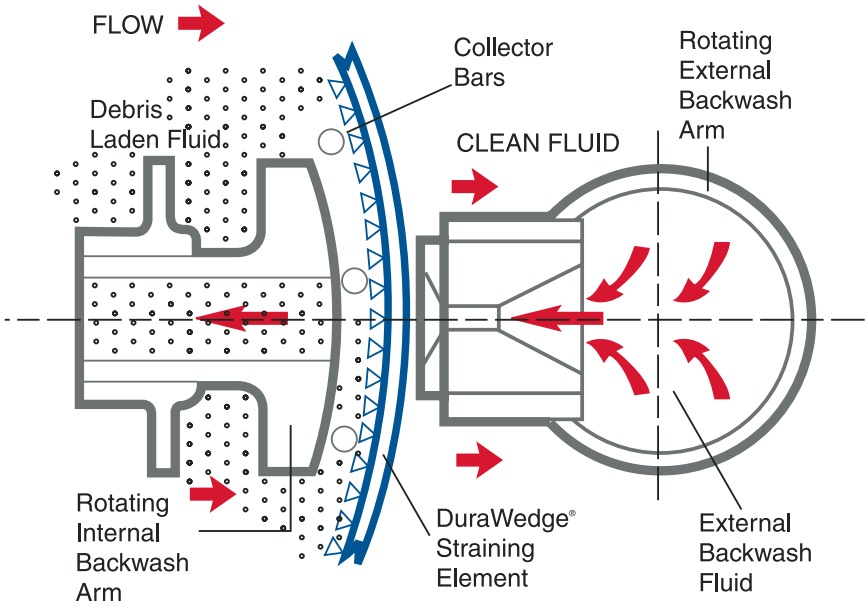
Compact Design

Incorporates unitized modular design feature. Motor, gear reducer, cover and complete internal operating mechanism lift off as a unit for ease of inspection and maintenance. This greatly simplifies maintenance and reduces cost compared to other automatic strainer designs.

Previously, self-cleaning strainers had to be located where line pressures were above 20 psi. Now, with the HAYWARD® Strain-O-Matic 596LDP, they can be utilized with line pressure below 20 psi and can be placed in more convenient locations – even on the suction side of a pump. Thus, pumping equipment is also protected from damage by entrained debris.

Consult Hayward for other low system pressure options.





Top View of External Backwash Flow

High velocity external backwash is directed across the screen. Dirt, fibers, and debris are dislodged and carried into the backwash arm and flushed away through the backwash outlet.

SCREEN ELEMENTS

DuraWedge® Element

DuraWedge® is a non-clogging, rugged stainless steel straining element constructed from vee-shaped profile wire. Available only from Hayward.

Features

•Two point contact straining from the "smooth" side prevents plugging or packing of debris and particles.

•Effective dislodging of dirt, debris and fibers from the element during backwash. This is accomplished by the increased velocity of the reverse flow (during backwash) from the "open side" of the vee.

•Fiber stapling is reduced because of smooth surfaces and the design contour of the profile wire.

•Vertical collector bars form spaces to accumulate debris and dirt, preventing snow plowing of materials by the rotating backwash arm and port shoe.

•No bypass. Elements are sealed.

•Longer service life. All-welded design with circumferential reinforcing bands provides structural integrity.

Convoluted Element

This is a sturdy, economical stainless steel element for general service use. It is ideal in applications where leaves, twigs and large amounts of miscellaneous debris are encountered.
The generous spaces created by the convolutions provide an area for the debris to collect. "Packing" does not occur due to the gradual contoured shape of the convolutions.
During backwashing the debris is easily dislodged and carried away through the backwash arm and out of the strainer.

Features

•Circumferential reinforcing bands for added resistance to pressure and flexing ensures long service life.

•Cartridge design for easy removal and cleaning.

•Convoluted sections are individually isolated by the port shoe during backwash for increased cleaning efficiency.

•No snow plowing. Convoluted profile provides collection spaces for debris.

•Extended area design offered only by Hayward

•No bypass

•Sinterbonded mesh available - A Hayward exclusive.

STANDARD OPENINGS

DuraWedge Element

Model 596 - All Sizes - 1/16, 1/32, 0.015"

Model 2596 - 10" to 16" - 1/8", 1/16", 1/32", 0.015". 0.009"

Model 2596 - 18" to 24" - 3/16", 1/8", 1/16", 1/32", 0.015", 0.009"

STANDARD OPENINGS

Convoluted Perf Element

Model 596 - All Sizes - 1/8", 1/16, 1/32

Model 2596 - 10" to 16" - 1/8", 1/16, 1/32

Model 2596 - 18" to 24" - 5/32", 1/8", 1/16"

Convoluted Mesh Element

Model 596 - All Sizes - 40 mesh (0.015"), 60 mesh (0.009"), 80 mesh (0.007")

Model 2596 - All Sizes - 40 mesh (0.015"), 60 mesh (0.009"), 80 mesh (0.007")

Note:Screen element selection is important. A smaller than required opening will reduce the efficiency of the system. Please contact Hayward for prompt expert assistance to ensure proper element/strainer selection.

SELF-CLEANING STRAINER COMPONENTS

Features:

Quality Construction
HAYWARD® Automatic Self-Cleaning Strainers are designed and constructed in general accordance with ANSI and ASME Section VIIII, Division 1. A Code Stamp is available. Seismic qualification is also available.

idL™ Seal
Hayward's unique idL shaft seal replaces older style packing and prevents troublesome leakage. This special quad seal means that the strainer always stays dry and clean in service with no process media leaking down the sides of the strainer.

Ease of Maintenance
Unitized modular assembly – the motor, gear reducer, cover and complete internal operating mechanism lift off as a unit, making all components easily accessible. This greatly simplifies maintenance and reduces costs.

Low Backwash Fluid Requirements
Due to the efficient hydraulic design of the backwash system.

Material of Construction
Cast 2" through 20" in iron, ductile iron, carbon and stainless steel, Ni-resist, aluminum bronze. Fabricated 6" through 60" in carbon steel, stainless steel, Monel, and copper nickel.

Choice of Screen Elements
To suit the particular service – Dura-Wedge, Perforated or Mesh elements.

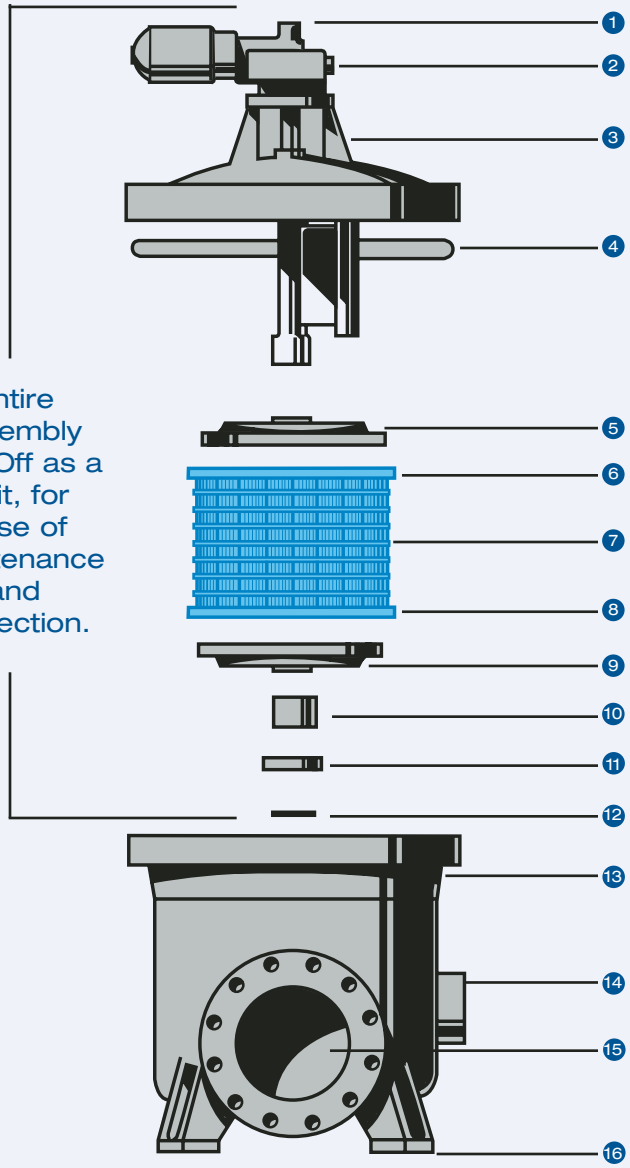
Minimal Power Consumption
1/3 HP drive motor in 2" through 8" Model 596, 1/4 HP in 10" through 16" Model 2596. 1/3 HP in 18" through 24", 1/2 HP in 30", 1 HP in 36" to 42", and 2 HP in 48" through 60".

No Dirty Fluid Bypass
"Sealed End" cartridge screen element seat in close tolerance machined retained rings.

Tight, Simple Cover Seat
O-ring design permits resealing without time-consuming gasket replacements and adjustment.

Manual Operation if Required
Utilizing extended shaft.

Typical Model 596



1. Extended Shaft for Manual Operation
2. Low H.P. Motor / Heavy Duty Gear Reducer
3. idL™ Shaft Seal
4. O-Ring Cover Seal
5. Full-Flow Backwash Arm with Adjustable Port Shoe
6. Upper Seal Retaining Ring
7. Sealed End Cap Ring
8. DuraWedge® Stainless Steel Element
9. Sealed End Cap Ring
10. Lower Seal Retaining Ring
11. Composite Bearing
12. Bearing Collar
13. Retaining Ring
14. Strain-O-Matic® Body, Designed and Constructed in Accordance with ANSI & ASME Sec. VIII
15. Backwash Outlet
16. Inlet with Large Bottom Chamber,Reduces Flow Velocity
17. Mounting Feet for Ease of Installation

APPLICATION CONSIDERATIONS

Straining Elements

Hayward offers three kinds of straining elements: convoluted perforated plates, convoluted sinter-bonded mesh and DuraWedge™.

For coarse straining applications, such as raw water intakes from lakes, ponds and streams, the convoluted perforated elements will perform well and offer the most economical unit pricing.

On other applications, where pre-screening of the fluid has already been performed, but finer filtering of the fluids is desired, then the sinter-bonded mesh element may be selected.

On applications where fibrous materials will be encountered in the fluid being strained, then a DuraWedge® element may help to minimize the impact of the fibers stapling to the screen.

Standard available opening sizes are shown on page 26. The rule of thumb in determining the opening size is to be 1/2 of whatever opening is being protected.

Debris

Cleaning of the straining element is accomplished by utilizing the pressure differential between line pressure and atmosphere. When the backwash valve is opened to atmosphere during the cleaning cycle, a portion of the strained fluid reverses flow back across the section of element being cleaned, lifts off the debris, and ejects the debris out of the strainer.

Sticky or greasy debris are more difficult to backwash and may require longer backwash cycle durations. Sand, dirt and pipe scale should backwash easily. The quantity of debris coming into the strainer can also be a problem. Insure that the volume of the suspended solids does not exceed 200 ppm or 0.02 percent. If the application requires heavier loading than this, consult Hayward.

Backwash Requirements

The quantity of fluid required to clean a straining element is dependent upon the type and quantity of debris. Under normal conditions, approximately 5 percent of the line flow will be used for cleaning of the straining element during the cleaning cycle. The loss of fluid through the backwash can be minimized by adding a manual throttling valve downstream of the automated valve.

Pressure and Temperature

- Model 596 Cast Iron and Model 2596 Ductile Iron are rated at 150 psi @ 150 F.
- Fabricated Units are rated at 150 psi @ 150 F, however other ratings are available, consult Hayward.
- For the Models 596 and 2596 the minimum operating pressure is 20 PSIG.
- For 596LDP Models the minimum operating pressure is 5 -10 PSIG depending on the application.

24" Model 2596 strainer.

CONTROL SYSTEMS

Design and Operation

Hayward® Automatic Control Systems (ACS) are specifically designed to monitor and operate the backwash cleaning system of Hayward Automatic Strainers. They are simple to operate, reliable and easily maintained. The design allows field adjustments to suit the demands of the service conditions, ensuring effective cleaning with a minimum use of backwash fluid.

Three basic systems, ACS-1, ACS-2 and ACS-3 are available.

Optional designs to meet specific requirements with special wiring arrangements, panel boxes (NEMA 7, 9), control valves, and air actuation among others, can be furnished.

ACS-1 Standard Control System Components

This system features a NEMA 4 rated (water and dust tight) panel box complete with adjustable timer, differential pressure override, 10 amp control relay for backwash valve activation, display lights to indicate Power On – Backwash Valve Open – and High Differential Pressure. A selector switch is also included to manually control the backwash valve functions of Off or On-Auto. The panel also has contact terminals for a motor starter and an external alarm connection. The panel requires 110 VAC input and is CSA approved, UL approval is available as an option. The panel has a differential pressure switch and an electrically-actuated ball valve that controls the backwash function. With Model 596LPD for low pressure systems, an electrically-operated butterfly valve is included to control the external source of cleaning water.

ACS-2 Standard Control System Components

This system has all of the features of the ACS-1 and includes a motor starter in addition to the other standard equipment.

ACS-3 Standard Control System Components

This system has all of the features of the ASC-2 system and includes a 460V/120V dual voltage transformer.

Motors

An electric motor and gear box are furnished as part of the strainer. The standard TEFC motor is 120/220V, Single phase 60Hz, or 230/460V Three Phase 60 Hz, at customer option. Other motors are available.

Modes of Operation

By operating the selector switch, the controls can be easily switched to either of two modes: automatic intermittent or continuous backwashing.

The automatic intermittent mode is adjustable by setting the timer in the panel that controls the frequency of backwashing and the “open” time of the backwash valve. The settings will depend on the individual installation. Predicting average times is difficult because conditions vary. Experience will dictate the optimal settings. Field adjustments should be made to suit the application.

The differential pressure switch must also be set. Two PSID above the clean reading is the setting recommended. This switch will compensate for sudden high loadings by overriding the time cycle and initiating backwash should the differential pressure rise above the programmed setting. A secondary delay timer will continue the cleaning for 60 seconds beyond that point. The time delay can be varied from 1 to 150 seconds.

The continuous backwashing mode is positive, efficient and practical where the backwashing fluid can be recycled to its source. It is also desirable, and sometimes necessary, to use this mode when very high solid loadings are encountered.

This mode is initiated by placing the backwash switch on the panel in the “on” position. Manual operation of the system can be controlled with this switch, opening or closing the backwash valve as desired. Returning it to “auto” will restore the intermittent cycling as set.

In both the automatic intermittent and continuous backwashing modes the backwash arm continuously rotates at a low 2 -4 RPM.

Differential Pressure Switch

A diaphragm-type differential pressure switch is a standard component in all Control Systems. It provides protection for the strainer and element, initiating backwash should a high differential pressure occur between timed cleaning intervals.

Backwash Valve

Electrically actuated (115 VAC/60 Hz) ball valves are also standard in the Control Systems. Materials of construction are suitable for water service. Other materials, valve types and pneumatic actuation are optional.

Backwash Valve Sizes

Strainer Size	2”, 3”, 4”	6”, 8”	10 thru 20”	24”, 30”	36”, 42”	48”
Valve Size	1”	1½”	3”	4”	6”	8”

AUTOMATIC STRAINER SIZING

Basic Guidelines

1. Insure that the pipeline flow velocity falls within the standard design range of the strainer.

2. Select the correct screen and opening size, don't 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.

5. Backwash line should discharge to atmosphere in close proximity to the strainer.

Standard Design Parameters

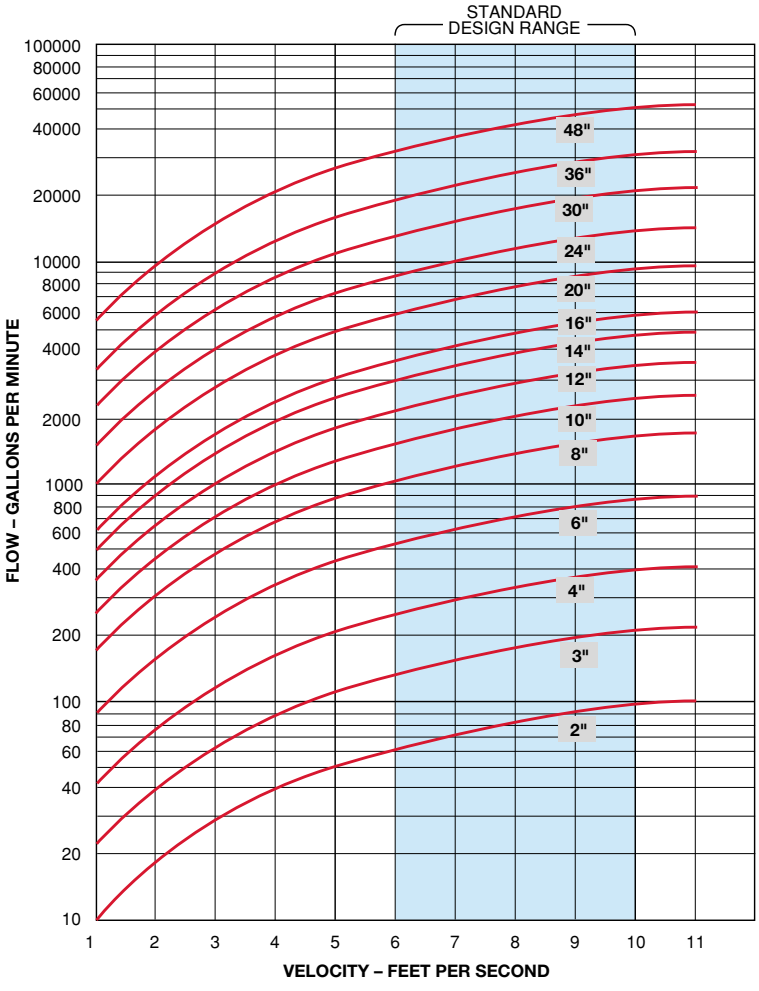
1. Self-cleaning strainers have a design flow range where the unit will best perform its two main functions,straining and self-cleaning.

2. Inlet flow velocity to the strainer should be in the 6 to 10 feet per minute range. There may be applications where the operating flow will fall outside the normal design range. When this occurs, please contact Hayward for recommendations.

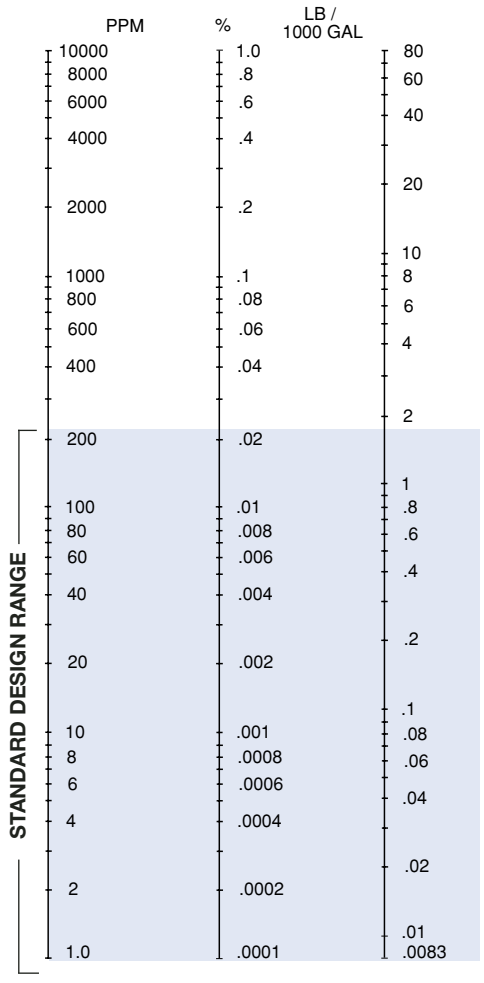
3. Minimum operating pressure is 20 PSI for standard units, 5-10 PSI for LDP units depending on the application.

4. Suspended solids should not exceed 200 PPM or 0.02% of volume. For heavier loadings consult Hayward.

STRAINER SIZING CHART



SUSPENDED SOLIDS SIZING CHART AND CONVERSION TABLE



AUTOMATIC STRAINER SAMPLE SPEC

Design

1. The Automatic self-cleaning Strainer shall be a Hayward Strain-O-Matic® Model 596 or 2596.

2. Strainer Design Parameters:
Strainer Inlet Size _____ in.
Flow Rate_____ GPM
Working Pressure _____ PSI (Min. 20 PSI)
Design Pressure _____ PSI
Design Temperature _____°F
Max. Allowable Pressure Drop _____ PSID
Solids Loading _____ PPM
Design shall be in general accordance with ANSI and ASME Sec. VIII Division 1.

3. For ease of maintenance the strainer shall be designed so the entire operating assembly, motor, gear reducer, cover, backwash arm assembly, bearing housing and element lift from the strainer body as a complete unit.

4. For backwashing efficiency the entire open area of the backwash port opening shall be in close proximity to the full length of the screen section being backwashed. Additionally, the entire backwash arm shall have a full-flow opening throughout the entire passage to the backwash piping. The backwash arm shall not contact or scrape the screen at any point.

Screen Element

1. Media Design parameters (check one):

Type:
___ DuraWedge™ media (vee-shaped profile wire)
___ Convoluted
___ Convoluted Sinterbonded

Opening Size:
Inches ___ , Mesh Equivalent ___ , Microns ___

2. The element shall be a one-piece cartridge design for ease of removal and cleaning.

3. The element shall have stainless steel “cap rings” at both ends to prevent bypass of dirty fluid. Reinforcing circumferential bands shall also be provided for structural strength.

Materials of Construction

The strainer body shall be (iron, carbon steel, stainless steel, bronze) and shall be appropriate for the service conditions.

All components shall be of ASTM designed materials suitable for the service conditions and consistent with good engineering practice.

Control System

The system shall be capable of automatically controlling and monitoring the strainer's operation.

The system shall have the following components.

The motor shall be a low HP TEFC single-phase 110/220V or three-phase 230/460V with a gear reducer to drive the backwash shaft.

A NEMA 4 control panel shall be furnished with three indicator lights (Power On, Backwash valve Open and High differential Pressure); a 3-position selector switch (Off-On-Auto) to control the backwashing cycle; and contacts for external alarm. (Motor starter and/or transformer are optional as specified).

A diaphragm-type differential pressure switch is to be provided that shall be capable of initiating backwashing at a set differential pressure.

An electrically actuated ball valve shall be provided to control the backwash flow.

Low Differential Pressure Model

For line pressures below 20 PSI or for suction service, specify Strain-O-Matic Strainer Model 596LDP (Low Differential Pressure) design.

AUTOMATIC STRAINER APPLICATION WORKSHEET

Self-Cleaning Strainers

GENERAL

SERVICE APPLICATION: _____

MARKET CODE: (CHECK ONE)

❑ INDUSTRIAL ❑ MUNICIPAL ❑ POWER ❑ PETROLEUM

LIQUID TO BE STRAINED: _____

SPECIFIC GRAVITY _____, VISCOSITY (CPS/SSU) _____, TEMP. (°F) _____

FLOW CONDITIONS

FLOW (GPM): _____, MAXIMUM _____, MINIMUM _____, VEL (FT./SEC) _____

OPERATING PRESSURE (PSI): _____, NORMAL _____, DESIGN _____, MINIMUM _____

OPERATING TEMPERATURE (°F): _____, NORMAL _____, DESIGN _____, MINIMUM _____

MAX. ALLOWABLE PRESS. DROP (PSI) CLEAN _____, DIRTY _____

CONTAMINANT

SOLIDS TO BE REMOVED: _____, ❑ HARD ❑ SOFT ❑ STICKY ❑ FIBROUS

SOLIDS CONCENTRATION: _____PPM, _____%WT, _____% VOLUME

PARTICLE SIZE: _____ MICRONS OR _____ INCHES

ELEMENT: ❑ PERFORATED ❑ MESH ❑ DURAWEDGE® ELEMENT

STRAINER CONSTRUCTION

MODEL 2596: ❑ CAST DUCTILE ❑ FAB STEEL ❑ FAB STAINLESS

MODEL 596: ❑ CAST IRON ❑ CAST STEEL ❑ CAST STAINLESS

❑ CAST BRONZE ❑ FAB STEEL ❑ FAB STAINLESS.

PIPELINE SIZE (INCHES):_____

END CONNECTIONS: ❑ FLANGED ❑ 125# ❑ 150# ❑ OTHER _____

MOTOR

FRAME: ❑ TEFC ❑ TENV ❑ OTHER _____

POWER SUPPLY: ❑ 120V, 1 PH, 60 HZ ❑ 230/460 V, 3 PH, 60 HZ, ❑ OTHER _____

SPECIAL COMMENTS: _____

CONTROL PACKAGE

TYPE: ❑ ACS-1 ❑ ACS-2 ❑ ACS-3

SPECIAL REQUIREMENTS OR OPTIONS: _____

SUBMITTALS (CHECK IF REQUIRED)

❑ APPROVAL PRINTS ❑ CERTIFIED PRINTS, ❑ CHEMICAL/PHYSICAL CERTIFICATIONS

❑ HYDRO TEST REPORTS, ❑ OTHER_____

OTHER SPECIFICATIONS/REQUIREMENTS: _____

TECHNICAL DATA

Flow Conversion Factors

M^3/hr	=	3.671 I.G.M.
I.G.P.M.	=	41.14 Barrels/Day
T.P.H.	=	3.74 I.G.M.
I.G.P.M.	=	1.2 U.S. G.P.M.
I.G.P.M.	=	4.54 Liters/Min
LITER/MIN	=	0.22 I.G.P.M.
U.S. G.P.M.	=	0.833 I.G.P.M.
Barrel	=	35 Imp. Gallons
Barrel	=	42 U.S.Gallons

Flow Velocity Conversion Factors

$$\text{Velocity in Ft/Sec} = \frac{\text{GPM X } 0.4085}{\text{ID}^2 \text{ in Inches}}$$

Volume Conversion Factors

To Obtain: Multiply By:	U.S. Gallon	Imperial Gallon	U.S. Pint	U.S.Pound Water	U.S. Cubic Foot	U.S. Cubic Inch	Liter	Cubic Meter
U.S. Gallon	1	0.833	8.0	8.337	0.13368	231.0	3.78533	0.003785
Imperial Gallon	1.2009	1	9.60752	10.0	0.16054	277.42	4.54596	0.004546
U.S. Pint	0.125	0.1041	1	1.042	0.01671	28.875	0.473168	0.000473
U.S. Pound Water	0.11995	0.1	0.9596	1	0.016035	27.708	0.45405	0.00454
U.S. Cubic Foot	7.48052	6.22888	59.8442	62.365	1	1728.0	28.31702	0.028317
U.S. Cubic Inch	0.004329	0.00361	0.034632	0.03609	0.0005787	1	0.016387	0.0000164
Liter	0.2641779	0.2199756	2.113423	2.202	0.0353154	61.02509	1	0.001000
Cubic Meter	264.170	219.969	2113.34	2202	35.31446	61023.38	999.972	1

To convert from one unit to another, locate the starting unit in the left hand column. Multiply by the factor shown horizontally to the right under the desired unit.

Pressure Conversion Factors

To Obtain: Multiply By:	Pound Sq. In.	Pound Sq. Ft.	Atmosphere	Kilogram Sq. Cm.	Inch Water	Foot Water	Inch Mercury	mm Mercury	Bar
Pounds/Sq. In	1	144.0	0.068046	0.070307	27.7276	2.3106	2.0360	51.7150	0.06895
Pounds/Sq. Ft.	0.0069545	1	0.000473	0.000488	0.1926	0.01605	0.014139	0.35913	0.000479
Atmosphere	14.696	2116.22	1	1.0332	407.484	33.9570	29.921	760.0	1.01325
Kilogram/Sq. Cm.	14.2233	2048.16	0.96784	1	394.27	32.864	28.959	735.558	0.9807
Inch Water	0.03607	5.194	0.002454	0.00254	1	0.08333	0.0734	1.865	0.00249
Foot Water	0.43278	62.3205	0.029449	0.03043	12.0	1	0.8811	22.381	0.02984
Inch Mercury	0.49115	70.726	0.033421	0.03453	13.617	1.1349	1	25.40	0.03386
mm Mercury	0.019337	2.7845	0.0013158	0.0013595	0.5361	0.04468	0.03937	1	0.001333
Bar	14.5038	2088.55	0.98692	1.0197	33.51	402.1	29.53	750.0	1

To convert from one unit to another, locate the starting unit in the left hand column. Multiply by the factor shown horizontally to the right under the desired unit.

Viscosity Equivalents

SSU (Saybolt seconds Universal)	Centipoise	Engler Degrees 20°C	Redwood Standard
30	1	–	–
50	5	2	44
100	20	3.5	88
200	40	16	175
300	65	30	263
400	85	43	350
500	105	57	440
600	130	72	525
700	150	90	615
800	175	115	700
900	195	132	790
1000	210	150	880
2000	425	350	1750
3000	625	540	2600
4000	860	740	3500
5000	1050	930	4550
6000	1300	1120	5250
7000	1500	1320	6150
8000	1700	1510	7300
9000	1920	–	–
10000	2150	–	–

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

HAYWARD®

manufacturer of

LOEFFLER® FILTRATION

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