A History of Innovation

In 1923, HAYWARD® began manufacturing specialty metal valves and industrial flow control products. Since then, HAYWARD has evolved through strategic acquisitions and technological advances.

Today, HAYWARD Filtration is a truly global organization manufacturing market-leading brands synonymous with performance, quality and innovation.

The HAYWARD Filtration business comprises 3 complimentary technologies; Gas–Liquid Separators, Pipeline Strainers and Bag and Cartridge liquid filtration systems. With 7 global manufacturing facilities, 26 wholly owned subsidiaries and independent distributor network, HAYWARD Filtration actively serves Customers in over 45 countries.

Building on more than 75 years of Strainer filter expertise, in 1996 HAYWARD diversified into Bag and Cartridge liquid filtration by acquiring American Felt and Filter’s Filtration division. In 1998, HAYWARD established itself as a key supplier outside of the USA by acquiring Germany’s LOEFFLER® Filter-Technik. In 1999, the acquisition of GAF® Filter Systems established HAYWARD as the world’s premier supplier of liquid bag filtration products.

To understand more about HAYWARD® Filtration the company, its Products, Applications and Customer Service, we encourage you to visit us at:

www.haywardfiltration.com

For the latest up-to-date information on all HAYWARD Filtration products visit our web site at www.haywardfiltration.com.

See a slide show/video of our new multibag filter housing... the MAXILINE SE. You’ll be able to clearly see just how quick and easy it is to open and close the cover of even large filter housings.

Download AutoCad files right from the site. No more bothersome registration is necessary. Just go to the site, find what you want, and download it.

Find application information about properly installing a plastic POLYLINE filter into a metal piping system.

Download complete Dimensional Drawings and Installation and Operation Manuals in an easy to use PDF format.

Read application reports and case histories in the on site Filtration Library.

There’s complete information about our Pipeline Strainers and Gas/Liquid Separators on the site along with Bag Filtration information.

Get free measurement converter software when you visit www.haywardindustrial.com. The free download puts a handy tool on your desktop that converts hundreds of different measures... time, volume, speed, flow and many more. There’s even a provision for you to create custom conversions. Visit us today to learn more about Hayward Filtration. The converter is our way of saying “thanks” for stopping by.

And Don’t Forget
To Add
www.haywardfiltration.com
To Your Browser’s “Favorites” List For Easy Access In The Future.
QUALIFICATIONS

This brochure details what is now regarded as the most comprehensive, innovative line of Filter Housings and Accessories available on the market. Over recent years HAYWARD® Filtration has introduced new concepts to Filter Housing design encompassing the revolutionary QIC-LOCK™ quick opening cover-lid mechanism (see page 12/13) greatly reducing change-out times and a tangential outlet which lowers housing height making it easier to access the filter bags.

Probably HAYWARD Filtration’s greatest achievement is the development and implementation of a single global product line manufactured worldwide in multiple locations to a common design in compliance with local code requirements:

- In Europe, Asia-Pacific and South America HAYWARD Filtration is fully qualified to provide pressure housings of Category I-IV under the Pressure Equipment Directive (PED) (97/23/EC) which came into effect May 29, 2002. HAYWARD manufactures housings to Design Code AD 2000-Merkblätter, the Notified body is TÜV Rheinland-Berlin Brandenburg, Conformity Assessment up to Module H1 and G.

- In North America, South America and Asia, HAYWARD Filtration is fully qualified to provide the same range of housings according to ASME. Canadian registration numbers, CRN, are also available.

In every location, HAYWARD Filtration Sales and Technical Support specialists can review the needs of an installation and recommend the right combination of hazard category and housing design to meet any need.
QIC-LOCK™ Concept
Multi-Bag housing with Open and Close cycles of less than 30 seconds!

QIC-LOCK™ MAXILINE™ VMBF SE
The user-friendly, cost-effective bag filter housing for high volume applications and processes demanding frequent bag change-out. Ideal for batch process runs and safety filtration.

MAXILINE™ MBF HE
The user-friendly, perfect sealing bag filter housing for safe filtration and minimized product loss. Ideal for batch processes which demand the highest quality of filtration.

MAXILINE™ MBF HD
The user-friendly, perfect sealing bag filter housing for safe filtration and minimized product loss. Features an economic davit cover design.

Custom Designed Housings
HAYWARD® bag filter housing are designed to accommodate a wide range of possible standard modifications.

TOPLINE™ Filter Housings
The best filter housing for the most demanding applications.

SIDELINE™ Filter Housings
Mid-priced filter housings for most applications.
### TECHNICAL DATA

#### SERIES Type*

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#### Connection Size

- PO-Polypropylene
- CP-CPVC
- 04-short 4"
- 02-short 7"
- R-Tri-Clamp
- S-Socket

### APPLICATIONS

- Automotive
- Chemical Industry
- Electronics
- Semiconduction
- Paint and Lacquer
- Geothermal Industry
- Food and Beverage
- Pharmaceuticals
- Health Care
- Environmental

### VOLUME CONVERSION FACTORS

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<th>U.S. Gallon</th>
<th>U.S. Pint</th>
<th>U.S. Pound Water</th>
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<th>U.S. Cubic Inch</th>
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</table>

### PRESSURE CONVERSION FACTORS

- Pounds/Sq. In
- Atmosphere
- Kilogram/Sq. Cm
- Inch Water
- Inch Mercury
- Bar

### Flow Equivalents

- Mv = 3.71 I.G.M.
- I.D.F.G.M. = 4.14 Barrel/Min
- T.D.G.M. = 3.76 I.G.M.
- I.D.F.G.M. = 1.2 U.S. G.P.M.
- I.G.M. = 4.54 Liter/Min
- LITD/MM = 0.22 I.G.M.
- U.S. G.P.M. = 3.83 I.G.P.M.
- Barrel = 35 I_gp.

### Mv = 3.71

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### Flow Conversion Factors

- To Obtain: Multiply By
- Multiples

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### Viscosity Equivalents

- Mv = 3.71 I.G.M.
- I.D.F.G.M. = 4.14 Barrel/Min
- T.D.G.M. = 3.76 I.G.M.
- I.D.F.G.M. = 1.2 U.S. G.P.M.
- I.G.M. = 4.54 Liter/Min
- LITD/MM = 0.22 I.G.M.
- U.S. G.P.M. = 3.83 I.G.P.M.
- Barrel = 35 I_gp.

### Volumetric Reading

- To Obtain: Multiply By
- Gallon | Pint | Pound Water | Cubic Foot | Cubic Inch |
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## APPLICATIONS

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<th>Fats and Oils</th>
<th>Catalyst, Activated Carbon</th>
<th>Acids, Bases</th>
<th>Petrochemicals</th>
<th>Water, Waste Water</th>
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<th>Metal Cleaning</th>
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<th>Food and Beverage</th>
<th>Paint and Lacquer</th>
<th>Water Treatment</th>
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### Industries
- **Automotive**
- **Chemical Industry**
- **Electronics Semiconductor**
- **Food and Beverage**
DUOLINE™ / MODULINE™ / TOPLINE™
Dual Filter Housings
Discover the flexibility of using multiple housings together as part of a system.

POLYLINE™
Filter Housings
All-plastic, rugged PVC, CPVC, PPL or PVDF construction for superior corrosion resistance.

FLOWLINE™
Filter Housings
Versatile, heavy-duty but cost-effective filter housings.

ECOLINE™
Filter Housings
Light-weight, economical filter housings.

HAYWARD®
Filter Housing Accessories
Original HAYWARD Accessories, Consumables and Spare Parts for safety and reliability.

Pipeline Strainers & Gas Liquid Separators
Overview of the entire HAYWARD Strainer line and HAYWARD Wright-Austin separator line.
What’s Behind Every HAYWARD Precision Filter Bag

A quick look at what makes a HAYWARD high performance filter bag and the technology behind it.

PROGAF™ Filter Bags

A revolution in filter bags. PROGAF™ combines a high-efficiency media with a high capacity pre-filter for effective particulate removal down to the submicron level.

ACCUGAF™ Filter Bags

Highly efficient filter bags that have an extremely high particle retention efficiency. Applications that require this high filtration efficiency can now take advantage of bag filtration with HAYWARD’s ACCUGAF™.

LOFCLEAR™ Filter Bags

Highly efficient filter bags with a special multi-layer construction that results in a better than nominal efficiency in demanding applications.

DURAGAF™ Filter Bags

Features increased media thickness with finer fibers for high pore volume. Reduced time between bag changings improves operating efficiencies and reduces operating costs. Discover how DURAGAF™ can work better in your application.
CLEARGAF™ Filter Bags
For food, beverage and pharmaceutical applications, most HAYWARD filter bags can be manufactured, packaged and stored to meet EEC and FDA requirements.

BANDSEAL™
Tie-on filter bags for filtration without a vessel.

SENTINEL®
All-welded construction bags for higher filtration efficiency. Patented ring seal for worry-free sealing-assurance.

SNAP-RING®
Sewn construction filter bag for less demanding applications.

HAYFLOW™
HAYWARD’s revolutionary new filter element.
Typical Applications for HAYWARD High Performance Filter Bags

Auto-motive
Filtration of pretreatment bath, filtration of E-Coat, topcoat and clearcoat, primer, paint ring line filters, parts cleaning fluids, drawing compounds, lubricants, metal working fluids and pump intake filters.

Chemi-cal
Catalyst recovery, removal of pipe scale, polishing of aqueous process fluids, alkalis, acids and solvents, filtration of emulsions and dispersions, gel removal from resins. Activated carbon or catalyst removal in the fine chemicals industry is a typical example of a demanding application in chemical processing. HAYWARD Filter Bags meet these application requirements for high filtration efficiency coupled with long service life and reliability.

Elec-troni cs
Wafer and chip processing, electronic etching baths, photo-chemical polishing and high-purity water filtration and prefiltration of various membrane filtration processes to improve their cost effectiveness. HAYWARD Filter Bags demonstrate the required purity, efficiency and consistent performance.

Food and Beverage
Polishing filtration of wine, spirits and beer, removal of particles from edible oils, removal of carbon black from cellulose, slime removal in gelatins, liquid sugar, thick juice, corn syrup polishing, starch processing, milk processing and soft drinks. Many HAYWARD Filter Bags conform to FDA and even EEC food processing standards and can meet the unique and varied demands of these applications.

Metal Working
Filtration of hydraulic oil, pretreatment system filtration, precious metal recovery, metal working fluids, and drawing compounds. Parts cleaning machines use our filter bags for minimizing residual dirt on parts.
Petrochemicals
Filtration of lube oils, fuel additives, enhanced oil recovery, filtration of amine solutions, filtration of glycol fluids, gas purification processes, distillation and cracking processes, amine washers, off-shore filter stations, oil drilling and injection fluids.

Paint and Lacquer
Removal of agglomerates, removal of paint coagulates, solvent filtration, removal of storage contaminants, filling lines, and paint mixing lines, monomer purification.

Pharmaceutical
Recovery of expensive active ingredients, catalyst recovery, active carbon purification and removal, filtration of gelatins, hormones, vitamin extracts, polishing of herbal mixtures, protein removal from plasma, filtration of saline solutions.

Resins, Plastics, Inks and Coatings
Oil and polymer filtration, dispersions, polymerization batches, resins for can coatings, plastics compounding, printing ink, plastics processing, paper coatings, high purity ink-jet fluid filtration.

Water Treatment
Well water filtration, water treatment plants, silt removal, pipe scale removal, sand and algae removal from sea water, ion exchange resin recovery, calcium deposit removal, filtration of chemicals used for water treatment, dust removal from cooling tower installations. Surface water filtration is an area traditionally dominated by cartridge filtration. Now, the high efficiency and long life of HAYWARD High Performance Filter Bags are a cost-effective alternative to expensive cartridges.
The revolutionary QIC-LOCK™ opening mechanism answers all the demands of Bag Filtration users working in an environment where productivity and safety are the key priorities. Years of field-based experience on earlier designs such as the V-clamp “toggle” closure followed by the “ratchet” system have all proven the requirement for benefits of rapid opening mechanisms.

- QIC-LOCK is safe to use, an interlock prevents opening until the housing is entirely vented.
- QIC-LOCK is simple and fast to operate, standing in 1 position, the operator can rotate the hand-wheel and open the cover, there is no requirement to have full movement and access around the housing or the use of any tools as with conventional bolted closures.
- QIC-LOCK has a rugged design, precision machining assures long-life and repeatable operation, and a special coating protects the spindle surface from wear and corrosion.
  
  The design is approved for all pressure housing design codes.

QIC-LOCK doesn’t just make life easier for operators; there are significant cost benefits to be realized with greatly reduced down times and lower maintenance costs.
1. Filter element change necessary, opening the safety interlock ensures simultaneous pressure relief.

2. Rotation of the spindle using a hand-wheel opens the V-clamp into the end position.

3. Opening the cover aided by spring assisted mechanism.

4. Filter element change.

5. Closing of the cover.

6. Closing of the V-clamp by rotation of the spindle.

7. Closing of the safety interlock, housing is ready to go on-line!
QIC-LOCK™ MAXILINE™ VMBF SE

The user friendly, cost effective bag filter housing for high volume applications and processes demanding frequent bag change-out. Ideal for batch process runs and high dirt load applications.

- QIC-LOCK rapid opening mechanism ensures simple, operator friendly and safe operation with minimal downtime to increase productivity and decrease running costs.
- Unique 3-point hold down or bayonet fittings ensure high quality of seal between each filter bag and housing body. Special tool (supplied) ensures simple effective operation.
- A counter-balanced spring assisted cover-lifting mechanism balances the cover perfectly giving it a weightless feel. Opening and closing of the cover with the "little finger" is a reality.
- Positive O-ring sealing offers easy and safe operation.
- Side inlet and bottom outlet provides easy and full drainage, tangential outlet option available to reduce housing height.
- Available in carbon steel or Type 316 stainless steel for high corrosion resistance.
- Housing volume is optimized to minimize product loss.
- 6 standard sizes with 4 through to 24 bag housings available (size 02).

These value added features:

QIC-LOCK spindle mechanism
Automatic safety interlock for venting housing
Low profile design with tangential inlet/outlet.
Spring assisted cover lifter

Give these benefits:

Operator friendly, simple, fast bag change-out. Idea for processes requiring frequent bag changes such as batch processes.
Cover cannot be opened if housing is under pressure.
Reduces housing height to make bag changing easier. No need for ladders, stools or catwalks.
Quick, easy opening of even the largest size covers by a single person.

See page 5 for dimensions.
MAXILINE™ MBF HE

The user friendly, cost effective bag filter housing for high volume, multiple applications and processes.

• The bag filter housing is designed with a proven swing eye-bolt or segment clamp closure mechanism.
• Unique 3-point hold down or bayonet fittings ensure high quality of seal between each filter bag and housing body. Special tool (supplied) ensures simple, effective operation.
• A counter-balanced spring assisted cover-lifter balances the cover perfectly giving it a weightless feel. Opening and closing of the cover with the “little finger” is a reality.
• Positive O-ring sealing offers easy and safe operation.
• Side inlet and bottom outlet provides easy and full drainage, tangential outlet option available to reduce housing height.
• Available in carbon steel or Type 316 stainless steel for high corrosion resistance.
• Housing volume is optimized to minimize product loss.
• 6 standard sizes with 4 through to 24 bag housings available (size 02).

These value added features:  Give these benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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<tr>
<td>Low profile design with tangential</td>
<td>Reduces housing height to make bag changing easier. No need for ladders, stools or catwalks.</td>
</tr>
<tr>
<td>inlet/outlet</td>
<td></td>
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<tr>
<td>Positive, 3-point bag hold downs</td>
<td>Individual, bag sealing for by-pass free filtration.</td>
</tr>
<tr>
<td>Spring assisted cover lifter</td>
<td>Quick, easy opening and closing of even the largest size covers.</td>
</tr>
<tr>
<td>Eye-bolt cover closure</td>
<td>Rugged, proven design, easy to use.</td>
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See page 5 for dimensions.
MAXILINE™ MBF HD

The MAXILINE HD multi-bag filter housing features a cost effective, handwheel operated, davit cover. Loosen the swing bolts, turn the davit handwheel and swing the cover aside.

- Standard ASME “U” Code Stamp.
- Tapered, electro-polished stainless steel perforated baskets.
- Unique 3-point hold-down or bayonet fittings ensure high quality of seal between each filter bag and housing body. A special tool (supplied) ensures simple, effective operation.
- Rugged, simple handwheel-operated davit cover makes the HD perfect for cost sensitive applications.
- Hydraulic-assist davit cover is available as an option.
- Positive O-ring sealing provides easy, reliable operation.
- Available in carbon steel and Type 316 stainless steel for high corrosion resistance.
- 7 standard sizes with 3 through to 24 bag housings are available for size 02 filter bags.

These value added features:
- Hand wheel operated davit cover
- Positive bag hold downs
- Up to 24 bags per housing
- Positive O ring seal

Give these benefits
- Rugged, reliable and very cost effective.
- Perfect bag to housing sealing for no by-pass
- Can handle very high flow rate / high dirt load applications
- No external leakage

See page 5 for dimensions.
Custom Designed Housings

HAYWARD® bag filter housing are designed to accommodate a wide range of possible standard modifications.

Material of construction optimised for Chemical and Temperature compatibility:

- **Housing**: Carbon steel, Stainless steel in various grades, Hastelloy, Polypropylene and PVDF
- **Coatings**: PTFE/FEP, Polyurethane and Epoxy
- **Sealings**: A wide range of Gaskets and O-rings are available

Process operating conditions:

- **Pressure/Temperature**: Depending on housing size, up to 1000 psi/750°F, Heating jackets with 200 psi/750°F
- **Flow rates**: Up to 4400 gpm

Lid Closure/Lifting mechanisms:

- **Closure**: QIC-LOCK spindle, T-bolt, Swing eye-bolts, Hex-nuts, Stud-bolts,
- **Lifting**: Spring, counterbalanced, hydraulic and hand wheel Davit

Surface Finish/Connections:

- **Surface**: Glass-beaded, Sand Blasted-painted, Electro-polished, Hand-polished, Acid-pickled, Coated (see above)
- **Connections**: Standardised flanges and threads (DIN, NPT, ANSI, BSP), Sanitary (Tri-clamp, Milk pipe, IDF, RJT and other sterile types)

Approvals and Design Codes:

- **ISO 9001 : 2000 Certification**
- **PED (Pressure Equipment Directive 97/23/EC)**
- **AD 2000-Merkblätter, EN 13445, Stoomwezen, CODAP, BS5500, ASME VIII Div 1**
- **Notified body: TÜV Rheinland-Berlin Brandenburg CE 0035**
- **Modules: Up to module H1 and G**
- **SVTI and UDT**
- **ASME (American Society of Mechanical Engineers)**
  - **U stamp and UM stamp, CRN (Canadian Registration Number)**

Skid mounting and mobiles:

- **Skids**: In-house engineering capability to couple multiple housings and or integrated control systems
- **Mobiles**: Application specific mobile units e.g. Wine Pallet
TOPLINE™ Filter Housings
The best filter housing for the most demanding applications.

- TOPLINE is the finest single bag filter housing available. From its high-performance design to its heavy duty investment-cast components, everything about TOPLINE is simply the best.
- TOPLINE’s side inlet, flow through the top design results in a minimum headroom of unfiltered liquid for easy bag change-out as well as providing optimum sealing of the filter bag.
- For filter bags sizes 01 and 02.
- Available in carbon steel or Type 316 stainless steel construction for high corrosion resistance
- A smooth, bead-blasted finish, coupled with TOPLINE’s minimum 2-weld design, makes it easy to completely clean the interior of the housing.
- All TOPLINE housings come with HAYWARD’s exclusive Five Year Warranty, and the ASME code UM stamp.
- TOPLINE... for applications too demanding for ordinary bag filters.

These value added features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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<tbody>
<tr>
<td>Top inlet with liquid flow through the cover.</td>
<td>Reduced headroom for unfiltered liquid makes bag change-out quick and easy.</td>
</tr>
<tr>
<td>Cover seals directly onto the filter bag</td>
<td>Perfect sealing for the finest micron by-pass free filtration applications.</td>
</tr>
<tr>
<td>Five year warranty</td>
<td>Years of trouble and maintenance free service.</td>
</tr>
<tr>
<td>Adjustable mounting legs</td>
<td>Easier installation</td>
</tr>
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</table>

See page 5 for dimensions.
SIDELINE™ Filter Housings
Mid-priced filter housings for most applications.

- A SIDELINE housing from HAYWARD is a solid, investment-cast filter in the medium cost range.
- SIDELINE offers a standard eye-bolt closure and a choice of 2˝ or 3˝ ANSI flanged connections as standard.
- For filter bags sizes 01, 02, 03 and 04.
- SIDELINE’s type 316 stainless steel construction means superior corrosion resistance and consistent performance, year after year. A smooth, bead-blasted finish, coupled with SIDELINE’s minimum 2-weld design, makes it easy to completely clean the interior of the housing.
- All SIDELINE housings come with HAYWARD’s exclusive Five Year Warranty and the ASME code UM stamp.
- SIDELINE... for all heavy duty industrial applications.

These value added features:

<table>
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<tbody>
<tr>
<td>Side inlet with evacuation cover</td>
<td>Less messy bag changing, no spillage of unfiltered liquid.</td>
</tr>
<tr>
<td>Cover opening direction can be changed in the field</td>
<td>Easily adapts to different piping layouts. Accommodates walls, posts or other obstructions.</td>
</tr>
<tr>
<td>Compression bag hold down</td>
<td>360 degree sealing of the filter bag to the housing.</td>
</tr>
<tr>
<td>Integral cover handle</td>
<td>Ergonomical and easy to open</td>
</tr>
</tbody>
</table>

See page 5 for dimensions.
**MODULINE™ Filter Housings**

Double or modular multibag unit for larger flow rates.

The MODULINE filter housings are multibag units assembled from two or more standard SIDELINE (MSBF) or TOPLINE (MTBF) housings using standard elbows, manifolds or T-Pipe modules. The MODULINE filter concept offers greater flexibility, capacity can be easily increased by adding further modules. MODULINE housings are fabricated to customer specifications.

See page 5 for dimensions.

**DUOLINE™ Filter Housings**

Duplex units for continuous filtration processes.

The DUOLINE bag filter system consists of two bag filter housings (SIDELINE or TOPLINE) fitted together at the inlet and outlet by either a butterfly or ball valve assembly. Valve assemblies are connected together by a center post handle assembly in order to guarantee a synchronised change from filter A to filter B. A quick turn of the handle diverts the flow from one filter housing to the other. The filtration process runs continuously during bag change-outs.

See page 5 for dimensions.

**TOPLINE™ Dual Filter Housings**

Compact 2-bag unit with single cover-lid.

The TOPLINE TBF-02 filter housing combines the advantages of the TOPLINE series with a compact 2-bag design. Features a single cover-lid, eye-bolt closure and standard adjustable leg assembly.

See page 5 for dimensions.
POLYLINE™ Filter Housings

Rugged, all plastic housings with a choice of PVC, CPVC, PPL or PVDF construction to meet the needs of all ultra-pure or corrosive applications.

- POLYLINE filter housings have no metal components to rust, corrode or contaminate the process media. Housings are available for size 01 or 02 filter bags (PVDF 02 only).

- With a POLYLINE housing you get extra features at no extra cost such as a vent/bleed valve installed on the housing cover and an integral mounting flange for rock solid installation without the need for support legs. The two bottom pipe connections are interchangeable as outlet or drain, allowing easy modification to in-line or loop piping arrangements to accommodate any installation design.

- The hand removable, no tools required, spin off cover makes filter bag changing quick and easy. Just a few turns of the cover using the built in handle opens and closes the housing with little effort.

- For applications that require continuous flow, duplex models are available. Here, the flow never has to be shut down for bag change-out. For contamination sensitive or severely corrosive filtration applications, POLYLINE is your best choice.

These value added features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>All plastic construction with smooth interior surfaces.</td>
<td>Easy to clean. Will never rust, corrode or contaminate the process media.</td>
</tr>
<tr>
<td>Hand removable spin off cover.</td>
<td>Fast bag change out, no tools needed to remove cover</td>
</tr>
<tr>
<td>Two outlets</td>
<td>Allows either in-line or loop piping connections with other outlet used as a drain.</td>
</tr>
<tr>
<td>Duplex model available</td>
<td>Used in applications requiring continuous flow.</td>
</tr>
</tbody>
</table>

See page 5 for dimensions.
FLOWLINE™ Filter Housings
Versatile, heavy-duty cost-effective filter housings.

- A FLOWLINE housing from HAYWARD® is the best choice for industrial, commercial and OEM applications that do not require a code stamp. The standard design is available with threaded or flanged connections.
- FLOWLINE's cost-effective design incorporates all of the features heavy duty applications demand but in a light-weight construction.
- FLOWLINE's special design uses a minimum number of welds for a smooth, easy to clean interior surface.
- For filter bags sizes 01 and 02.
- Available in carbon steel and Type 316 stainless steel for high corrosion resistance. A smooth, bead-blasted finish makes it easy to completely clean the interior of the housing.

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- FLOWLINE’s special design uses a minimum number of welds for a smooth, easy to clean interior surface.
- For filter bags sizes 01 and 02.
- Available in carbon steel and Type 316 stainless steel for high corrosion resistance. A smooth, bead-blasted finish makes it easy to completely clean the interior of the housing.

These value added features:
- Fabricated construction
- Cover opening direction can be changed in the field
- Adjustable mounting legs
- Integral cover handle

Give these benefits:
- Cost effective, lighter weight than a cast housing.
- Easily adapts to different piping layouts.
- Accommodates walls, posts or other obstructions
- Easier installation
- Makes it easier to open and close cover.

See page 5 for dimensions.
ECOLINE™ Filter Housings
Light-weight, economical filter housings.

- An ECOLINE housing from HAYWARD® has a light-weight design for commercial, OEM, non-hazardous, low pressure applications that do not require a Code Stamp.
- ECOLINE's cost-effective design incorporates a handy V-clamp closure and threaded couplings. The lid is fitted with a 1/4" BSP connection for easy fitting of a vent or gauge.
- For filter bags sizes 01, 02, 03 and 04.
- ECOLINE’s type 316 stainless steel construction offers superior corrosion resistance and consistent performance. A smooth, bead-blasted finish makes it easy to completely clean the interior of the housing.

These value added features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost effective design</td>
<td>Perfect for cost sensitive applications.</td>
</tr>
<tr>
<td>Compression bag hold down</td>
<td>360 degree sealing of the filter bag to the housing.</td>
</tr>
<tr>
<td>V-clamp cover closure</td>
<td>Easy to operate for quick cover removal and closure.</td>
</tr>
<tr>
<td>Side inlet with evacuation cover</td>
<td>Less messy bag changing, no spillage of unfiltered liquid.</td>
</tr>
</tbody>
</table>

See page 5 for dimensions.
ACCESSORIES

HAYWARD®

Filter Housing Accessories

Original HAYWARD® Accessories, Consumables and Spare Parts for safety and reliability

The wide range of filter housing Accessories from HAYWARD makes it possible to custom design a housing to the exact requirements of your application, no matter how complex or unique it may be.

Accessories can be used to improve processes as well as the application requirement itself. For example, displacement balloons make bag change-out easier, LOFNETIC magnetic inserts extend filter bag life in applications where magnetic particles are encountered.

Original HAYWARD “added value” Accessories are guaranteed to work with your HAYWARD filter housings as part of the system to deliver the highest performance and reliability.

01 Restrainer Baskets
Heavy duty, electropolished SS 316 perforated plate baskets (included with housing) allows use of filter bags and HAYFLOW™ elements up to differential pressures of 50 psi. Available in all standard sizes, fitting all HAYWARD bag filter housings. Specially designed restrainer baskets, including special of construction such as HASTELLOY or EPOXY coated, are available. Standard baskets can be used in combination with adaptor rings for retrofitting other types of housings.

02 LOFNETIC Magnets
Magnet assemblies are inserted into the filter bag during filtration, they are a combination of bag positioner fitted in the center with a magnetic bar(s). Lifetime is extended by retaining magnetic particles such as chips and fines, preventing deposition onto the filter media. They also retain finer magnetic dust when using bags of coarser micron rating. HAYWARD magnetic strainers are available in size 01 and 02 using one or two SS 316 covered magnetic bars.

03 Bag Positioner
Highly recommended for all installations, mandatory for some, bag positioners or “bag lock’s” ensure correct positioning of the filter bag within the basket and eliminate any “bobbing” up and down movement of the bag caused by uncontrolled back pressure. This avoids any chance of bag bursting. ACCUGAF™, PROGAF™ and LOFCLEAR™ 500 filter bags need to be equipped with a bag positioner. A special new collar design firmly fixes the element inside the bag during filtration. They are available in sizes 01 and 02.
**Leg Assembly**

Height-adjustable leg assemblies are standard for size 01 and 02 TOPLINE™, FLOWLINE™, and SIDELINE™ housings, and optional for ECOLINE™ housings. Wall mounting brackets are also available.

**Displacement Balloons**

Inserting a displacement balloon inside the filter bag minimizes the amount of residual liquid present in the filter bag and reduces product loss. This eases the changing of the filter bags eliminating the need for expensive pressure-aided draining systems. A special new collar design firmly positions the balloon inside the bag. The SS 316 balloons’ maximum DP is 230 psi, they are available in sizes 01 and 02.

**Manifold Modules**

HAYWARD standard pipe modules are available in SS 316. 90° elbows, flange reductions, flanged “T” sections and flange manifolds can be easily assembled to make DUO-LINE™ or MODULINE™ bag filter versions based on FLOW-LINE™, SIDELINE™ or TOPLINE™ size 01 or 02 housings.

**Adapter Head for Open filtration**

Used in conjunction with SNAP-RING® filter bags in gravity feed open systems. Adapter heads are available in SS 316 and polypropylene with a 1.5“ NPT connection for pressures to 20 psi.

**Gaskets and O-ring seals**

As standard, HAYWARD metal filter housings are fitted with Buna N O-rings, plastic housings have Viton® O-rings. Other material options such as EPDM, Viton, TFE encapsulated Viton or Silicone rubber are available as are flat gaskets. The options offer a variety of chemical and thermal resistances to meet a multitude of uses and applications.

**Mesh Strainers**

Bag filter housings may be fitted with SS 316 mesh lined strainers in place of baskets to convert them to strainer filters. Mesh strainers are available in four standard sizes: 01, 02, 03 and 04, micron ratings are 25, 50, 100, 150, 250, 400, 800 µm respectively.

**Miscellaneous**

Gauges, Vents, Eye-bolts, Clamp-screws, V-clamps, Centerbolts, Butterfly and Ball Valves are available as accessories or spare parts to fit the various HAYWARD bag filter housings.

**Bag Hold-down Rings**

The various ECOLINE™, SIDELINE™, FLOWLINE™, POLYLINE™ and MAXILINE™ MBF bag filter housings are fitted with different bag hold-down rings (included with housing). They hold the filter bag securely inside the restrainer basket which in turn is positioned correctly within the housing.
HAYWARD
Precision in
Filtration.
A Whole New
Way to Think
About Bag
Filtration
Systems
INTRODUCTION

Setting New Technology Boundaries

Demanding or critical liquid filtration applications require high performance filtration media. This media may have to be more efficient, stronger, longer lasting or conform to specific standards. Sometimes, a unique combination of these qualities can be required.

HAYWARD has developed a line of filter bags that meet these stringent media requirements. The convenience and economy of liquid bag filtration is now feasible for filtration applications that previously required other, more expensive systems.

Change the way you’ve been thinking about filter bags...and explore the range of filter bags described in this catalog. You may find solutions to your most difficult filtration challenges here. Today’s bags are capable of performing in applications that, in the past, required more complex and expensive filtration systems.

After you have finished reading about these special filter bags, contact us. Because demanding or critical applications can be complex, a HAYWARD Applications Specialist is available to perform a no-obligation analysis of your process. Learn how one of these high performance filter bags can work in your system, whether your system already exists or is in the design stage, and the improvements you can expect...before you make any commitment.

PROGAF™, ACCUGAF™, LOFCLEAR™, DURAGAF™, HAYFLOW™, CLEARGAF™, SENTINEL®, SNAP-RING® and BANDSEAL™
What Makes a HAYWARD Filter Bag Better?

State-of-the-art media...advance construction...quality control...customer service...application specialists...in short, the entire HAYWARD organization teams up to bring you the most advanced bag filtration solutions available. Hayward has applications specialists available around the world to help first-hand with difficult, demanding applications. On-site trials demonstrate the best filter bag for any new application. Expert system software makes system sizing and optimization simple and effective. In short, commitment to our customers packs value-added quality into every product we sell.

Advanced Filter Design
Starting with unique element design and ending with patented sealing technology, HAYWARD products deliver performance in simple or complex applications. Multi-layer constructions, pleated extended surfaces, fully-welded constructions and pressure-activated seals are only some of the features which make HAYWARD filter bags the most advanced in the world. This range of design and construction offers filtration solutions over the full spectrum of fine filtration applications.

Advanced Filtration Media
No other range of filtration products can bring the wide range of filtration media and construction to either simple or demanding applications. Progressive structure media deliver efficiency and media life not available in any other technology. High-purity media styles permit filtration without contamination of the fluid. Heat-stabilized monofilament meshes deliver absolute filtration ratings in almost any fluid. High-quality felts deliver the most cost-effective filtration available today for straightforward applications. In short, full-spectrum performance.

Proprietary Fabrication Technology
Whether sewn or welded, simple or complex, HAYWARD filter bags are fabricated using the most advanced techniques and equipment in the world. Highly automated welding systems produce consistent, dependable bag construction. HAYWARD’s proprietary UNIWELD system produces bag seals which are, at the same time, strong and flexible to conform to restrainer baskets. Food-grade products are fabricated in facilities where both the environment and materials are controlled to assure cleanliness. Repeatable, robust, cost-effective...technology working for our customers.

Rigorous Quality Standards
Every HAYWARD filter bag carries its own promise of quality to our customers. The QC tag permits full traceability of both materials and processes throughout fabrication and into service. Hayward ISO 9001:2000 facilities produce filter bags and vessels to standards demanded by demanding industries. From the simplest sewn filter bag to the most complex multi-layer construction, the quality is the same. No compromise...the HAYWARD promise to its customers.
COMPASS™ Expert System Software
Select a filter...size and optimize a system...search for your application. COMPASS brings over 30 years of application success to the fingertips of each HAYWARD Filtration Specialist. This breadth of experience is available in a customer’s facility or over the phone, to provide rapid accurate estimates of system performance.

Worldwide Customer Support
HAYWARD has manufacturing facilities and customer support personnel located in North America, South America, Europe, Asia, Africa and Australia. There are 26 HAYWARD Regional Sales Offices and an independent, professional distribution network to serve the needs of our customers in 45 countries. Throughout the purchase, installation, and start-up of your HAYWARD Filtration System, a HAYWARD representative is always available to insure its performance.

In this brochure, an application key appears for each bag style. You can use this key to select a bag based on particle size range and flow rate, for size 02 bags made of standard filter bag material.
PROGAF filter bags bring a new, high-performance alternative to applications requiring absolute filtration. PROGAF’s progressive density depth filtration delivers high efficiency (up to 99.98%) and long life with all the convenient features of a bag filter. In comparison with other filtration technologies, PROGAF delivers lower operating costs while retaining the ease of change-out typical of a bag filter.

Welded Construction for Superior Performance
All PROGAF High Performance Filter Bags feature 100% welded construction for better filtration performance. This construction ensures that nothing bypasses the process media through holes in the fabric created from sewing the material. HAYWARD’s proprietary welding technology produces a super-strong seam that stands up to the most demanding applications.

PROGAF™ Filter Bags Seal Better in Critical Applications
The patented SENTINEL provides a flexible, chemically-resistant seal which adapts to any filter vessel. This unique design employs a pressure-activated sealing lip which responds to increases in differential pressure. As the pressure increases, the seal of the ring improves, guaranteeing bypass-free performance over all ranges of pressure, temperature and micron rating. The elevated bag handles make removal quick and easy.

Unique Progressive Density Media Structure
PROGAF filter bags utilize an advanced media structure developed specifically to deliver both long life and absolute filtration. PROGAF’s progressive density design uses up to 12 layers of media which become finer and finer as fluid passes through. The result is a gradual removal of con-

### PROGAF™ Filtration Ratings

<table>
<thead>
<tr>
<th>Filter Model</th>
<th>Particle Size at Common Removal Efficiencies (µm)</th>
<th>∆P (psi) Size 02 @ 45 gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;60%</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>PGF 50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PGF 51</td>
<td>&gt;0.15</td>
<td>0.3</td>
</tr>
<tr>
<td>PGF 55</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>PGF 57</td>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

Filtration efficiency confirmed by independent test laboratory
taminant without any single layer blinding prematurely. Application and laboratory tests confirm that PROGAF bag filters deliver longer service life and lower operating costs than any other renewable filter element. The 100% polypropylene construction provides pure, silicone-free materials in an economic, self-contained, easily disposable filter bag.

**Filtration Efficiencies Of Up To 99.98%**

PROGAF High Performance Filter Bags from HAYWARD have performance efficiencies of up to 99.98%….true absolute filtration. In many filtration applications of 1 micron and above, PROGAF Filter Bags can replace expensive cartridge filtration systems and provide better performance while saving time and money. Ask your HAYWARD Filtration Specialist for “real world” documented case histories, illustrating how PROGAF Filter Bags have performed in applications similar to yours.

**The PROGAF™ Difference**

Ordinary standard filter bags are made from needled felt media that has a fiber structure that is not as fine and precise as the filtration grade melt blown media used for PROGAF Filter Bags. The needled fibers are much larger in size and spaced much further apart, yielding a lower efficiency. PROGAF Filter Bags have been designed to deliver calibrated fractional efficiency on very small particles, down to less than one micron. The bags feature a completely welded construction and the unique, patented SENTINEL Sealing Ring For a positive by-pass free seal. And all PROGAF Filter Bags have a round bottom shape for increased pressure stability.

**Choose Just the Filtration Efficiency Your Application Needs**

PROGAF Filter Bags are available in efficiency codes of 50, 51, 55 and 57. To select the perfect PROGAF Filter Bag for your application, choose the micron retention efficiency level you need on the left side of the chart at particle size in microns at the bottom. Next, locate the bag efficiency code (identified by the colored lines) that is closest to that point. There you have it: the most cost effective filter bag for your critical filtration application.
Some Typical PROGAF™ Applications

All materials used in the construction of PROGAF Filter Bags, including the multilayer melt-blown polypropylene media, are FDA/EC listed materials that meet their requirements for food contact applications. But food or beverages are not the only applications that can take advantage of PROGAF’s high filtration efficiencies and capacity retention. The pharmaceutical, micro-electronics, chemical, food, ink and paint, and water treatment industries can also use PROGAF High Performance Filter Bags.

Chemical and Pharmaceutical Industries

Demanding filtration in high-purity industries are the applications PROGAF was made for. Media capable of removal to 2 µm absolute with long service live is essential for activated carbon removal or catalyst recovery. Gel removal requires a deep matrix of fine fibers. A PROGAF bag is ideally suited for each of these applications. Available in four filtration ratings, one of the PROGAF bags will deliver just the needed performance.

Water Filtration

Water filtration applications have traditionally been dominated by cartridge filtration. Following extensive worldwide trials, PROGAF 51 has demonstrated a log 3.5 reduction of impurities in these demanding applications.

Micro-Electronics

These applications typically require chemicals that are constantly filtered to extremely low levels of particle contaminant. PROGAF’s special profile, with its high efficiency media and graded density structure, provides performance characteristics superior to that of traditional cartridge type filtration. PROGAF out-performs cartridges in terms of dirt-holding capacity, service life, and cost. Membrane prefiltration significantly reduces the SDI values in water filtration.

Compare PROGAF™ to Filter Cartridges and See the Difference

The two charts on the next page graphically illustrate the advantages of PROGAF High Performance Filter Bags over different types of filter cartridges. PROGAF Filter Bags and filter cartridges come in many shapes and sizes. Compare PROGAF Filter Bags with their cartridge equivalent in material, micron rating and industry qualifications. Progressive structure of PROGAF filter bags delivers operating differential pressure which starts and remains lower during filter life than other comparable filters. The chart shown here illustrates the results of actual comparison tests made against two common styles of cartridge filters: depth-loading and pleated polypropylene. During laboratory loading tests, the PROGAF filters remained at the lowest differential pressure of any
of the three over the life, illustrating the effectiveness of the progressively structured media.

**OPERATIONAL CONSIDERATIONS**

**Bag Positioner**

To ensure proper performance, PROGAF Filter Bags must be used with the HAYWARD Bag Positioner. Using them together aids bag insertion into the filter housing and assures correct alignment of the bag inside the restrainer basket, prevents the bag from being pushed out of the restrainer basket in case of reverse flow, and makes bag removal easier.

**Pre-Wetting in Aqueous Solutions**

PROGAF filter bags are fabricated from fine polypropylene filtration media. This material is hydrophobic, which means that water will not wet the surface of the fibers. Therefore, a fluid with lower surface tension must first be used to wet the fibers, as well as cartridge filters made from this material. Prior to installation, you must first immerse the bags for a few minutes in a wetting solution compatible with the process fluid. After the fibers are wet, water is drawn in by capillary action. Full details about how to install and pre-wet PROGAF Filter Bags are provided in the installation instructions.
ACCUGAF™, Filter Bags for Applications Demanding Efficiency >99%

The ACCUGAF filter bag from HAYWARD pushes the boundaries of bag filtration technology far beyond traditional designs. With efficiencies >99%, each ACCUGAF model provides cost-effective filtration solutions for demanding applications. The five models assure users that particles from the range of 1-25 microns can be removed effectively while delivering long service life.

High-Efficiency Performance
ACCUGAF filter bags feature:

- 100% welded seams
- HAYWARD patented SENTINEL seal ring
- Melbown filtration media in polypropylene or polyester
- No additives, such as resins, binders or surface treatments

FDA Compliant Materials
ACCUGAF filter bags are constructed entirely of materials compliant to FDA requirements for materials in contact with food. All materials conform to US Code of Federal Regulations 21 CFR Part 177 and EC Directive 90/128/EEC.*

Applications
Although ideally suited for food and beverages, ACCUGAF filter bags will deliver equal performance in a wide range of demanding applications such as:

- Beer, wine, spirits and beverage filtration
- Fine particle removal in parts cleaning
- Final filtration of lacquers
- Final filtration of vinegar
- Activated carbon removal in process systems
- Final filtration of hydraulic oils and lubricants

### ACCUGAF Filtration Ratings

<table>
<thead>
<tr>
<th>Material</th>
<th>Filter Model</th>
<th>Particle Size at Common Removal Efficiencies (µm)</th>
<th>ΔP (psi) Size 02 @ 45 gpm</th>
<th>Max Op. Temp. (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene</td>
<td>AGF 51</td>
<td>&gt;60%: 0.2, &gt;90%: 0.8, &gt;95%: 1.5, &gt;99%: 5</td>
<td>1.30</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>AGF 53</td>
<td>&gt;60%: 0.8, &gt;90%: 1, &gt;95%: 2, &gt;99%: 3</td>
<td>3.20</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>AGF 55</td>
<td>&gt;60%: 1, &gt;90%: 2, &gt;95%: 3, &gt;99%: 5</td>
<td>0.73</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>AGF 57</td>
<td>&gt;60%: 2, &gt;90%: 3, &gt;95%: 4, &gt;99%: 10</td>
<td>0.60</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>AGF 59</td>
<td>&gt;60%: 10, &gt;90%: 25, &gt;95%: 30, &gt;99%: 35</td>
<td>0.44</td>
<td>190</td>
</tr>
<tr>
<td>Polyester</td>
<td>AGFE 51</td>
<td>&gt;60%: 0.2, &gt;90%: 0.6, &gt;95%: 0.8, &gt;99%: 1.5</td>
<td>1.30</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>AGFE 55</td>
<td>&gt;60%: 1, &gt;90%: 2, &gt;95%: 3, &gt;99%: 5</td>
<td>0.73</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>AGFE 57</td>
<td>&gt;60%: 2, &gt;90%: 4, &gt;95%: 5, &gt;99%: 10</td>
<td>0.60</td>
<td>300</td>
</tr>
</tbody>
</table>

Filtration efficiency confirmed by independent testing laboratory.

*Polypropylene only
OPERATIONAL CONSIDERATIONS

Bag Positioner
ACCUGAF filter bags must be used with the HAYWARD bag positioner. This eases insertion and assures correct alignment of the filter bag inside the restrainer basket. In addition, the filter bag will be protected against damage to inadvertent back-flow.

Pre-Wetting in Aqueous Solutions
ACCUGAF polypropylene filter bags are fabricated from microfiber filtration media. These materials are hydrophobic, indicating that water will not wet the fiber surfaces. As will all other fine polypropylene filters, a lower surface tension fluid (wetting agent) must be used to wet the media prior to introducing water. Prior to service, the filter bags must be immersed in a wetting solution compatible with the process fluid. After wetting, an aqueous fluid will be drawn into the media through capillary action. Full details about installation and wetting are provided with every box of ACCUGAF filter bags.

PRODUCT CODES

ACCUGAF™
AGF: polypropylene melt-blown
AGFE: polyester melt-blown
E: Polypropylene Mesh
R: Polyester Mesh
E: PP SENTINEL® Ring
H: Hytrel SENTINEL® Ring

Bags/Box/Box Size (inches)
01/02 10M 19 x 12 x 14

Bag Size Collar/Ring Type Bottom Shape Packaging
AGF AGFE
53 - round bottom
51 51
55 55
57 57
59 -
LOFCLEAR filter bags now make absolute filtration viable in many applications where only standard bags could be used due to cost constraints. Made from 100% pure polypropylene materials compliant with food requirements, LOFCLEAR filter bags contain no leachables or lubricants such as silicone oils. In addition, their excellent oil adsorbancy makes LOFCLEAR filter bags ideally suited to the oil removal needs of the paint and coatings industries.

Two Series to Match Filters to Applications
LOFCLEAR filter bags are available in two styles, Series 100 and Series 500. These two styles make it possible to match the requirements of a wide range of applications, depending on the needs for efficiency and long life. The Series 100 filters use a multi-layer construction for applications where high efficiency is of prime importance. The Series 500 filters utilize a patent pending pleated construction to increase surface area for applications requiring high dirt capacities and long life.

Perfect for Removal of Gelatinous Materials
LOFCLEAR filter bags have proven to be highly effective in the removal of gelatinous contaminants. The combination of deep microfiber filtration media breaks up gels and retains them within the media depth. These features prevent surface blockage and breakthrough typical of standard filter bag materials.

LOFCLEAR™ Series 100 Filter Bags
LOFCLEAR Series 100 Filter Bags feature a proven three-layer construction with a sewn filter welded to the HAYWARD SENTINEL seal. They feature efficiencies >99% over a wide range of particle sizes, with dirt capacities up to 1/2 pound. The seven models feature:
- Polypropylene prefilter
- Meltblown polypropylene microfiber final filter
- Polypropylene outer migration barrier

LOFCLEAR Series 100 filter bags are an excellent choice for application such as high-purity fluids with low particulate concentration, first-pass guard filtration, oil adsorption and activated carbon removal.

The LOFCLEAR 128 and 129 were especially developed for the filtration of electro-coatings in the automotive industry. The filtration design allows pigments to pass through the filtration layers, while retaining impurities and removing silicones and other crater-forming substances. The LOFCLEAR 130 filter bag adds extra adsorption capacity for retaining high amounts of oils or other crater-forming substances. The LOFCLEAR 135 delivers high removal of particulate and oils for clearcoat applications where pigment removal is not an issue.
LOFCLEAR™ Series 500 Filter Bags

LOFCLEAR Series 500 Filter Bags have an all-welded multi-pleated construction for high efficiency and long life. This series of bags has a pleated prefiltration layer and a complex design of final filtration layers, allowing the removal of difficult-to-filter gels and deformable particles with a high capacity of solids loading. The outer web covering eliminates any downstream fiber migration.

Among the many applications for LOFCLEAR Series 500 Filter Bags are oils, slurries, dilute oil removal, re-circulating batch systems, and systems with heavy contamination.

A pleated prefilter provides a very large surface (about 32 sq ft) to collect gels and solids before it reaches the final filter layers.
TOPLINE™ Filter Housings

The best filter housing for the most demanding applications.

• TOPLINE is the finest single bag filter housing available. From its high-performance design to its heavy duty investment-cast components, everything about TOPLINE is simply the best.
• TOPLINE’s side inlet, flow through the top design results in a minimum headroom of unfiltered liquid for easy bag change-out as well as providing optimum sealing of the filter bag.
• For filter bags sizes 01 and 02.
• Available in carbon steel or Type 316 stainless steel construction for high corrosion resistance
• A smooth, bead-blasted finish, coupled with TOPLINE’s minimum 2-weld design, makes it easy to completely clean the interior of the housing.
• All TOPLINE housings come with HAYWARD’s exclusive Five Year Warranty, and the ASME code UM stamp.
• TOPLINE... for applications too demanding for ordinary bag filters.

These value added features:

Give these benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top inlet with liquid flow through the cover.</td>
<td>Reduced headroom for unfiltered liquid makes bag change-out quick and easy.</td>
</tr>
<tr>
<td>Cover seals directly onto the filter bag</td>
<td>Perfect sealing for the finest micron by-pass free filtration applications.</td>
</tr>
<tr>
<td>Five year warranty</td>
<td>Years of trouble and maintenance free service.</td>
</tr>
<tr>
<td>Adjustable mounting legs</td>
<td>Easier installation</td>
</tr>
</tbody>
</table>

See page 5 for dimensions.
How much longer will a DURAGAF™ Filter Bag last in your application?

**Polyester Filter Bags**

<table>
<thead>
<tr>
<th>Micron Rating</th>
<th>1</th>
<th>5</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Filter Bag Life</td>
<td>5.0</td>
<td>4.5</td>
<td>4.0</td>
<td>3.5</td>
<td>3.0</td>
<td>2.5</td>
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</table>

**Polypropylene Filter Bags**

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<th>10</th>
<th>25</th>
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<td>Relative Filter Bag Life</td>
<td>5.0</td>
<td>4.5</td>
<td>4.0</td>
<td>3.5</td>
<td>3.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Extended Life Felt**
- finer fibers
- more pores
- thicker media

**Surface of Extended Life Felt**
- no fiber release
- full flow through surface channels

**PRODUCT CODES**

<table>
<thead>
<tr>
<th>Code</th>
<th>Material</th>
<th>Micron Rating</th>
<th>Bag Cover Layer</th>
<th>Color/Ring Type</th>
<th>Packaging</th>
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<tr>
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<td>Polypropylene</td>
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<td>PEXL</td>
<td>Polyester</td>
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<tr>
<td>PEXLF</td>
<td>Polypropylene Food Grade</td>
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<td>POXLF</td>
<td>Polyester Food Grade</td>
<td>10</td>
<td>P</td>
<td>E</td>
<td>30L</td>
</tr>
</tbody>
</table>

**Bag Cover Layer**
- P: Plain
- E: Polypropylene SENTINEL Ring, Welded (POXL/POXLF)
- H: Hytrel SENTINEL Ring, Welded (PEXL)
- Z-WW: Santoprene SENTINEL Ring, Welded (PEXLF)

**Bag Size**
- Code 01: ø 7 x 17 inches
- Code 02: ø 7 x 22 inches

**Bags/Box Size**
- L: Large
CLEARGAF is the first and only series of filter bags specifically designed for the requirements of the food, beverage and pharmaceutical industries. Comprised of several filter styles, CLEARGAF is the only filter bag to deliver:

- Fully FDA compliant materials per 21CFR177
- Fully EC compliant per 90/128/EEC
- Independent testing and certification
- Special single packaging and warehouse control

CLEARGAF™ Filter Bags for Direct Contact with Foodstuffs

Filter Bags are widely used for the filtration of fluids that are directly or indirectly used as foodstuffs. In most applications, these types of filters must be carefully selected to ensure that foodstuffs are not contaminated from their use. Most materials used to manufacture disposable filters, including bag filters and cartridge filters, are polymers, which are generally selected for their purity in the application. Many of these materials, however, contain materials that can diffuse out of the plastic into the process fluid. This effect, known as migration, can lead to foodstuff contamination. For this reason, the use of polymers is often limited to products such as CLEARGAF Filter Bags, which are made from materials that have been documented as safe in food applications. CLEARGAF Filter Bags conform to both US FDA and European EC regulations. The difference between the FDA and EC regulations is one of degree. FDA regulation limits on migration are proportional to weight. EC limits, however, are based on area, and must be demonstrated in tests on finished articles. For heavy material, the EC limits can be up to 50 times more restrictive than the FDA ones.

Independent Verification

You can be sure all CLEARGAF Filter Bags meet these requirements, because they have been evaluated, tested and certified for EC migration performance by an independent food research institute. CLEARGAF Filter Bags are also made only from materials listed in the US Code of Federal Regulations Title 21 Part 177. No other materials are added during fabrication.

Special Manufacturing and Packaging

CLEARGAF Filter Bags are manufactured under special conditions to ensure that they contain no contamination. Immediately after manufacture, each bag is individually sealed in protective plastic packaging to keep them contamination-free. HAYWARD has special warehousing facilities for CLEARGAF Filter Bags to further protect them during storage. No other manufacturer goes to these lengths to ensure the quality of their food grade filter bags. For less demanding food and beverage applications, HAYWARD offers a line of cost effective filter bags that are appropriate for many applications.
### Selection Chart

#### Max. Temp. (°F) - Sizes - Available Grades - Ring Style

<table>
<thead>
<tr>
<th>PRODUCT CODE</th>
<th>Sizes</th>
<th>Available Grades</th>
<th>Ring Style</th>
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<td>285</td>
<td>51 - 53 - 55 - 57 - 59</td>
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<tr>
<td>PEXLF</td>
<td>285</td>
<td>51 - 53 - 55 - 57 - 59</td>
<td>Z</td>
</tr>
<tr>
<td>POF</td>
<td>195</td>
<td>50 - 51 - 55 - 57</td>
<td>E</td>
</tr>
<tr>
<td>POXLF</td>
<td>195</td>
<td>50 - 51 - 55 - 57</td>
<td>E</td>
</tr>
<tr>
<td>NMOF</td>
<td>285</td>
<td></td>
<td>Z</td>
</tr>
<tr>
<td>AGF</td>
<td>195</td>
<td></td>
<td>E</td>
</tr>
<tr>
<td>PGF</td>
<td>195</td>
<td></td>
<td>E</td>
</tr>
</tbody>
</table>

*Products subject to MPQ in Europe applications. See Technical Bulletin TB990801 for full details.

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### PRODUCT CODES

- **PEF**: polyester needlefelt
- **PEXLF**: extended life polyester needlefelt
- **POF**: polypropylene needlefelt
- **POXLF**: extended life polypropylene needlefelt
- **NMOF**: nylon monofilament
- **AGF**: polypropylene meltblown
- **PGF**: polypropylene meltblown

---

### BANDSEAL™

For simple, minimal-pressure non-critical open filtration applications (that is, filtration without a vessel), HAYWARD’s line of BANDSEAL Filter Bags offers many cost-effective choices. These filter bags are available with a drawstring that permits them to be installed directly on the end of a pipe, without the need of an adapter.

---

### PRODUCT CODES

- **NMO**: nylon monofilament
- **P**: plain
- **R**: ring
- **01**: 100 µm
- **43**: width 5.5 x 12 inches L
- **45**: width 5.5 x 20 inches L
- **50S**: 50S
- **60S**: 60S
- **70S**: 70S
- **80S**: 80S
- **50**: 50
- **100**: 100
- **500**: 500
- **1000**: 1000
- **01**: ø 7 x 17 inches L
- **02**: ø 7 x 32 inches L
- **03**: ø 4 x 9 inches L
- **04**: ø 4 x 15 inches L
- **0**: none
- **E**: extruded mesh (for AGF, PGF)
- **P**: plain (no cover) (for needlefelts)
Now, applications requiring polypropylene or polyester felt filter bags can take advantage of the all-welded construction afforded by HAYWARD patented SENTINEL® Filter Bags. These bags, made from silicone-free materials, feature super-strong welded construction rather than sewn seams. This construction ensures that nothing bypasses the process media through holes in sewn fabric.

**Welded Construction Filter Bags**

SENTINEL filter bags from HAYWARD represent the industry standard in bypass-free filter construction. Available in polyester and polypropylene materials, all SENTINEL filter bags feature:

- SENTINEL Pressure Actuated Seal Ring
- Silicone Free Needled Felt
- Super Strong Welded Construction
- Non Migrating Media Construction

**Proprietary Construction**

HAYWARD’s proprietary construction processes produce a reliable, durable filter bag. All seams are fully welded, producing strong, reliable joints with no by-pass or loose sewing thread. Seams are both strong and flexible, allowing the filter bag to form to the restrainer basket. The seam edges are heat sealed, eliminating possible loose fibers. This results in a filter bag with durable performance for the most demanding applications.

**SENTINEL® Seal Ring**

All HAYWARD SENTINEL filter bags utilize the patented SENTINEL seal. Its all-plastic construction provides a flexible, chemically resistant seal which adapts to any filter housing. This unique design employs a pressure actuated sealing lip which responds to increases in differential pressure. As the pressure increases, the seal of the ring improves, insuring by-pass free performance over all ranges of pressure, temperature and micron rating. The elevated bag handles make removal of the bag from the vessel quick and easy. When a SENTINEL filter bag is installed into a HAYWARD filter vessel, the ring snaps into place, holding its position until the vessel is closed.

**PRODUCT CODES**

<table>
<thead>
<tr>
<th>Code</th>
<th>Bag Material</th>
<th>Micron Rating μm</th>
<th>Bag Cover Layer</th>
<th>Color/Ring Type</th>
<th>Options</th>
<th>Packaging</th>
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</thead>
<tbody>
<tr>
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<td>1 - 25</td>
<td>SENTINEL® Range</td>
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<tr>
<td>PE</td>
<td>Polyester</td>
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<td>E: Polypropylene SENTINEL® Ring, welded</td>
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<tr>
<td>NMO</td>
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</table>

<table>
<thead>
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<td>02</td>
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<tr>
<td>03</td>
<td>ø 4 x 0 inches L</td>
<td>30L</td>
<td>Z: Santoprene SENTINEL® Ring, sewn</td>
<td>WW</td>
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<tr>
<td>04</td>
<td>ø 4 x 15 inches L</td>
<td>30L</td>
<td>-</td>
<td>WW</td>
</tr>
</tbody>
</table>
Sewn Construction Filter Bags

For over 30 years, HAYWARD SNAP-RING® filter bags have been critical components of filtration systems world-wide. The wide range of media materials, affordable price, and reliability of construction have made them the ideal choice for applications in nearly all process industries.

Superior, Consistent Quality
SNAP-RING filter bags are manufactured to the highest standards of fabrication available. Materials must satisfy stringent specifications for filtration performance and media purity. Production under 9001:2000 quality systems results in order to order, year to year, reliability and repeatability. Heavy duty sewing thread and the metal seal ring are produced to HAYWARD specifications and guaranteed to be silicone free.

Adaptable to Most Vessels
SNAP-RING filter bags are designed and constructed to fit the widest range of filter vessels, whether from HAYWARD or from another supplier. Special geometries are available to fit most non-standard housings.

Application Versatility
SNAP-RING filter bags are available with four different ring plastics, six different media materials and eleven micron ratings. SNAP-RING filter bags can handle corrosive chemicals, aggressive solvents and even elevated temperatures. With this many choices, the right HAYWARD filter bag is available for every application.
With this new, patent pending filter element HAYWARD technology has combined the best of both bag and cartridge filters into one single filtration element for outstanding filtration performance. Because HAYFLOW's surface area is up to 70% greater than a similar size filter bag, existing systems that use HAYFLOW experience longer filter element life and less changing, resulting in reduced running costs. With HAYFLOW, designers of new bag filtration systems can opt for reduced running costs or, because of the high flow rates possible with HAYFLOW, reduce filter housing size by up to 50% thus lowering the initial cost of the system.

What Makes the HAYFLOW™ Element Better

The heart of HAYWARD’s HAYFLOW filter element is two concentric cylinders of high-quality extended life HAYWARD filter media. These cylinders are formed using unique welding technology to create a no by-pass seam. The diameter of the cylinder is the same size as a standard filter bag, so retrofitting into existing systems is easy. The HAYFLOW element is fitted with HAYWARD's patented SENTINEL® sealing ring, ensuring a positive seal with the filter vessel to protect against bypass of the process media.

How the HAYFLOW™ Element Works

The process fluid enters the inside of the element, passes through it, and exits through the vessel outlet. Like a filter bag, the filtered-out material stays inside the HAYFLOW element. The HAYFLOW element is unlike a filter cartridge, where the residue of the filtered material remains on the outside of the cartridge, complicating the changing process.

An All-Around Better Choice

Changing a HAYFLOW filter element can actually be easier than changing a filter bag, because HAYFLOW’s revolutionary design only retains 25% of the residual liquid volume of a similarly sized filter bag. When you need to change the element, it weighs up to 75% less than a filter bag. A full bag can weigh up to 33 lbs, so weight is an important consideration for the system operator.
The lower retention volume of HAYFLOW means less saleable product has to be thrown away. This important HAYFLOW feature can provide considerable savings over time. HAYFLOW’S cylindrical construction offers strength unrivaled in other similar products. The all-welded filter element is fit to a matching restrainer basket, allowing the filtration media to be replaced easily and quickly. The close-tolerance fit of the filter and the restrainer basket provide ease of installation and worry-free performance. This combination of fully-welded seams and a rigid, cylindrical geometry provides strength over a full range of operating differential pressure. The HAYFLOW element is always smooth and fits to the basket walls without crimps or pleats, guaranteeing a quick and easy installation. Batch system operators often do not want to stop a batch process and change a filter bag. Using HAYFLOW, system operators have found up to 5 times the life over a similar size filter bag and experienced reduced operating costs.

Usually, bag filters are bigger than cartridge filters but are easier to handle and more cost effective. HAYFLOW brings the best of both systems together...high flow rates in compact vessels, or a longer lifetime and extended changing cycles. HAYFLOW combines highly efficient filter media, enlarged surface area, better dirt-holding capabilities and a reduction of the residual liquid volume retained in the element. All of these advantages result in superior filtration performance.

The Choice is Yours

HAYWARD’s HAYFLOW filter element can be adapted to a wide range of applications through the use of different filter media. Basically, any weldable filtration media can be used to construct a HAYFLOW element. Multilayered construction is also possible for applications that require it. Using melt-blown polypropylene media, HAYFLOW elements are available with high micron retention ratings, and with selective absorption characteristics as well. Standard HAYFLOW filter elements are available in both polypropylene and polyester construction. These two materials are very versatile and will perform in a majority of applications over a wide range of temperatures. HAYWARD uses a high-quality, extended life DURAGAF™ needle felt media with extremely fine fibers and higher pore volumes for superior performance. Both feature either polypropylene or polyester SENTINEL sealing rings.

Cut away of the element from an E-coat tank filtration after being in service for eleven weeks

Metal fines collected from parts washer
Higher flow rates - smaller, less costly housings can be used
Up to five times greater life over filter bags
Liquid losses are 25% of similar size filter bag
SENTINEL sealing ring and 100% welded construction for no by-pass
Up to 35 times more effective than standard filter cartridges
Low pressure differential results in less energy consumption of pumps
Very cost-effective in comparison to similar systems
Rugged cylindrical construction
Easier maintenance with reduced costs
Easy retro fit to existing filter housings
And...HAYWARD’s superior support, before, during and after system installation.

Take Advantage of HAYFLOW™ Now
You can easily change over from ordinary bag filtration to the revolutionary new HAYFLOW filter element. Existing bag filter housings need only to be fitted with a new HAYFLOW restrainer basket for instant compatibility with the HAYFLOW element. No tools, special equipment or modification to the vessel are required. Just drop in the new basket, and you are ready to take advantage of all the benefits offered by a HAYFLOW filtration system.

Still Not Sure if HAYFLOW™ is Right for You?
Contact us. We can show you how you can save money and improve your filtration process using HAYFLOW filter elements.
Application:

- Automotive
- Sugar Processing
- Paints, Coatings, Inks, Dispersions
- Resins
- Water and Waste Water Treatment
- Solvents
- Lubricants and Metalworking Fluids
- Aqueous and Solvent Based Cleaners in Parts Washing Equipment
- Pulp and Paper
- Oil and Gas Exploration and Processing
- Pharmaceutical
- Food Processing
- Chemical Process Industries
- Potable Water, Beer, and Wine
- Edible Oils

Remember “Filter Cost” and “Filtration Cost” are Not the Same Thing
We can explain the difference and demonstrate the HAYFLOW advantage in your application.
<table>
<thead>
<tr>
<th>PRODUCT LINE</th>
<th>Media</th>
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<td>ACCUGAF™</td>
<td>AGF</td>
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<td>LOFCLEAR™</td>
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Filter Bag Specifications

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<th>Bag Size</th>
<th>Max Flow Water (gpm)</th>
<th>Flow Area (sq.ft.)</th>
<th>Volume (gal.)</th>
<th>Diameter (in.)</th>
<th>Length (in.)</th>
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Chemical & Thermal Resistance of Filter Bags

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<th>Abbreviation</th>
<th>Temp. °F</th>
<th>Temp. °C</th>
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<th>Aliphatic Solvents</th>
<th>Aromatic Solvents</th>
<th>Alkaline Systems</th>
<th>Strongly Alkaline</th>
<th>Acidic Systems</th>
<th>Strongly Acidic</th>
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### Viscosity Equivalents

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<th>Engler Degrees 20°C</th>
<th>Redwood Standard</th>
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### Flow Conversion Factors

- **M³/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**

### Volume Conversion Factors

<table>
<thead>
<tr>
<th>To Obtain:</th>
<th>Multiply By:</th>
<th>U.S. Gallon</th>
<th>Imperial Gallon</th>
<th>U.S. Pint</th>
<th>U.S. Pound Water</th>
<th>U.S. Cubic Foot</th>
<th>U.S. Cubic Inch</th>
<th>Liter</th>
<th>Cubic Meter</th>
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### Pressure Conversion Factors

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<th>Pound Sq. Ft.</th>
<th>Atmosphere</th>
<th>Kilogram Sq. Cm.</th>
<th>Inch Water</th>
<th>Foot Water</th>
<th>Inch Mercury</th>
<th>mm Mercury</th>
<th>Bar</th>
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Pipeline Strainers

Hayward has been manufacturing quality pipeline strainers for over 75 years. Our dedication to excellence has earned us the confidence of thousands of users all over the world. Hayward Engineering has led the way with designs that meet the ever growing and rigorous demands of the process and manufacturing industries, utilities and municipalities.

Hayward has the most complete line of pipeline strainers in the world. From simple 1/2” size Y strainers to 48” pipeline Automatic Self-Cleaning strainers to custom fabricated strainers... Hayward has the perfect strainer for any straining application. When there is damage causing dirt or debris in liquid pipelines Hayward has the pipeline strainer to remove it.

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Hayward’s Wright-Austin brand Gas/Liquid Separators have been the “Industry Standard” for over 100 years. Nobody knows more about gas/liquid separation than HAYWARD Filtration. Wright-Austin Gas/Liquid Separators are used to remove 99% of damage causing moisture and particulate matter from air, gas and steam pipelines. They protect valuable system components like air compressors and turbines.

HAYWARD Filtration has a wide selection with hundreds of different Wright-Austin Gas/Liquid Separators and when a standard model isn’t right for an application, Hayward Engineers can work with customers to create a custom fabricated model that fits the applications requirements exactly.
A History of Innovation

In 1923, HAYWARD® began manufacturing specialty metal valves and industrial flow control products. Since then, HAYWARD has evolved through strategic acquisitions and technological advances.

Today, HAYWARD Filtration is a truly global organization manufacturing market-leading brands synonymous with performance, quality and innovation.

The HAYWARD Filtration business comprises 3 complimentary technologies; Gas–Liquid Separators, Pipeline Strainers and Bag and Cartridge liquid filtration systems. With 7 global manufacturing facilities, 26 wholly owned subsidiaries and independent distributor network, HAYWARD Filtration actively serves Customers in over 45 countries.

Building on more than 75 years of Strainer filter expertise, in 1996 HAYWARD diversified into Bag and Cartridge liquid filtration by acquiring American Felt and Filter’s Filtration division. In 1998, HAYWARD established itself as a key supplier outside of the USA by acquiring Germany’s LOEFFLER® Filter-Technik. In 1999, the acquisition of GAF® Filter Systems established HAYWARD as the world’s premier supplier of liquid bag filtration products.

To understand more about HAYWARD® Filtration the company, its Products, Applications and Customer Service, we encourage you to visit us at:

www.haywardfiltration.com