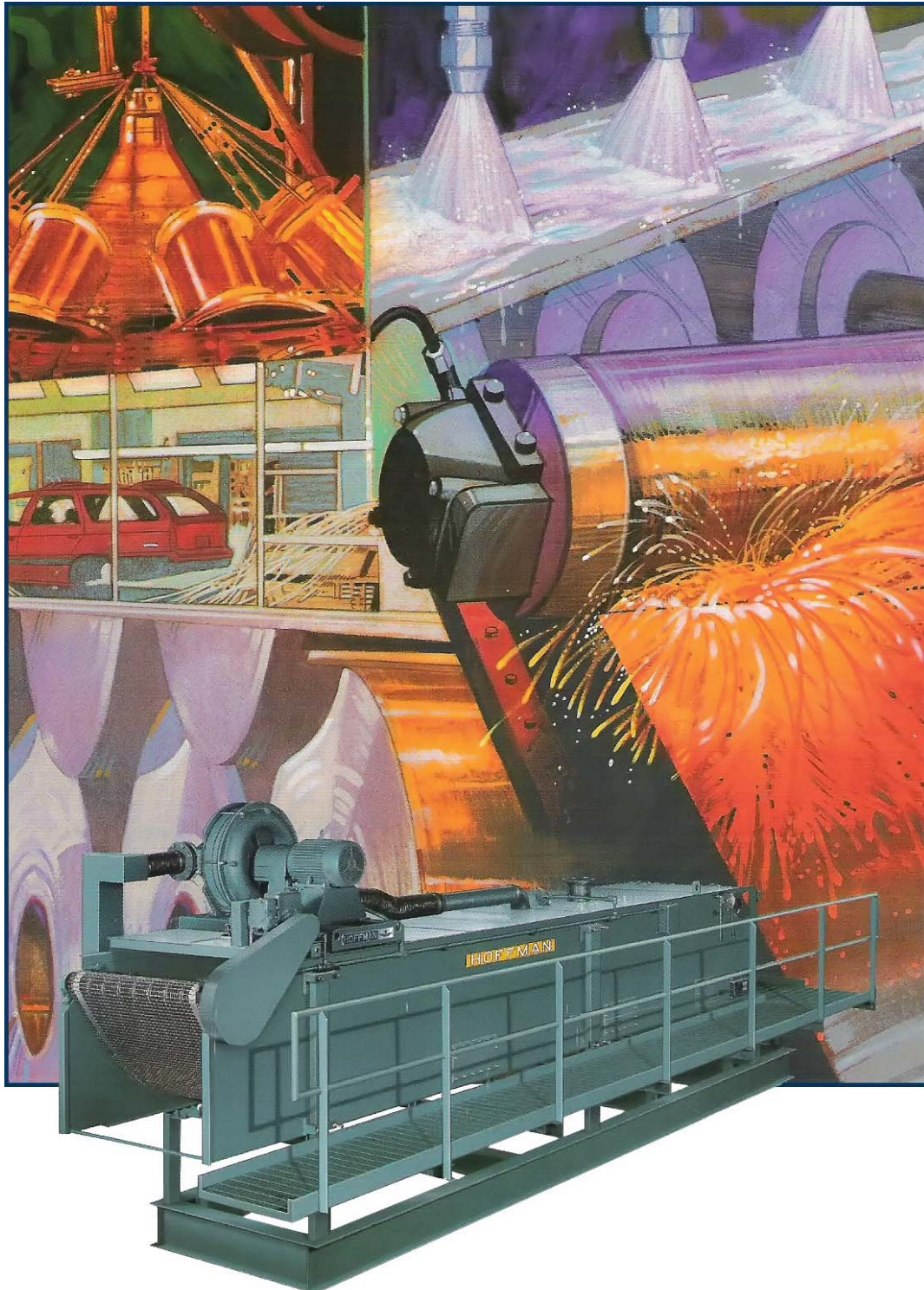


# HOFFMAN FILTRATION SYSTEMS

MANUFACTURED BY

**AIR**  
LIQUID  
SYSTEMS INC.



**Vacu-Matic® Liquid Filtration Systems**

# HOFFMAN

## Filtration Leadership And Manufacturing Excellence

The Hoffman Vacu-Matic Filter is the heart of Air Liquid Systems, Inc.'s Hoffman filtration line. It is used throughout industry to provide cost effective and trouble free filtration in a wide variety of applications.

Hoffman filters are used to reclaim and recycle industrial coolants, filter process liquids, and clarify waste effluents. The results are threefold:

**Product quality increased** - prevents contaminants from being reintroduced into lines and damaging products

**Costs reduced** - less liquid and energy consumption, decreased waste disposal, increased equipment and tool life, and the Vacu-Matic's proven reliability which results in lower maintenance costs and less down time

**Waste disposal simplified** - automatic media index and discharge of the dried filtrate cake into a collection bin provides maximum filtration with minimum user interface needed

The Vacu-Matic Filter's design provides positive filtration for suspended particles, skimming of floating contaminants (tramp oils, gels, etc.), and aeration to eliminate bacterial

### AIR LIQUID SYSTEMS, INC.

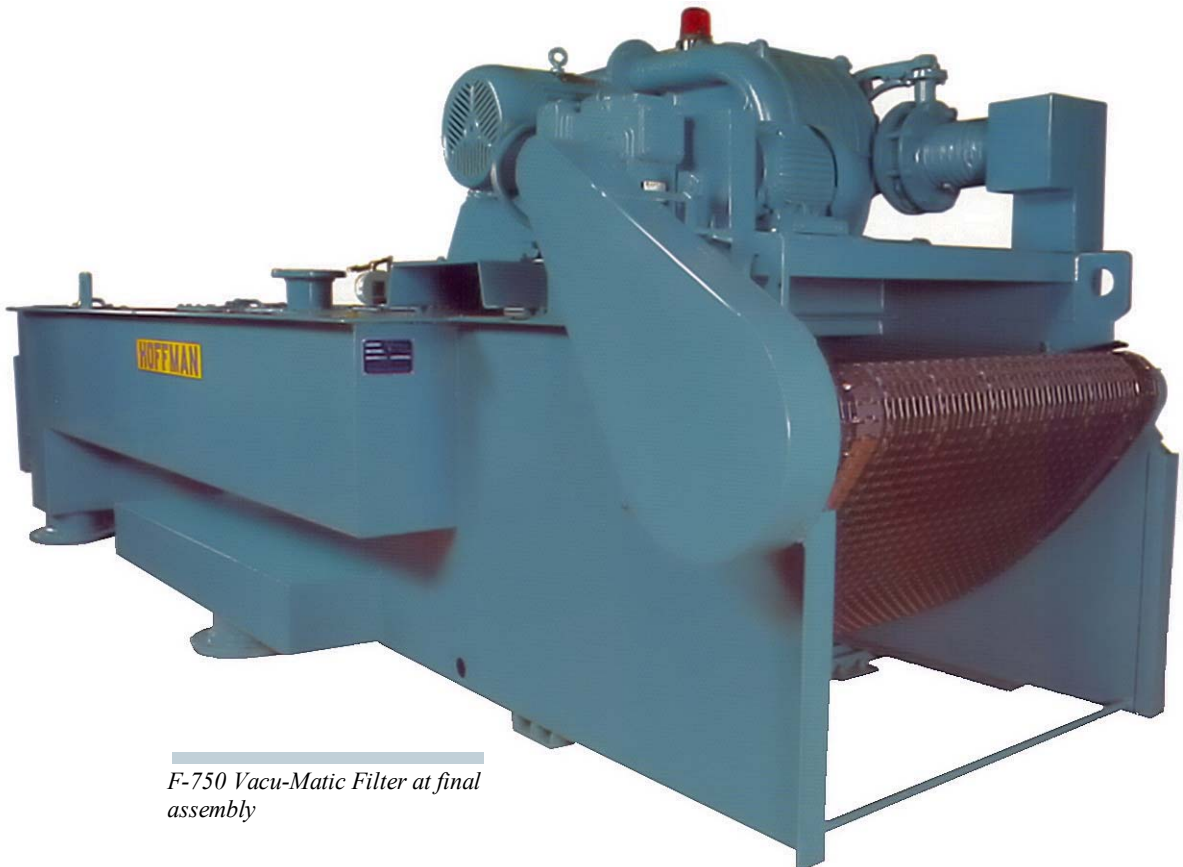
Air Liquid Systems, Inc. is an industrial manufacturing and service company serving worldwide customers for over 25 years. We specialize in the design and manufacture of the Hoffman line of Liquid Filtration Systems, design and manufacture of complete strip drying systems, and the supply of all filter and strip dryer spare parts and accessories.

Air Liquid Systems, Inc. and its representative network offer total solutions to filtration needs. Representatives provide on-site discussions and plant surveys to ensure complete satisfaction with product placement, and full understanding of the customer's application. Sales personnel are experienced engineers with the ability to package a complete systems to meet the customer's requirements.

### Filtration Effectiveness In A Wide Variety Of Coolant And Processing Applications

- Grinding Applications
- Hot & Cold Rolling
- Wire Drawing
- Machining Coolants
- Caustic Washes
- Continuous Casting
- Mill Waste Filtration
- Phosphatizing
- Paint Booth Filtration
- Clarifier Underflow
- Can Body Production
- Food Waste
- Wet Scrubbers
- Parts Washing

1



*F-750 Vacu-Matic Filter at final assembly*

## VACU-MATIC® FILTER

### AN OVERVIEW OF THE VACU-MATIC'S®

#### ... Filtration Process

Hoffman Vacu-Matic Filters are flat bed vacuum units. A continuous metal conveyor belt supports the disposable filter media, while a heavy-duty Gardner Denver exhauster creates a vacuum beneath the media. As the liquid to be filtered is drawn through, a filter cake is formed. As the cake thickens, the vacuum increases and, at a preset limit, a vacuum switch causes the belt (and media) to be indexed. As media is newly exposed, it can be pre-coated by dirty liquid prior to entering the vacuum chamber.

#### ... Benefits

The Vacu-Matic utilizes the flow of air to perform three major functions. First, air is used to dry the cake prior to sludge removal. This minimizes loss of process liquids and reduces sludge disposal costs. Second, using the standard air skimmer, air flow is directed by the exhauster discharge over the liquid pool to skim away floating contaminants. Third, air passing the filter chamber aerates the cleaned liquid. This is particularly important in the case of coolants to control bacteria growth and resulting coolant rancidity.



*Gardner Denver 4203A exhauster and 20 HP motor on Vac-1000 filter*

**Seal and Flat Wire Belt** - Hoffman's unique seal and flat wire belt are built-in to each Vacu-Matic unit. Permanent butterfly clips form the moving seal in the carbon steel flat wire belt (other materials optional). The stationary component of the seal is a PVC extrusion (Buna "N" and Teflon also available) held in place by stainless steel hold down springs. This assembly securely holds the media to the belt and ensures a positive liquid seal. Special seal arrangements are used for paint sludges and other "problem" filtrates.

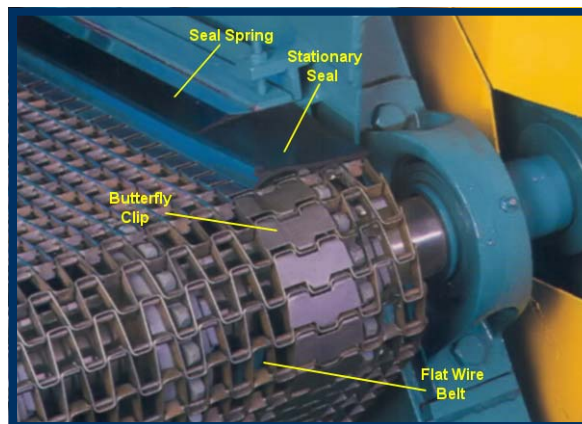


*F-750 shown at a customer's plant filtering contaminated water from a mill hotwell*

2

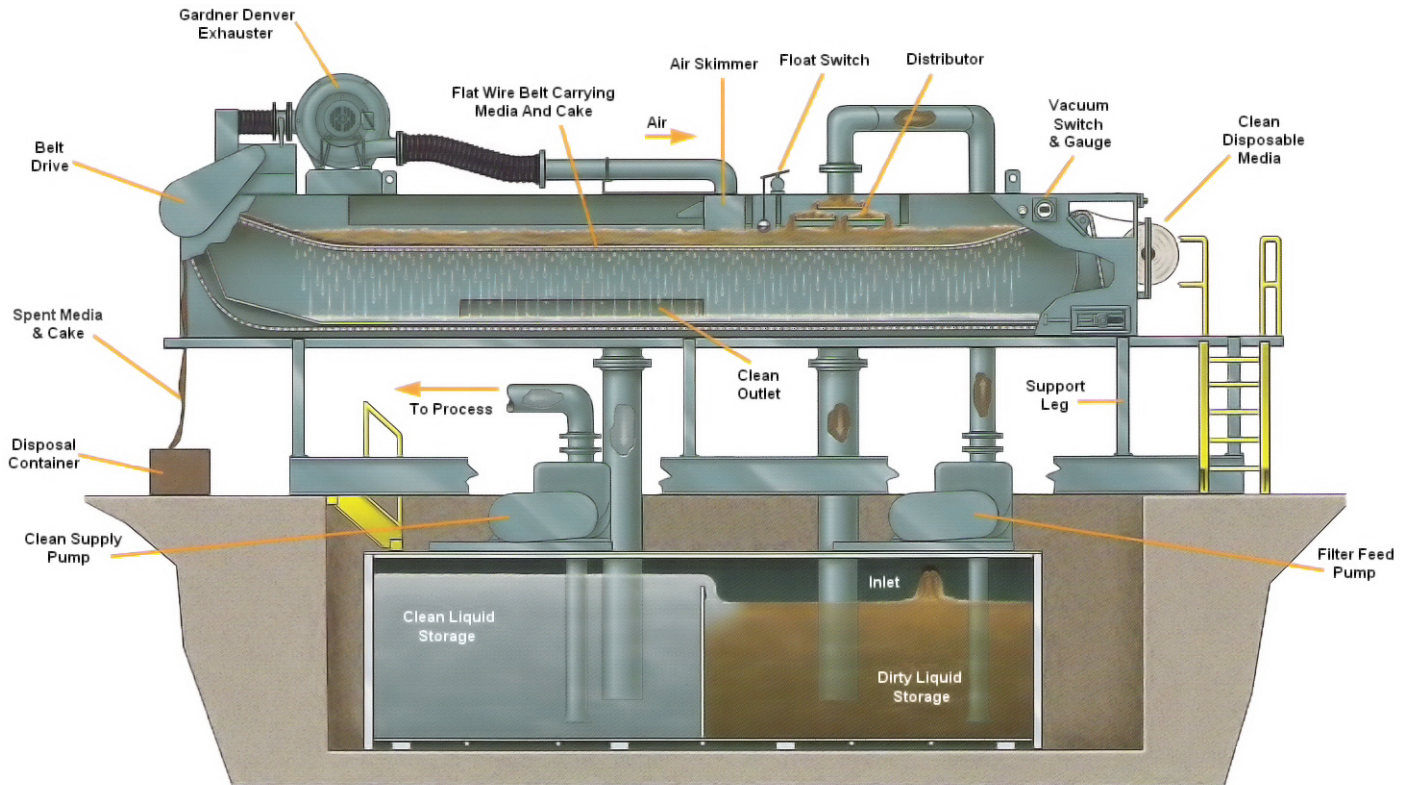
#### ... Standard Components

**Exhauster** - Heavy duty Gardner Denver's Hoffman cast iron exhausters are installed on all Vacu-Matic filters. All heads and sections of this unit are constructed of cast iron, which reduces sound levels, ensures longevity, and simplifies maintenance. Cast iron construction also permits Gardner Denver to design flow passages which maximize efficiency. Adjacent to the blower is the drive and motor gearbox used to index the media belt.



*Flat wire conveyor belt with permanent butterfly clips; stationary seal secured with stainless steel hold down springs.*

## A WORKING VIEW



3

## HI-FLO VACU-MATIC® OPERATION

The feeder pump supplies the Vacu-Matic with contaminated process liquid from the dirty tank. This liquid is pumped to the distributor, where it is evenly portioned across the pool on the filter bed. The bed consists of a flat wire belt supporting the filter media itself.

A Gardner Denver exhauster produces vacuum in the chamber beneath the filter bed, drawing the liquid through the media and the built-up deposit of solids (filter cake). When the pressure drop across the filter cake/media reaches a given limit, an electrical switch is closed. This indexes the media and dried filter cake into the disposal container.



Vacuum Switch

At the same time, clean filter media is drawn onto the filter bed. Both the vacuum in the vacuum chamber and the liquid level drop due to the inrush of liquid through the fresh media. This sudden flow builds the filter cake back to a functional level.

The clean liquid passing through the filter cake and media drains into the clean liquid compartment of the holding tank. A "water leg" is maintained in the clean overflow pipe to sustain a vacuum in the filter.

Where excessive floating solids or tramp oil exist in the incoming process liquid, discharge air from the vacuum producer can be used to operate the standard air skimmer. This moves any loose floating materials toward the dirty end of the filter for removal as media is indexed.

Should the filter bed become flooded due to mechanical malfunction or unexpected impurities in the process, the liquid level is reduced via the overflow slot connected to the side gutter. This is connected to an overflow drain pipe dumping into the dirty compartment of the holding tank.

## COMPACT VACU-MATIC®

### COMPACT VACU-MATIC® OPERATION

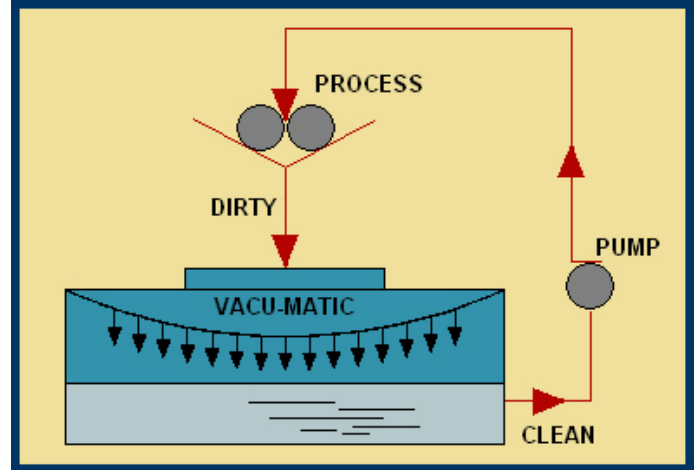
The Hoffman Compact Vacu-Matic operates using the same principles as the larger Hi-Flo unit.

The difference is that the Compact has its own clean liquid reservoir, with dirty liquid often being fed directly to the filter, while the Hi-Flo requires the storage of all liquids in separate tanks or sumps.

This makes the Compact ideally suited for small to medium sized applications, particularly in plants where space is restricted. Models are available for flow rates from 20 GPM (75.7 LPM) to 240 GPM (908.4 LPM). Units are supplied with both exhauster and pump motors pre-wired to a junction box for easy installation.

The Compact offers all the advantages of flat bed vacuum filtration:

- **Removal of tramp oil and floating solids**
- **Coolant aeration to curtail bacterial growth**
- **Continuous coolant flow while indexing**
- **Easy to install, simple to operate controls**

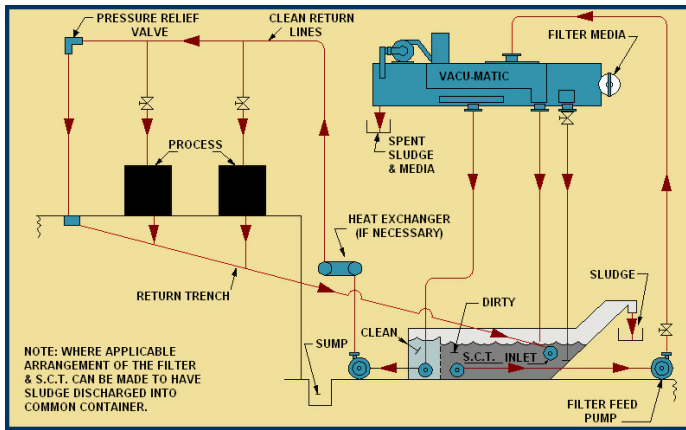


*Compact Vacu-Matic Process Diagram*

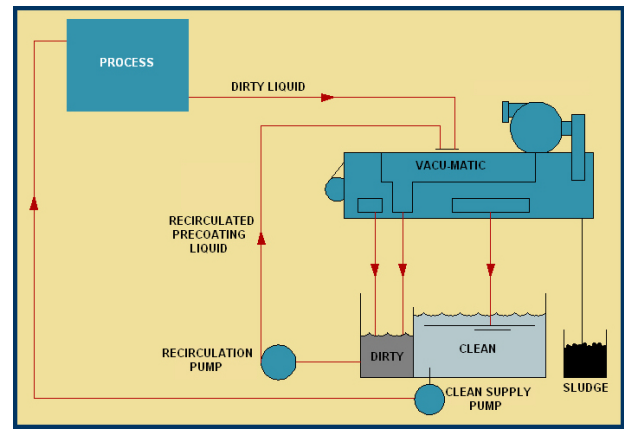


*Hoffman F-122 Compact unit; filter pictured was shipped to customer for use in the removal of metal solids from a steel mill coolant loop*

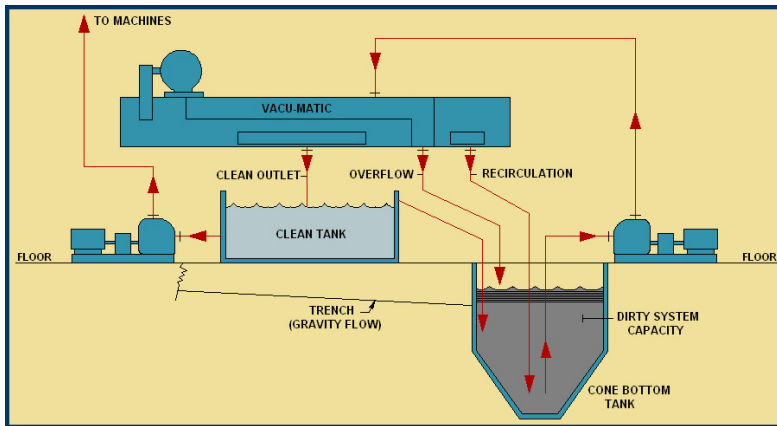
## PROCESS DIAGRAMS



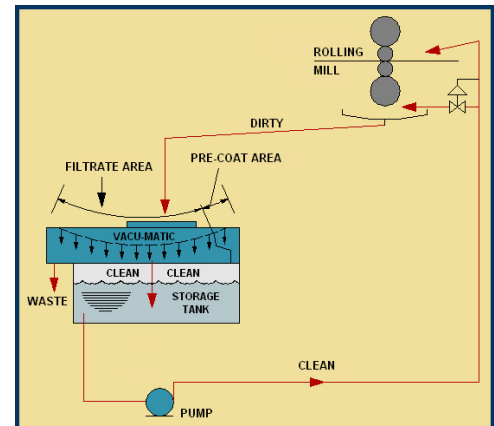
Gravity flow to Hoffman Sludge Collecting Tank (primary clarifier); pump to filter



Gravity flow to filter; pump back to process. Storage tanks supplied with filter



Cone bottom dirty reservoir below floor. Filter and clean tank above floor



Gravity flow to filter; pump back to process. Sumps/ tanks in plant

## Total System Capabilities To Meet Filtration Needs

Air Liquid Systems, Inc. offers a wide variety of Hoffman Vacu-Matic products, options and accessories to completely handle your plant's filtration needs. Our personnel also have a broad knowledge of related process-liquid equipment for integration into complete systems.

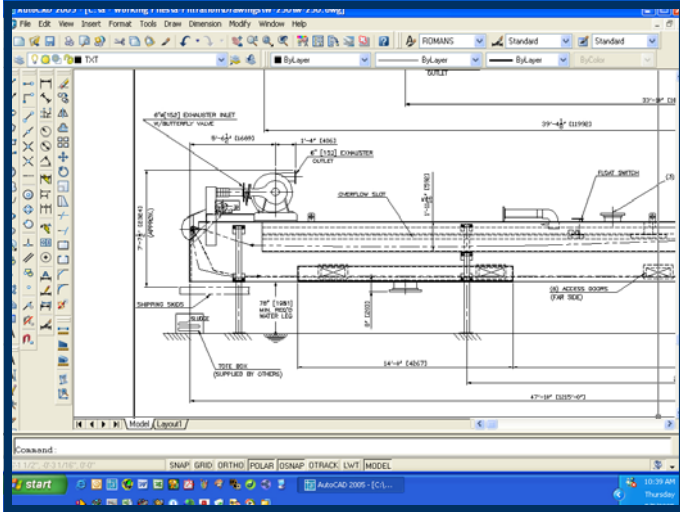
We have the experience to engineer and project manage total systems, or to supply basic components for easy installation by the customer. Whatever your needs, our experienced representative network will help you capitalize on your plant's filtration opportunities, and assist your company to:

- Increased equipment and tool life
- Reduced maintenance costs
- Higher product quality
- Lower liquid consumption
- Increased reclamation value
- Enhanced labor productivity
- Decreased energy and waste disposal costs
- Greater equipment output



Model F-2500 Vacu-Matic Filter assembled with clean/dirty tank below the filter, and catwalk structure to enable ready access to the filter's mechanical components.

## DESIGN & CONSTRUCTION

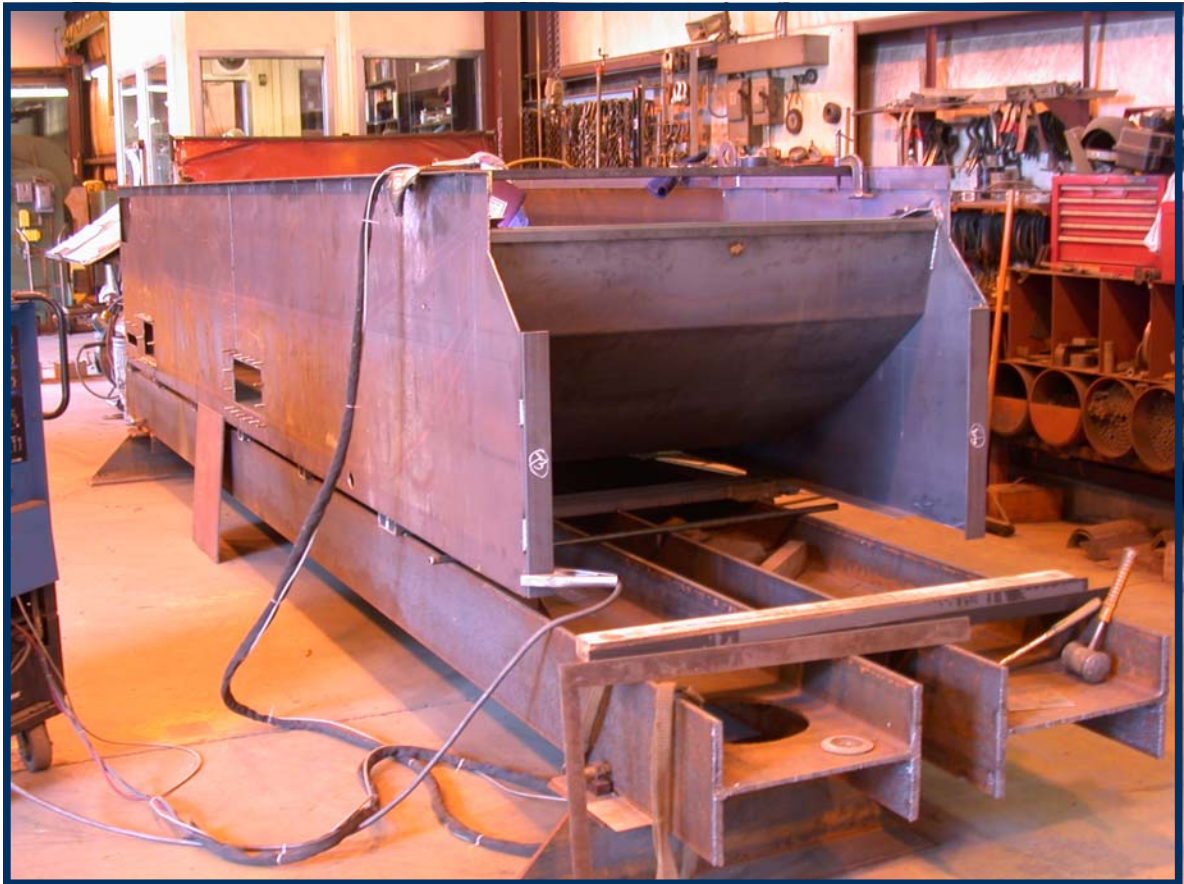


*General layout of standard Vac-2500 filter with exhauster assembly*

Each filter and system are designed in the latest version of AutoCAD. A project engineer oversees each filter and system from proposal through fabrication and assembly, providing status updates at project milestones as requested by the customer.

Experienced welding technicians fabricate the filter tanks in standard carbon steel or stainless steel, depending upon the environment in which the unit will be working. Flat wire belts and other components can also be supplied in carbon steel or stainless steel.

Components are assembled to the unit prior to shipment, including the Gardner Denver exhauster and motor, index motor, switches, and gauges. The filter media is shipped loose to prevent damage, with instructions for the customer to install on-site.



*Fabrication of standard Vacu-Matic F1000 filter tank for use on aluminum rolling mill*

## ACCESSORIES & OPTIONS

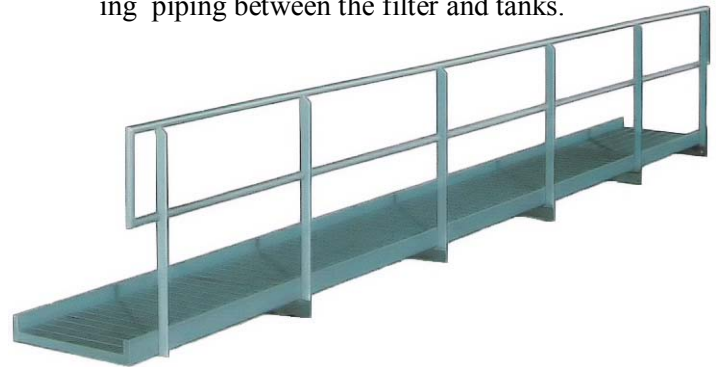


### Belt Skimmer

The Hoffman Belt Skimmer is a durable and dependable method for removal of tramp oils, grease, and other floating contaminants from the surface of water-based solutions. The skimmer is provided with a belt and chain drive (guards removed to show mechanical details) allowing speed variation from 4 to 8 feet per minute. This allows the skimmer to be adjusted for varying contaminant loads.

### Catwalks, Legs, And Other Fabrications

Custom-designed steel fabrications are available for the complete filtration system. These fabrications include catwalks and stairs for filter access, legs and support structure for supporting the filter above the floor or pit, clean and dirty tanks, and interconnecting piping between the filter and tanks.



7

### Air Skimmer ★ NOW STANDARD

For further control of tramp oil and floating contaminants, the Vacu-Matic filter is available with an air skimmer on the discharge of the vacuum producer. Discharge air is channeled back over to the pool in the bed of the filter. By blowing across the surface of the pool, it skims floating contaminants into the cake at the filter's discharge where they are removed during the index cycle.



### Control Panel

Control Panels designed by Air Liquid Systems are available to monitor all aspects of filter operations such as vacuum, end-of-media roll, and high and low liquid levels. Control panels incorporate the transformers, fuse blocks, and motor starters required to allow a single power hook-up for operation. Pilot lights, alarm horns, beacons, and various electrical standards can be used to meet specific customer requirements. PLC programming can also be provided for applications where needed.



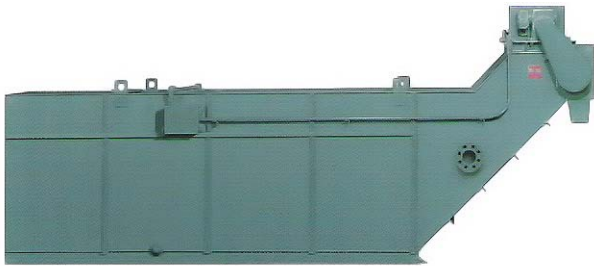


## ADDITIONAL FILTRATION & CLARIFICATION PRODUCTS

In addition to the **Vacu-Matic Filters** described in the preceding passages, Air Liquid Systems offers a number of related Hoffman filtration and distillation equipment product lines. Each of these is designed to permit the most economical and maintenance-free reuse of process liquids.

### **Sludge Collection Tanks**

Hoffman Sludge Collection tanks are available in both standard and custom sizes and configurations. Applications are most frequently found in industries where machining and grinding produce large quantities of high specific gravity waste products.



### **Disk And Cartridge Filters**

These units are compact in size and used in low flow applications (1-125 GPM/ 3.8 473.1 LPM). Housings can be fitted with either disk or replaceable cartridge filter elements.



### **Vacuum Stills**

Hoffman Vacuum Stills are steam heated, pot-type units designed to separate high boiling temperature solvents from oils and greases. Distilled solvents are automatically removed and pumped to clean storage. Likewise, collected wastes are pumped out without shut-down of the distillation unit. Available in five sizes with nominal capacities of 40 to 600 gallons per hour (150 to 2,270 liters per hour), these units are designed for continuous operation and minimum maintenance.



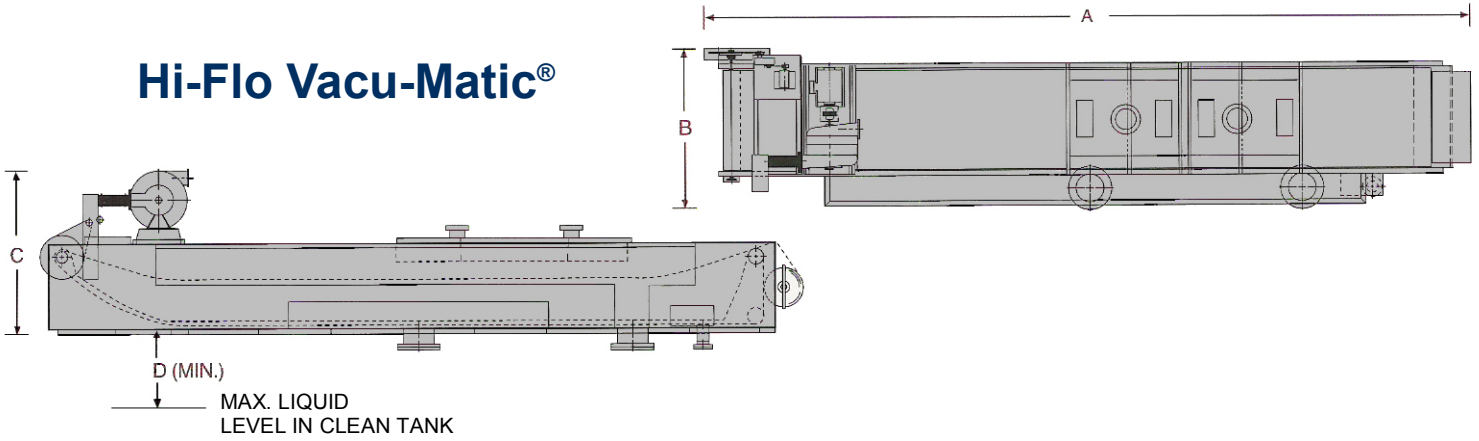
### **Magnaflo Magnetic Separators**

As with several other Hoffman filtration products, Magnaflo units are used most often in machining industries. Magnetic solids from machining and grinding are easily removed by the Magnaflo's strong ceramic magnets. The Magnaflo is available in 13 sizes with storage capacities ranging from 160 to 6,600 gallons (606 to 24,980 liters). Flow rates can be as great as 1,000 GPM (3,875 LPM).



# SPECIFICATIONS & DIMENSIONS

## Hi-Flo Vacu-Matic®



### HI-FLO "F" SERIES

	F200	F300	F400	F500	F750	F1000	F1500	F2000	F2500	F3000	F3500	F4000	F4500
FILTER AREA, Sq. Feet	17	23	26	29	35	45	55	72	89	110	129	147	165
Filter Area, Sq. Meters	1.58	2.14	2.4	2.7	3.3	4.2	5.1	6.7	8.3	10.2	12	13.7	15.3
Length "A", Feet/ Inches	12'-5"	15'-2"	16'-1"	17'-4"	19'-7"	20'-8"	23'-8"	27'-8"	32'-8"	35'-6"	40'-3"	45'-0"	49'-9"
Length "A", Meters	3.8	4.6	4.9	5.3	6.0	6.3	7.2	8.4	10.0	10.8	12.3	13.7	15.2
Width "B", Feet/ Inches	4'-0"	4'-0"	5'-2"	5'-2"	5'-2"	6'-2"	6'-4"	6'-4"	6'-7"	7'-4"	7'-4"	7'-6"	7'-6"
Width "B", Meters	1.2	1.2	1.6	1.6	1.6	1.88	1.93	1.93	2.0	2.24	2.24	2.3	2.3
Height "C", Feet/ Inches	4'-10"	4'-10"	6'-5"	6'-5"	6'-5"	6'-8"	6'-8"	7'-4"	7'-4"	7'-7"	7'-7"	7'-7"	7'-7"
Height "C", Meters	1.5	1.5	1.9	1.9	1.9	2.0	2.0	2.23	2.23	2.3	2.3	2.3	2.3
Water Leg "D", Inches	28"	28"	42"	42"	42"	78"	78"	78"	78"	78"	78"	78"	78"
Water Leg "D", Meters	0.71	0.71	1.1	1.1	1.1	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
Exhauster Motor, HP	5	5	10	10	10	20	20	20	20	20	20	20	20
Exhauster Motor, KW	3.73	3.73	7.46	7.46	7.46	14.91	14.91	14.91	14.91	14.91	14.91	14.91	14.91
Weight, LBS.	2,800	3,100	4,150	5,585	6,500	9,600	13,000	15,000	16,000	18,000	19,500	21,000	24,000
Weight, KG.	1,270	1,400	1,880	2,530	2,950	4,360	5,900	6,800	7,270	8,180	8,860	9,500	10,900

9

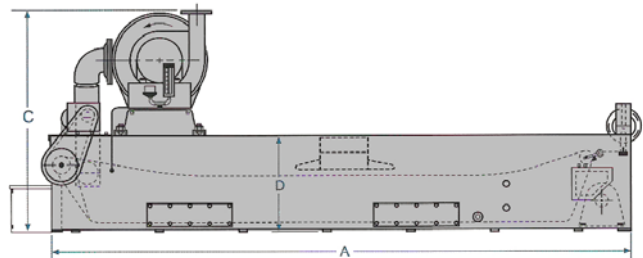
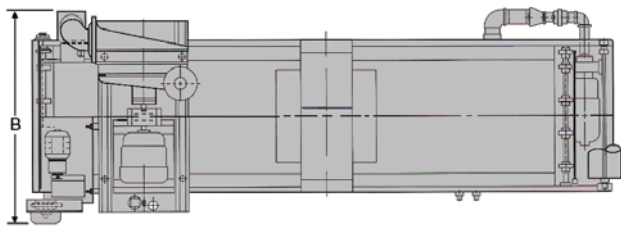
### HI-FLO "W" SERIES

	W75	W90	W120	W148	W162	W190	W215	W250
FILTER AREA, Sq. Feet	75	90	120	148	162	190	215	250
Filter Area, Sq. Meters	7.0	8.4	11.0	13.7	15.0	17.6	20.0	23.2
Length "A", Feet/ Inches	21'-9"	24'-9"	28'-9"	33'-9"	36'-1"	40'-10"	45'-7"	50'-4"
Length "A", Meters	6.6	7.5	8.8	10.3	11.0	12.4	13.9	15.3
Width "B", Feet/ Inches	8'-10"	8'-10"	9'-0"	9'-0"	9'-4"	9'-4"	9'-4"	9'-4"
Width "B", Meters	2.69	2.69	2.74	2.74	2.85	2.85	2.85	2.85
Height "C", Feet/ Inches	6'-11"	6'-11"	7'-6"	7'-6"	7'-8"	7'-8"	7'-8"	7'-8"
Height "C", Meters	2.1	2.1	2.3	2.3	2.34	2.34	2.34	2.34
Water Leg "D", Inches	78"	78"	78"	78"	78"	78"	78"	78"
Water Leg "D", Meters	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
Exhauster Motor, HP	20	20	20	20	20	20	20	20
Exhauster Motor, KW	14.91	14.91	14.91	14.91	14.91	14.91	14.91	14.91
Weight, LBS.	15,000	16,000	19,500	21,000	24,000	27,000	30,000	32,500
Weight, KG.	6,800	7,275	8,865	9,550	10,900	12,300	13,600	14,800

## HI-FLO "8W" SERIES

	8W110	8W130	8W160	8W200	8W220	8W255	8W290	8W330
FILTER AREA, Sq. Feet	110	130	160	200	220	255	290	330
Filter Area, Sq. Meters	10.22	12.08	14.86	18.58	20.44	23.69	26.94	30.66
Length "A", Feet/ Inches	21'-9"	24'-9"	28'-9"	33'-9"	36'-1"	40'-10"	45'-7"	50'-4"
Length "A", Meters	6.6	7.5	8.8	10.3	11.0	12.4	13.9	15.3
Width "B", Feet/ Inches	11' 2-1/4"	11' 2-1/4"	11' 2-1/4"	11' 4-1/4"	12' 2-3/4"	12' 2-3/4"	12' 2-3/4"	12' 2-3/4"
Width "B", Meters	3.41	3.41	3.41	3.46	3.73	3.73	3.73	3.73
Height "C", Feet/ Inches	6'-11"	6'-11"	7'-6"	7'-6"	7'-8"	7'-8"	7'-8"	7'-8"
Height "C", Meters	2.1	2.1	2.3	2.3	2.34	2.34	2.34	2.34
Water Leg "D", Inches	78"	78"	78"	78"	78"	78"	78"	78"
Water Leg "D", Meters	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
Exhauster Motor, HP	20	20	20	20	20	20	20	20
Exhauster Motor, KW	14.91	14.91	14.91	14.91	14.91	14.91	14.91	14.91
Weight, LBS.	20,000	21,000	26,000	28,000	32,000	36,000	40,000	42,000
Weight, KG.	9,072	9,520	11,793	12,701	14,515	16,330	18,144	19,051

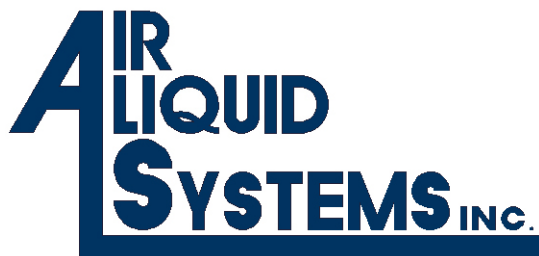
## Compact Vacu-Matic®



10

## COMPACT "F" SERIES

	F40	F60	F80	F120	F122	F124	F126
FILTER AREA, Sq. Feet	4.2	4.2	12	12	16.6	21	26
Filter Area, Sq. Meters	0.4	0.4	1.1	1.1	1.5	1.95	2.4
Reservoir Capacity, US Gal.	50	50	130	130	154	178	202
Reservoir Capacity, Liters	190	190	490	490	580	675	765
Length "A", Feet/ Inches	6'-8"	6'-8"	8'-7"	8'-7"	10'-7"	12'-7"	14'-7"
Length "A", Meters	2.0	2.0	2.6	2.6	3.2	3.8	4.5
Width "B", Feet/ Inches	2'-8"	2'-8"	4'-2"	4'-2"	4'-2"	4'-2"	4'-2"
Width "B", Meters	0.8	0.8	1.3	1.3	1.3	1.3	1.3
Height "C", Feet/ Inches	2'-11"	2'-11"	4'-4"	4'-4"	4'-4"	4'-4"	4'-4"
Height "C", Meters	0.9	0.9	1.3	1.3	1.3	1.3	1.3
Height to Distributor Top "D", Inches	18"	18"	22-1/2"	22-1/2"	22-1/2"	22-1/2"	22-1/2"
Height to Distributor Top "D", Meters	0.46	0.46	0.572	0.572	0.572	0.572	0.572
Exhauster Motor, HP	1	1-1/2	3	5	5	5	5
Exhauster Motor, KW	0.746	1.12	2.24	3.73	3.73	3.73	3.73
Weight, LBS.	990	1,100	1,160	1,620	1,740	1,860	1,980
Weight, KG.	450	500	527	735	790	845	900



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Website: [www.airliquidsystems.net](http://www.airliquidsystems.net)

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