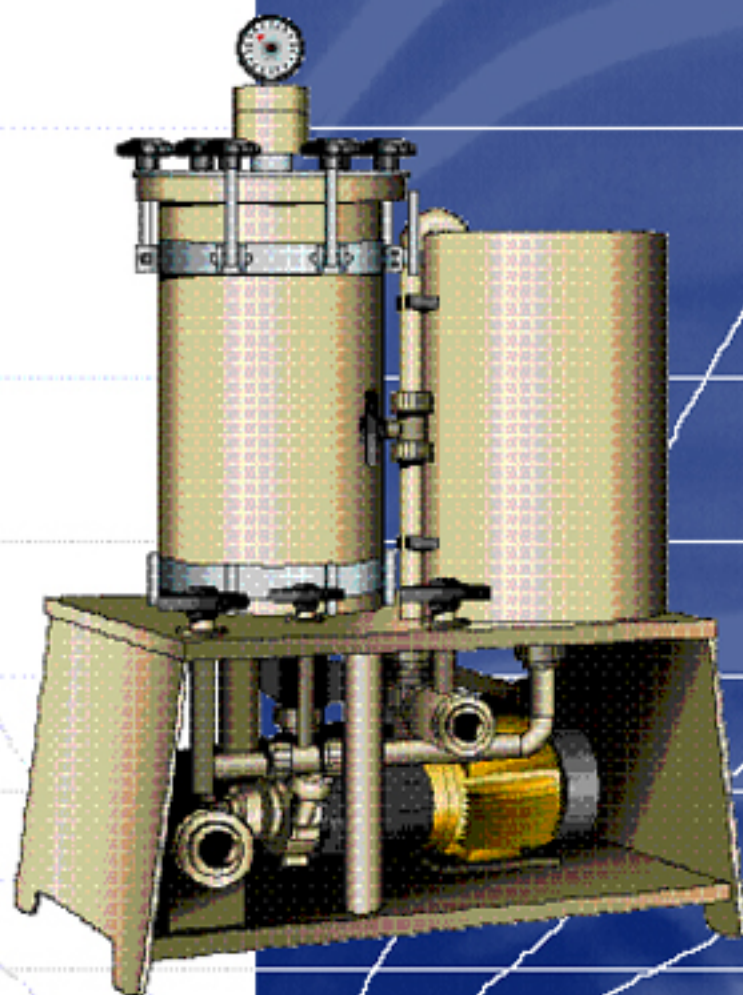




Cartridge, Disc and Bag filter systems



Filter systems 1000 - 4000 l/h 250 - 1000 us-gph

Cartridges - Discs

Pump

- Magnetic drive PP pump with 2 hour dry run capability (M10, M11 and M15 only).

Filter chamber

- All PP housing.
- Leakfree welded base for optimal mechanical strength, with extra SS top plate for #31-32.
- No by-pass of unfiltered solution.

Filter media

- Cartridge systems accept wound, spun, carbon and pleated elements.
- All discs accept thin or thick filter paper or reusable cloth.
- Discs can easily be replaced.

Slurrytank (# 31..32)

- Round slurrytank with sloping bottom allows easy cleaning and complete drainage.
- Multi functional design allows carbon treatment, chemical mixing / additions, draining chamber before cleaning and pump priming.

Standard system includes:

- Union connection with PP/CPVC sockets, optional hose connectors.
- Motor starter (3 phase) with thermal overload.
- Air release and drain valve.
- 3m lead (without plug).
- Pressure gauge with membrane prevents contact with solution (except for #11..22).

No metal contact with the solution

- External fasteners are SS, with optional high phosphoric electroless nickel coating for strong Chloride, Fluoride and MSA environments.

Max. temperature 80 °C / 176 °F

Max. pressure 1,6 bar / 23 psi

Dimensions		L x W x H mm	Net kg
	# 11..21	390 x 275 x 680	12..16
	# 12..22	390 x 275 x 935	14..18
Without slurrytank	# 31	390 x 315 x 905	22..31
With slurrytank	# 32-S	390 x 625 x 1160	30..35

1000 l/h - 0,12 kW
250 us-gph - 1/6 hp



 M10 - 11A - K - PP 1 cartridge 10"

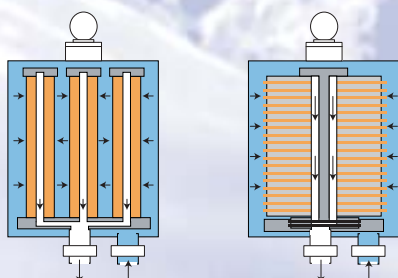
2000 l/h - 0,18 kW
500 us-gph - 1/4 hp



 M11 - 21A - K - PP 2 cartridges 10" (parallel filtration)



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Selection e.g.

	M10	11A	K	PP	
l/h*					
kW					
hp					
1000	0,12	1/6			
2000	0,18	1/4			
	M10			PP	Material
	M11			PVDF	
			K		Cartridge
1 Chamber 10"		11A			
1 Chamber 20"		12A			
2 Chambers 10"		21A			
2 Chambers 20"		22A			

* Clean Flowrate

3000 l/h - 0,18 kW
800 us-gph - 1/4 hp

4000 l/h - 0,25 kW
1000 Gph - 1/3 hp



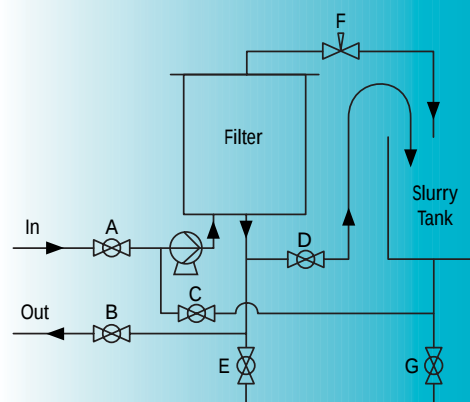
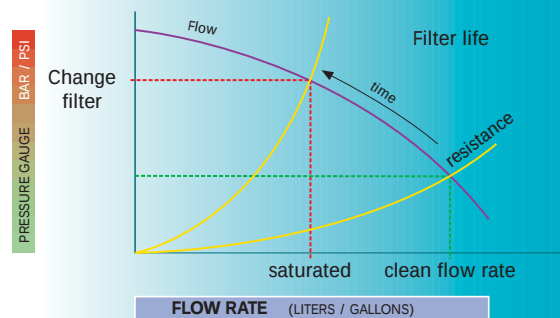
-  M15 - 31A - K - PP 3 cartridges 10"
-  M15 - 31A - P - PP 32 discs ODxID Ø 136 x 32mm (0,5m² / 5 ft²)

3000 l/h - 0,18 kW
800 us-gph - 1/4 hp

4000 l/h - 0,25 kW
1000 us-gph - 1/3 hp



-  M15 - 32A - K - S - PP 3 cartridges 20" + slurrytank (14 L / 3,7 us-gallons)
-  M60 - 32A - P - S - PP 65 discs ODxID Ø 136 x 32mm (1m² / 11 ft²) + slurrytank



Action	Valve	A	B	C	D	E	F	G
1. Start up / Air release		o	o				o	
2. Operation		o	o					
3. Filling slurrytank		o	o		o			
4. Dosing filteraid				o	o			
5. Emptying slurrytank		o	o	o				
6. Draining filterchamber						o	o	
7. Changing filtermedium								o
8. Draining slurrytank								o

o valve open

Selection e.g.

M60 **32A** **P** **S** **PP**

l/h* kW hp

3000 0,18 1/4

4000 0,25 1/3

M15

M60

Chamber 10"

Chamber 20"

31A

32A

K

P

PP

S

-

S

K

P

PP

S

-

S

K

P

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Filter systems 5000 - 30000 l/h 1300 - 8000 us-gph

Cartridges - Discs

Pump

- Magnetic drive PP pump with 2 hour dry run capability (M336..M458 only).

Filter chamber

- All PP housing, # 71/72 also in PVDF.
- Leakfree welded base and SS top plate give optimal mechanical strength.
- No by-pass of unfiltered solution.

Filter media

- Cartridge systems accept wound, spun, carbon and pleated elements.
- All discs accept thin or thick filter paper or reusable cloth.
- Discs can easily be replaced.

Slurrytank

- Round slurrytank with sloping bottom allows easy cleaning and complete drainage.
- Multi functional design allows carbon treatment, chemical mixing / additions, draining chamber before cleaning and pump priming.

Standard system includes:

- Union connection with PP/CPVC sockets and optional hose connectors or flanges.
- Motor starter 3 phase with thermal overload.
- Air release and drain valve.
- 3m lead (without plug).
- Pressure gauge with membrane prevents contact with solution.

No metal contact with the solution

- External fasteners are SS, with optional high phosphoric electroless nickel coating for strong Chloride, Fluoride and MSA environments.

Max temperature	PP	80 °C / 176 °F
	PVDF	90 °C / 194 °F
Max pressure	Without reinforcement	1,6 bar / 23 psi
	With reinforced bottom	5 bar / 72 psi

Dimensions		L x W x H mm	Net kg
Without slurrytank	# 71	490 x 370 x 920	33..37
	# 151	600 x 485 x 982	65..75
With slurrytank	# 72-S	675 x 490 x 1175	40..50
	# 152-S	600 x 895 x 1235	70..80

5000 - 10.000 l/h 0,25 - 0,55 kW
1300 - 2600 us-gph 1/3 - 3/4 hp

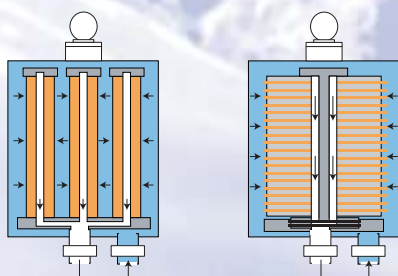
**Also available in PVDF
for chromium plating solutions**



	M60 - 71A - K - PP	7 cartridges 10"
	M60 - 71A - P - PP	32 discs ODxID Ø 205 x 32mm (0,9m² / 10 ft²)



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Selection e.g.

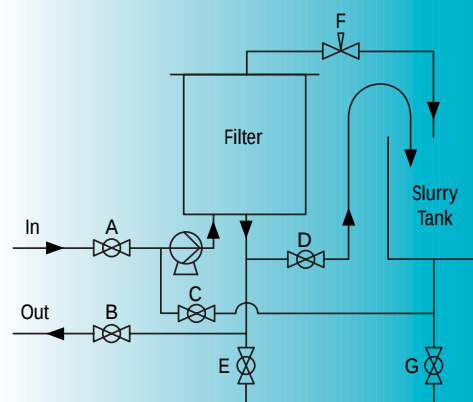
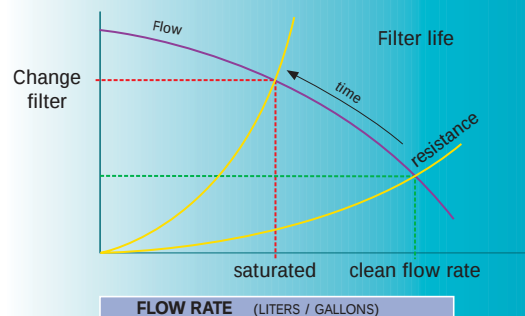
	M60	71A	K		PP
l/h* kW hp					
5000 0,25 1/3	M60				PP
5000 0,55 3/4	M62				PVDF
8000 0,37 1/2	M90			-	
10000 0,55 3/4	M120			S	
		71A	K	Cartridges	
		72A	P	Discs	

* Clean Flowrate

10.000 - 30.000 l/h
2600 - 8000 us-gph



PRESSURE GAUGE
BAR / PSI



Action	Valve	A	B	C	D	E	F	G
1. Start up / Air release		o	o				o	
2. Operation		o	o					
3. Filling slurrytank		o	o		o			
4. Dosing filteraid				o	o			
5. Emptying slurrytank		o	o	o				
6. Draining filterchamber						o	o	
7. Changing filtermedium								o
8. Draining slurrytank								o

o valve open

- M300 - 152A - K - S - PP 15 cartridges 20" + slurrytank (45 L / 12 us-gallons)
- M300 - 152A - P - S - PP 65 discs ODxID Ø 280 x 50mm (4m² / 43 ft²) + slurrytank

Selection e.g.	M150	152A	P	S	PP	
l/h* kW hp						
10000 1.1 1 1/2	M110				PP	Material
15000 1.5 2	M150					
20000 2.2 3	M220			-		Without slurrytank
25000 3 4	M300			S		With slurrytank
30000 4 5 1/2	M400					
		P	K			cartridges
		151A	discs			
Chamber 10"		152A				
Chamber 20"						

Pump	Chamber	Connections		Hose	
		Union		Inlet	Outlet
		Inlet d/DN	Outlet d/DN		
M60		32/25		1-1/4"	
M90	71..72	32/25	32/25	1-1/4"	1-1/4"
M120		40/32		1-1/2"	
M110		40/32		1-1/2"	
M150		50/40		2	
M220	151..152	63/50	40/32	2-1/2"	1-1/2"
M300		63/50		2-1/2"	
M400		63/50		2-1/2"	

d = OD DN = ID (mm)

* Clean Flowrate

Filter systems 25000 - 70000 l/h 6500 - 18000 us-gph

Cartridges - Discs

Pump

- Magnetic drive PP pump with 2 hour dry run capability.

Filter chamber

- 30 mm PP wall with leakfree welded base gives optimal mechanical strength.
- Rigid PP chamber cover c/w 12 mm SS top plate can be rotated and opened by one person.

Filter media

- Cartridge systems accept wound, spun, carbon and pleated elements.
- Disc systems offer choice of thin filter discs for largest filter area or thick discs for highest dirt holding capacity.
- All discs accept thin or thick filter paper or reusable cloth.
- Discs can be removed in manageable stacks.

Slurrytank

- Large round slurry tank with sloping bottom allows easy cleaning and complete drainage.
- Multi functional design allows carbon treatment, chemical mixing / additions, draining chamber before cleaning and pump priming.

Standard system includes:

- Union connection with PP/CPVC sockets and optional hose connectors or flanges.
- Wheels for portability may be removed, once installed.
- Motor starter 3 phase with thermal overload.
- Air release and drain valve.
- 3m lead (without plug).
- Pressure gauge with membrane prevents contact with solution.

No metal contact with the solution

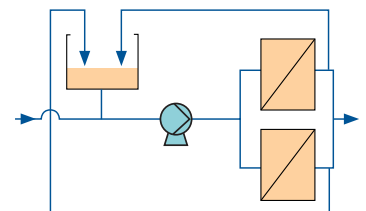
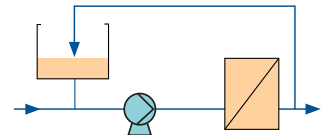
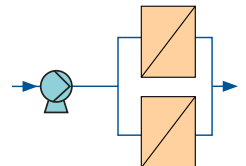
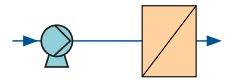
- External fasteners are SS, with optional high phosphoric electroless nickel coating for strong Chloride, Fluoride and MSA environments

Max temperature 80 °C / 176 °F

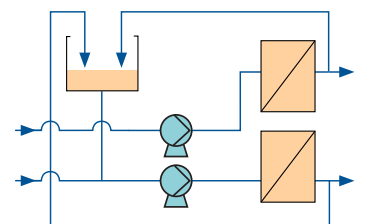
Max pressure 5 bar / 72 psi

Dimensions		L x W x H mm	Net kg
Without slurrytank	# 362	900x760x1430	240
With slurrytank	# 362-S	1400x900x1430	280

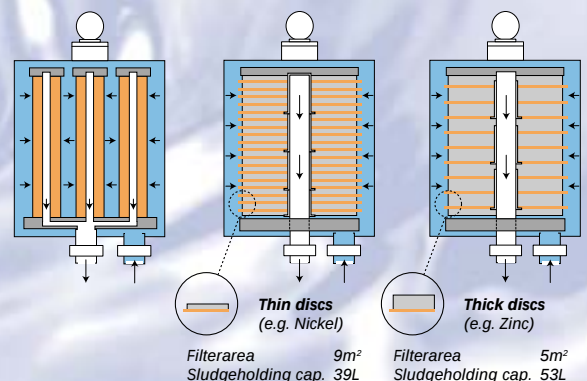
25.000 - 35.000 l/h
6500 - 9000 us-gph



25.000 - 70.000 l/h
6500 - 18.000 us-gph

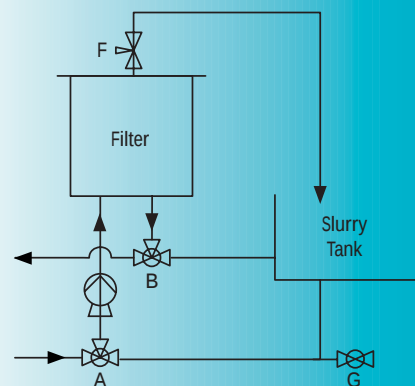
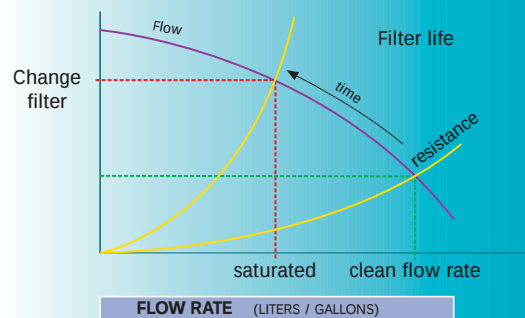


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PRESSURE GAUGE
BAR / PSI



Operation: 3-way Valves L type

	A	B	F	G
1. Start up / Air release				
2. Operation				
3. Filling slurrytank				
4. Dosing filteraid				
5. Draining filter (in slurrytank)				
6. Changing filtermedium				
7. Draining slurrytank				

o valve open

	M400 - 362A - K - S - PP	36 cartridges 20" + slurrytank (100 L / 26 us-gallons)
	M400 - 362A - P - S - PP	61 discs ODxID Ø 460 x 100 mm (9m² / 97 ft²) + slurrytank
	M400 - 362A - Ph - S - PP	33 discs ODxID Ø 460 x 100 mm (5m² / 54 ft²) + slurrytank

Selection e.g.	MT	400	2-362A	P	S	PP	
1 pump	M					PP	Material
2 pumps	MT						
l/h*							
28000	3	4					
35000	4	5 1/2					
		300					
		400					
1 chamber 20"			362A				Cartridges
2 chambers 20"			2-362A				Thin discs
				K			Thick discs
				P			
				Ph			

*Clean Flowrate

		Connections			
Pump	Chamber	Union		Hose	
		Inlet d/DN	Outlet d/DN	Inlet	Outlet
M300	362	63/50	63/50	2-1/2"	2-1/2"
M400					

d = OD DN = ID (mm)

Multi purpose bag filter systems

These well balanced Hendor bag filter systems combined with superior filter media and proper control of flow and pressure, ensure optimal filtration results.

Pump

- Magnetic drive PP pump with 2 hour dry run capability. (M10 and M15 only).

Filter chamber

- All PP housings.
- Leakfree welded base and SS top plate give optimal mechanical strength.
- No by-pass of unfiltered solution.

Filter media

- PP filter bags, also in combination with carbon bag for carbon treatment.
- PP filter bag with PP micro fibres for oil absorption or tin filtration.

Basic system includes:

- Motor starter with thermal overload.
- Air release and drain valve.
- Pressure gauge with membrane prevents contact with solution.

Manually controlled system includes:

- By pass system with valves and flowmeter.

Automatic system includes:

- Complete electronic device to control system flow and pressure to ensure optimal results.

No metal contact with the solution

- External fasteners are SS, with optional high phosphoric electroless nickel coating for strong Chloride, Fluoride and MSA environments

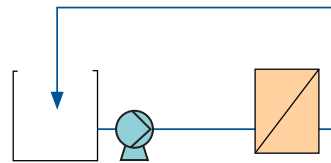
Installation

Union connection with PP/CPVC sockets or hose connectors.

Max temperature 80 °C / 176 °F

Dimensions	L x W x H mm	Net. kg
# 7A-B1	490 x 370 x 1030	36..39
# 7A-B2	490 x 370 x 1284	42..45

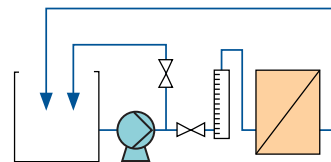
1000 - 10.000 l/h 0,12 - 0,55 kW
250 - 2600 us-gph 1/6 - 3/4 hp



1000 - 10.000 l/h 0,12 - 0,55 kW
250 - 2600 us-gph 1/6 - 3/4 hp

Manually controlled

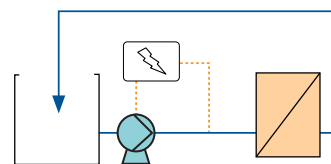
With by-pass and flowmeter



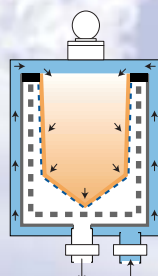
1000 l/h 0,12 kW
250 us-gph 1/6 hp

Automatic filter system

Optimal auto control of sludge level



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Selection e.g.

	M60	7A-B2	FM	PP
l/h*				
kW				
hp				
	M10		PP	Material
	M15			
	M60		-	
	M90		FM	
	M120		FF	

Chamber 10"

Chamber 20"

7A-B1

7A-B2

Bag L = 445mm x ø 180 mm

Bag L = 830mm x ø 180 mm

Basic filtersystem

Manually controlled

Auto.-controlled (M10 only)

* Clean Flowrate

Bag filtration

- Recommended as prefilter, for pretreatment (eg phosphating, paint strippers),
- Waste treatment
- Large dirt holding capacity
- Low operating cost
- Easy bag change
- No by-pass of unfiltered liquid

Carbon purification

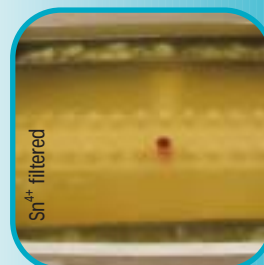
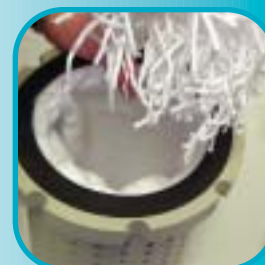
- Removes organic break-down products of brighteners
- 1 gram carbon = 500 – 1500 m2
- 1 litre carbon = 300 - 400 gram
- Adsorbs 10 - 50 % its own weight
- Low flow = good wetting (50 % volume is air)
- Low flow = more contact time = better adsorption
- Higher temperature = better adsorption

Oil-grease

- Oliofile Hydrophobe Chemical inert PP micro fibre
- Absorbs non emulsified oil out of emulsified cleaners
- Will not absorb surfactants
- Also for Etch, Activator
- In case of big volumes of oil, use skimmer
- Absorbs 6 – 8 times its own weight
- Re-use 6 times by 10 min. centrifuge
- Maximum results at low flow and pressure
- No oil risk in plating baths
- Low COD in effluent

Gel like sludge

- Controlled system flow and pressure required
- Surface micro fibre single length bag 400 M² Voids volume 95 % Total fibre length 40.000 km
- Sludge holding capacity 5 - 8 kg (B1)
- Successful with gel - like sludge (tin, phosphate, chromate, flux) (eg Sn⁴⁺ : up to 40 times cheaper than conventional filtering)



Connections

Pump	Chamber		Union		Hose	
			Inlet d/DN	Outlet d/DN	Inlet	Outlet
M10	7A-B1/2	-	32/25	25/20	1"	1"
M15			32/25	25/20	1"	1"
M60			32/25	32/25	1-1/4"	1-1/4"
M90			32/25	32/25	1-1/4"	1-1/4"
M120			40/32	32/25	1-1/2"	1-1/4"
M10	7A-B1/2	FM	32/25	25/20	1"	1"
M15			32/25	25/20	1"	1"
M60			32/25	32/25	1-1/4"	1-1/4"
M90			32/25	32/25	1-1/4"	1-1/4"
M120			40/32	32/25	1-1/2"	1-1/4"
M10	7A-B1/2	FF	-	-	1"	1"

d = OD DN = ID (mm)

Selection assistant for Hendor

1. Customer process / system information

Process	✓	Application	✓	pH	
Anodizing / hot seal		Automotive			
Chrome - Trivalent		Coins		Temperature	
Chrome -Hexavalent - Hard		Connectors		Celsius / Fahrenheit	°
Cleaning		Construction		Tank Volume	
Copper - acid		Furniture		Litres / Gallons	
Copper - cyanide		Gravure		Clean filter flow rate	
Copper electroless		Jewellery		Required tank turnovers/ hour	
Etching		Printed circuits		Filterarea required	
Gold		Sanitary		m ² / ft ²	
Gold - Immersion		Semi conductors		Carbon treatment	✓
Nickel - electroless		Strip		Continuous	
Nickel - electrolytic		Wastewater		Periodic	
Phosphating		Wire		Electrical	✓
Silver		Other - please state		Volt	
Tin				Phase	
Zinc - acid		In line resistance		Hertz	
Zinc - alkaline / cyanide		Strainer			
Zinc - alkaline, non-cyanide		Eductors / nozzles			
Zinc - hot galvanizing		Heat exchanger			
Other - please state					

2. Checklist

Standard filter system includes	✓	Options	✓
Air release	✓	Filtermedium (not included in standard unit)	
Drain valve	✓	Dry run protection	
3 m lead (without plug)	✓	Slurry tank	
Motor starter (3 phase)	✓	Wheels for portability	
<i>incl. thermal overload switch</i>		Pressure gauge on # 11/12 cartridge systems	
Pressure gauge	✓	Pressure gauge with transducer	
<i>not on #11/12 cartridge systems and automatic bag filter system</i>		Union connection with PVC/CPVC sockets	
Union connection	✓	Hose connectors	
<i>with PP sockets for rigid piping</i>		Flexible hose	
		Suction strainer	
		Flange connection	
		Protective extra coating on SS external parts	
		Flow control - manual	
		Flow control - automatic	
		Chamber interlock sensor	

3. Choose the right medium

Sources of contamination	Type of impurities	Recommended filtermedium	✓
Products to be plated	Organic	Oil / grease Brightener/breakdown	Bag + micro fibres
Anodes			
Environ dust	Inorganic	Solids	Cartridges
Air agitation			Dics with paper
Drag in			Dics with cloth
Flight bars		Hydrated salts	Filterbag
Cathode contacts			Bag + micro fibres
Addition of plating chemicals			



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Important

From experience Hendor has shown that customers benefit for many years, from a correctly sized product.
By returning this form, Hendor can advise in selecting the most suitable system.

4. Selection assistant for filtermedium

Selection	W		L		20		S		050
Type	Code	Medium	Code	Length	Code	Core	Code	µm	Code
Wound cartridge	W	Washed PP Polyester	W L	10"	10	PP Polyester SS316	P L S	0,5	0A5
				20"	20			1	001
				30"	30			5	005
								10	010
								25	025
								50	050
								100	100

Type	Code	Medium	Code	Length	Code	Core	Code	µm	Code
Spunbonded cartridge	S	Nominal	N	10"	10	No core	X	0,5	0A5
				20"	20			1	001
				30"	30			5	005
								10	010
								25	025
								50	050
								100	100

Type	Code	Medium	Code	Length	Code	Core	Code	µm	Code
Pleated cartridge	P	Absolute	A	10"	10	PP	P	1	001
				20"	20			5	005
				30"	30			10	010
								25	025

Type	Code	Medium	Code	Length	Code	Core	Code	µm	Code
Carbon cartridge	C	Polyethylene	E	10"	10	PP	P	25	025
				20"	20				
				30"	30				

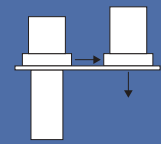
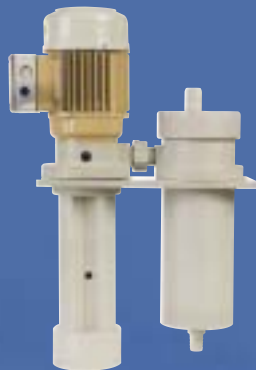
Type	Code	ODxID (mm)	Code
Thin paper 10 µm	90	136x32	136x32
Thick paper 1-5 µm	375	205x32	205x32
		280x50	280x50
		460x100	460x100

Type	Code	ODxID (mm)	Code
Fine PP cloth 10 µm	400	136x32	136x32
Coarse PP cloth 50 µm	240	205x32	205x32
		280x50	280x50
		460x100	460x100

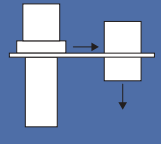
Type	Code	Medium	Code	Ø x l (mm)	Code	Ring	Code	um	Code
Filterbag	B	PP felt	PF	180x445	7B1	PP SS316	P S	1	001
				180x830	7B2			5	005
								10	010
								25	025
								50	050
								100	100

Type	Code
PP micro fibres	55-11010

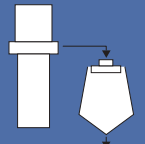
Filtersystems with vertical pump



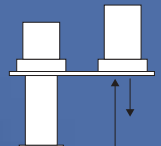
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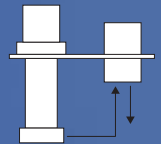
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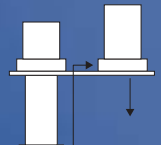
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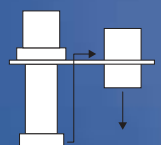
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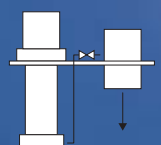
5



6



7



8



 **hendor**
Quality Pumps & Filters

Hendor BV
P.O. Box 9
5530 AA Bladel

Leemskuilen 15
5531 NK Bladel
The Netherlands

Tel.: +31 (0)497 33 93 89
Fax.: +31 (0)497 38 15 93

info@hendor.com
www.hendor.com