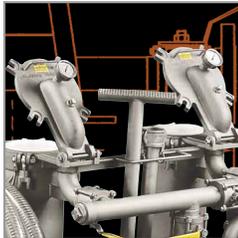


# Portable Liquid Pump and Filter Systems

Compressed Air-Powered  
Pump and Filter System



Technical Bulletin C

**Filtration Systems**

Division of Mechanical Mfg. Corporation



# PORTABLE LIQUID PUMP AND FILTER SYSTEMS



## DESCRIPTION

*Filtration Systems* Portable Liquid Pump & Filter Systems are designed to pump, transfer, and filter liquids from tanks, drums or other reservoirs. It is an essential piece of equipment for any industrial facility where liquids are present; ideal for multiple-site batch filtering, recycling of expensive process fluids, or cleanup of accidental spills. Portable Liquid Pump & Filter Systems are designed for use with high performance filter bags, strainer baskets, or cartridges filters.

Completely packaged systems include *Over-The-Top*® filter housing(s) and a pneumatically actuated diaphragm pump, mounted to a portable cart or stand.

## STANDARD FEATURES

- Over-The-Top*® design Liquid Filter Housing
- Air-Powered Double Diaphragm Pump
- Portable Cart or Stand
- Hoses, Wands, Gauges and Valves included
- Easily operated by single user
- Non-Electric System
- Requires No Special Tools
- Systems can be used with Filter Bags, Cartridges, Strainers, or Mesh/Micron Lined Baskets

## Housing Features

*Filtration Systems* vessels feature *Over-The-Top*® design. Compression of our *Zero-Bypass*® bag collar between the housing lid and the top of the support basket provides a positive 360-degree seal, preventing bypass of unfiltered liquid. Solids are trapped and collected in the bag, eliminating clean-up of the vessel interior during bag change-out.

## Filter Media

Systems use a variety of disposable filter media, making them highly versatile for industrial, pharmaceutical, water, beverage, and other process applications. Housings accommodate #2 size (7"dia. x 32"long), #4 size (4"dia. x 14"long), or #5 (4" dia. x 24"long) filter bags, filter cartridges, Mesh or Micron Lined Strainer Baskets.

## Pump Features

- Compressed Air-Powered Double Diaphragm Pump
- Self-Priming from a dry start
- Can run dry without damage
- Stops automatically if discharge is closed; resumes running when line is open
- Low internal velocity allows trouble-free pumping of abrasives or viscous materials
- Pumps are available in Stainless Steel, Polypropylene or Aluminum



Model  
PNS-122-35



Model  
PNS-122-75



Model  
PNS-141-10

# STANDARD SPECIFICATIONS AND FEATURES

SYSTEM BASICS	PNS-141-10	PNS-122-35	PNC-122-35	PNF-122-35 "Non-Ferrous"	PNS-122-75	PNS-222-V-135	PNS-151/122-35	PNDP-4
System Operating Capacity (gpm)	10 gpm	35 gpm	35 gpm	35 gpm	75 gpm	135 gpm	35 gpm	.5 gpm
Filter Housing Construction	T-316 SS	T-304 SS	Carbon Steel	T-304 SS	T-304 SS	T-304 SS	T-316 & T-304	T-304 SS
Pump Construction	Polypropylene	Stainless	Aluminum	Aluminum	Stainless	Stainless	Stainless	Polypropylene
<b>FILTER HOUSING</b>								
Filter Housing Model Number	NS-141	NS-122	NC-122	NS-122	NS-122	NS-222-V-PS	NS-151 & NS-122	Disc Filter
Material of Construction	T-316 SS	T-304 SS	Carbon Steel	T-304 SS	T-304 SS	T-304 SS	T-316 & T-304 SS	T-304 SS
O-Ring Material	Buna	Buna	Buna	Buna	Buna	Buna	Buna	Buna
Standard Housing Finish	Blasted	Blasted	White Primer	Blasted	Blasted	Blasted	Blasted	2-B Mill Finish
Micron Size to be Filtered	.5-800	.5-800	.5-800	.5-800	.5-800	.5-800	.5-800	.5-800
Bag Support Basket Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Vent Port and Gauge Ports (NPT)	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	N/A
Lid Safety Detents & Lid Stop	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Hinged Closure w/ Lid Handle	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Hardware-Bar Knobs (Plated)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A
<b>PUMP</b>								
Pump Size	1/2"	1"	1"	1"	1-1/2"	2"	1"	1/4"
Pump Body Construction	Polypropylene	Stainless	Aluminum	Aluminum	Stainless	Stainless	Stainless	Polypropylene
Internal Diaphragm & Seals	Buna	PTFE	Buna	Buna	PTFE	PTFE	PTFE	Buna
Maximum Solids Size	1/32"	1/8"	1/8"	1/8"	1/8"	5/16"	1/8"	.10"
<b>HOSES</b>								
Hose Diameter	1/2"	1"	1"	1"	1-1/2"	2"	1"	1/4"
Material of Construction	Clear PVC	Teflon	Clear PVC	Clear PVC	Clear PVC	Clear PVC	Teflon	Polypropylene
Spiral Reinforced	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Cam and Groove Ends for Quick Disconnect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Push-On Connection
<b>SUCTION &amp; DISCHARGE WANDS</b>								
Wands Included with System	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Wand Diameter	N/A	3/4" SS	3/4" SS	3/4" SS	1-1/2" SS	1-1/2" SS	3/4" SS	N/A
Suction Screen Material & Size	T-316 SS 3/32"	T-316 SS 1/8"	T-316 SS 1/8"	T-316 SS 1/8"	T-316 SS 1/4"	T-316 SS 1/4"	T-316 SS 1/8"	N/A
Cam and Groove End for Quick Disconnect	No	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Magnetic Wand Clamps for Unattended Use	No	Yes	Yes	Yes	Yes	No	Yes	N/A
<b>COMPRESSED AIR COMPONENTS</b>								
Air Filter/Regulator Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Air Pressure Gauge Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Air Filter Micron Rating	50	50	50	50	50	50	50	50
Air Shutoff/Control Valves Included - Brass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Length of Airhose Included (ft)	5	25	25	25	25	25	25	N/A
Air Connection Size	1/4" Adapter	3/8" Adapter	3/8" Adapter	3/8" Adapter	1/2" Adapter	3/4" Adapter	3/8" Adapter	1/4" Adapter
Clean Out Air Purge	No	Yes	Yes	Yes	Yes	Yes	Yes	No
<b>VALVING SPECIFICATIONS</b>								
Pump Suction Valve Included	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Vessel Effluent Valve Included	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Valving for Series Operation Included	No	No	No	No	No	Yes	No	No
Valving for Parallel Operation Included	No	No	No	No	No	Yes	No	No
Valve Materials of Construction	T-316 SS/PTFE	T-316 SS/PTFE	Brass	Brass	T-316 SS/PTFE	T-316 SS/PTFE	T-316 SS/PTFE	T-316 SS/PTFE
Valve Type	Ball Valve	Ball Valve	Ball Valve	Ball Valve	Ball Valve	Ball Valve	Ball Valve	Ball Valve
<b>HAND TRUCK/STAND</b>								
2 Wheel – 4 Wheel Type	Stand	2-Wheel	2-Wheel	2-Wheel	2-Wheel	4-Wheel	2-Wheel	Stand
Material of Construction	Stainless Steel	Coated Steel	Coated Steel	Coated Steel	Coated Steel	Stainless Steel	Coated Steel	Stainless Steel
Wheel Diameter and Type	N/A	10" Pneum.	10" Pneum.	10" Pneum.	10" Pneum.	5" Swivel/Brake	10" Pneum.	N/A
Drip Containment	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Wheels Off Ground at Rest	N/A	Yes	Yes	Yes	Yes	No	Yes	N/A
Dimensions (Inches)	18 x 9 x 20	44 x 29 x 26	44 x 29 x 26	44 x 29 x 26	44 x 29 x 44	44 x 30 x 72	44 x 29 x 44	7 x 11 x 30
Shipping Weight (Pounds)	60	260	245	225	335	680	300	17

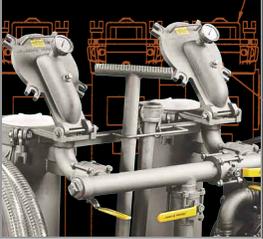
*Our vessels and filter media are specifically designed to work together as a system, maximizing efficiency and results.*

## **ULTRAFIT® WELDED HIGH PERFORMANCE LIQUID FILTER BAGS**

Graded-Density, *Composite Layer Design Technology™* combines coarse and fine layers to optimize flow, efficiency, and dirt-holding capacity.



# VALVED DUPLEX, PARALLEL AND/OR SERIES SYSTEM



**Model  
PNS-222-V-135**



## Valved Duplex, Parallel and/or Series System

Individually valved modules may operate independently, providing continuous service during bag filter changes. Concurrent operation of both housings doubles the flow rate capacity of a single vessel. Each vessel accommodates a #2 size filter bag (7" dia. x 32" long). This system may be used with any combination of Strainers, Micron-Rated Baskets or Cartridge Contaminant Chambers.

This system allows for Two-Stage (series) filtration; the first vessel feeds the second vessel. When used as a two-stage unit, the liquid is filtered in two separate passes which can, at a minimum, filter more effectively when there are any of the following conditions:

Condition	Outcome
Unequal Particle Size Distribution	First stage can handle larger particles, Second stage can filter finer levels of particulate
Redundancy for Greater Quality Control and Performance	Improved performance with two filters (same micron) back-to-back for greater efficiency and capture rates
Cost Reduction Requirements using Disposable Filters	Less Expensive Pre-filters (Disposable or Reusable may be used for the First stage, whereas Absolute Rated media can filter as the Second stage

## APPLICATIONS

Portable Systems are extremely effective for batch processing and/or clean-up of accidental spills. Some liquids that are compatible with these systems include:

- ACIDS
- ADHESIVES
- BEVERAGES
- BULK CHEMICALS
- COOLING OILS
- COSMETICS
- CUTTING FLUIDS
- DETERGENTS
- FOOD
- FUEL OIL
- HYDRAULIC OIL
- INKS
- PAINTS & VARNISHES
- PETROCHEMICALS
- PHARMACEUTICALS
- PROCESS WATER
- RESINS
- SLUDGES
- SLURRIES
- SOLVENTS
- VEGETABLE OIL
- WATER

## PORTABLE TEST/PROCESS SYSTEM



Model  
PNS-151/122-35



### The Portable Test/Process System

The Portable Test/Process System consists of two filter housings and a double-diaphragm pump, mounted on a mobile cart. This self-contained system runs on factory compressed air. A valve, located next to each vessel, allows liquid flow to be directed through either filter housing for testing or batch processing. Small quantities of liquid may be run through the smaller housing (NS-151) for sample testing, allowing validation of the filtered liquid (effluent) based upon observation or evaluation. The larger housing (NS-122) may be used with an **Accufit**® or **Ultrafit**® Welded filter bag, or **SEDEK**® cartridge to determine solids loading characteristics, which can be “scaled-up” (extrapolated) to

provide general sizing information for full-size production applications. Additionally, filtering with an **Ultrafit** Calibrated Test Bag in the NS-122 allows the user to determine the micron rating of **Ultrafit** Welded High Performance filter bag for their process. By observing visible performance characteristics of specific filter media, users benefit by participating in their own Quality Control Testing Process.

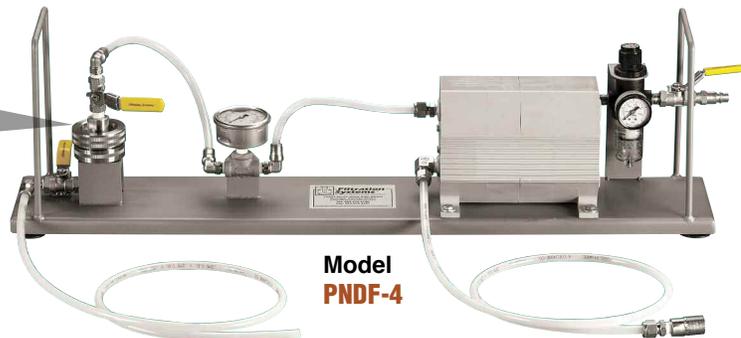
In addition to its test function capabilities, the Portable Test/Process System is a very desirable piece of equipment for any factory, due to its versatility as a “go-anywhere” portable filtering system.



## PORTABLE DISC FILTER HOUSING SYSTEM



Component parts of the  
Variable Compression Disc  
Filter Housing



Model  
PPDF-4

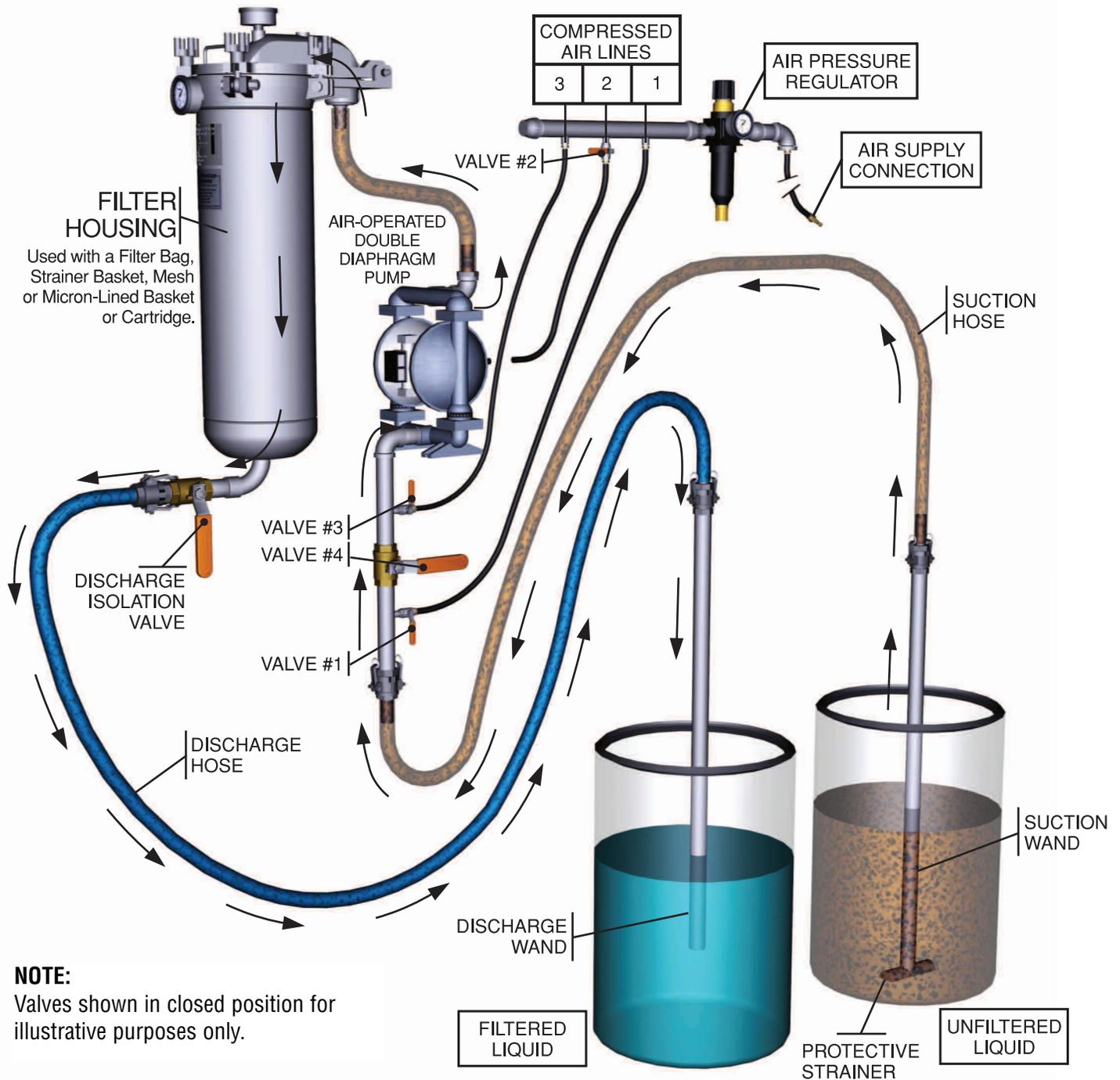
### Portable Disc Filter Housing System for use with 47mm Filter Discs

The Portable Disc Filter Housing System consists of a Variable Compression Disc Filter and an adjustable flow, diaphragm pump. This system is designed for sample testing, validation and optimum media selection.

### Applications

- Collect data to determine the optimum grade of filter media for your specific requirements
- Test filter media on a small scale basis for all General Filtration and Microfiltration applications
- Sample small amounts of liquid for process scale-up or pilot studies, or from production runs
- Verify incoming bulk liquid deliveries
- Evaluate the performance characteristics of **Accufit**® and **Ultrafit**® Welded Filter Bag products

# PORTABLE LIQUID FILTER SYSTEM FLOW DIAGRAM



**Product Identification:** All Filtration Systems filter vessels have a unique serial number that can be identified by our factory. Nameplates, specifying both the serial number and maximum allowable pressure and temperature ratings, are permanently affixed to all housings.

**Product Specifications:** With over 30 years of industry expertise and proven performance, Filtration Systems offers quality products at responsible prices. We continually strive to improve our products through ongoing research and development; therefore, we reserve the right to change specifications without notice.

**Warranty:** Filtration Systems warrants our products to be free from defects in workmanship for a period of one year from the date of purchase, when used in accordance with our specific guidelines. Our only obligation and a customer's remedy, subject to our inspection and evaluation, shall be to replace the product or refund the purchase price.

**Limitation of Liability:** Filtration Systems shall not be held responsible or liable for any loss resulting from the resale, direct or indirect misuse, incidental or consequential damages, arising out of the use of this product.

## Filtration Systems

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C-07/13 W-9/20