

MAHLE

Industry

Cartridge Filters The NP Trapper Series

Particulate Removal, Depth Filter Elements
Chemically Compatible with a Wide Range of Fluids and Gases

1. Introduction

Nowata NP Trapper series cartridges, named for their superior dirt trapping ability, are made using a unique two stage manufacturing process which gives the Trapper filter elements a higher quality and greater control of filtration. This dual density profile throughout the cartridge improves the porosity from one cartridge to the next. Density is controlled radially and concentrically. Due to the two stage density profile, the contaminant is trapped not only on the cartridge surface, but throughout its depth. This creates a filter cartridge with greater dirt holding capacity and more reliable filtration.

These cartridge filter elements are made from long fibers of a Polyester and Acrylic blend, for greater structural integrity and minimal shedding. The one piece construction for all cartridge lengths eliminates the risk of contaminant bypass. The two stage design of the Trapper ensures higher quality filtration and particle retention. The spiral wrapped outer layer collects larger particles and extends cartridge life. The rigid inner layer maximizes cartridge strength and controls particle removal at the specified cartridge rating.

All the Nowata NP Trapper series cartridges are manufactured with virgin fibers, and without the use of silicone, making them chemically compatible with a wide range of fluids and gases. Typical filtration applications include:

Applications

- Fresh Water
- Salt Water
- Ethylene Glycol
- Natural Gas
- Hydraulic Fluid
- Hydrocarbons
- Paint
- Printing Inks
- Coolants
- Solvents and Resins
- Chemicals and Coatings
- Lubricating Oil
- Kerosene and Other Petroleum Products
- Plus a Variety of Other Liquids and Gases



2. Construction Features for NP Trapper Cartridges

Operation

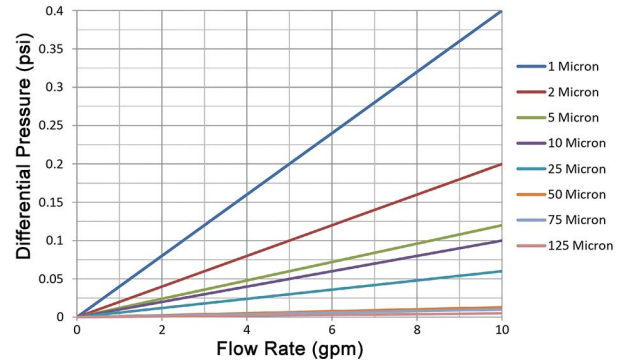
The NP Trapper cartridge elements will operate at temperatures up to 250 °F (120 °C). They are available in 1 to 125 micron ratings, plus they will withstand differential pressures up to 75 psi. Cartridge replacement is suggested at a 30-35 psi differential pressure rating. Operation above 35 psi differential pressure rate may be at a greatly reduced flow rate and with a significant drop in filtration efficiency.

Material

The NP Trapper filter is made from long fibers of Polyester and Acrylic. These long fibers are impregnated with a phenolic resin, which provides a rigid cartridge that resists channeling and particle migration. No support core is needed to hold the filter material in place as in other style cartridges.

3. Flow Rating

This graph represents the typical flow rate per 10" length cartridge, at various micron ratings. These values are based on an initial clean pressure drop of 2 psi with water. For other liquids, multiply the ΔP by the fluid's viscosity in centipoise. For longer cartridges, divide the ΔP by the number of 10 inch equivalents. A maximum flow of 24 GPM is limited by the 1-1/8" I.D. restriction. These flow rates should give acceptable cartridge life when the turbidity is below 15 parts per million. If high dirt loads are expected, lower cartridge flow rates should be used for sizing purposes.



4. Additional Cartridge Data

Cartridge Micron Rating	Nominal Cartridge Lengths			Actual Flow Rates (gpm) with Water*			
	9-3/4 inches	29-1/4 inches	40 inches	Flow Factors	9-3/4 inches	29-1/4 inches	40 inches
1	1NP1	3NP1	4NP1	0.04	2	6	8
2	1NP2	3NP2	4NP2	0.02	4	12	16
5	1NP5	3NP5	4NP5	0.012	5	15	20
10	1NP10	3NP10	4NP10	0.01	6	18	24
25	1NP25	3NP25	4NP25	0.006	7	21	24
50	1NP50	3NP50	4NP50	0.0013	8	24	24
75	1NP75	3NP75	4NP75	0.001	8	24	24
125	1NP125	3NP125	4NP125	0.0005	8	24	24

*Water at 2 psi clean pressure drop. Flow rates will vary according to viscosity and turbidity of fluids.

All cartridges are 2-9/16" OD x 1-1/8" ID. Single length (1NP) cartridges are 9-3/4" long. Triple length (3NP) cartridges are 29-1/4" long. Quadruple length (4NP) cartridges are 40" long. Adding "-OP" to the model number indicates 222 o-ring style end seal with the opposite end closed.

To identify or specify a certain micron size for a particular cartridge, note the numbers that follow the 1NP or 3NP. That number (or numbers) denotes the micron rating. Adding "-OP" to the model number indicates a 222 end adapter. Blank indicates the standard double open end (DOE) configuration.

Formulas for Flow Rate and Pressure Drop:

Flow Rate (gpm) = (Clean ΔP x Length Factor)/(Viscosity x Flow Factor). See table for Flow Factors.

Clean ΔP = (Flow Rate x Viscosity x Flow Factor)/Length Factor

1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use conversion tables for other units.
3. Flow Factor is ΔP /gpm at 1 cks for 10 inch (or single).
4. Length Factors convert flow or ΔP from 10 inch (single length) to required cartridge length.

Length Factors: 9-3/4" is L.F. 1, 29-1/4" is L.F. 3, 40" is L.F. 4.