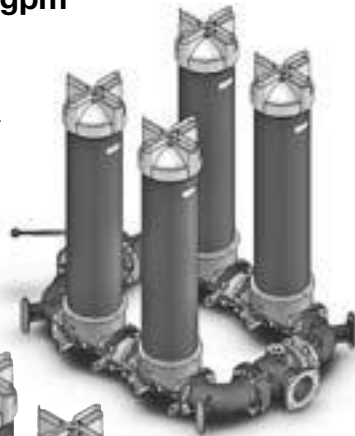
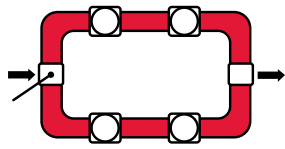


# LOW PRESSURE FILTERS

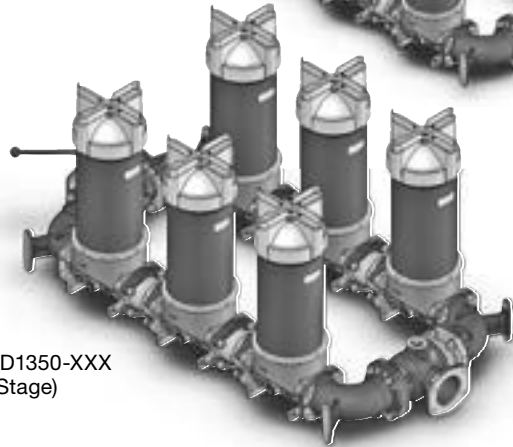
## NFD UHE Series

Ultra High Efficiency Inline Duplex Filters

360 psi • up to 450 gpm



NFD2650-XX  
(2 Stage)

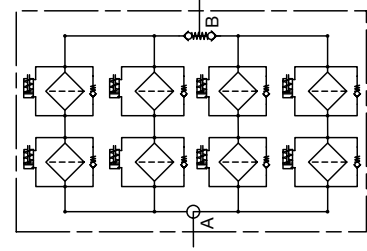
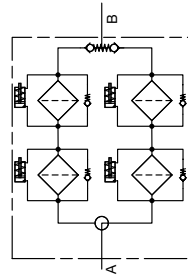


NFD1350-XXX  
(3 Stage)

### Hydraulic Symbol

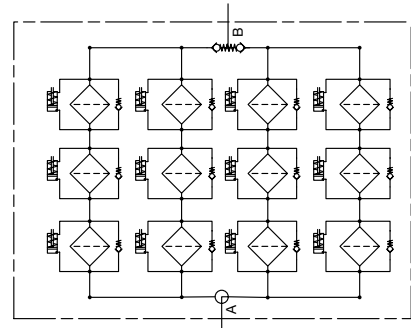
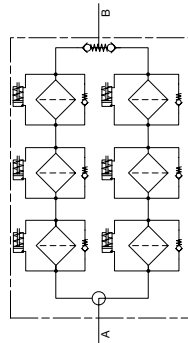
NFD 1350-2650 UHE 2 Stage

NFD 5250 UHE 2 Stage



NFD 1350-2650 UHE 3 Stage

NFD 5250 UHE 3 Stage



### Features

- Multi-pass filtration in a single pass!
- Beta efficiency values > 5000 in a single pass are possible
- Conventional NF housings are piped in a series to achieve multi-levels of filtration in one pass.

Note: This filter is configured with an .....R..... type (return/low pressure) element, so if the filter requires a bypass, the bypass is located in the closed end cap of the cartridge element.

### Configurations

#### NFD Size 1350, 2650, 5250 - Two Stage

- Fine-Fine Filtration in Duplex Arrangement
- Coarse-Fine Filtration in Duplex Arrangement
- Medium-Fine Filtration in a Duplex Arrangement
- Fine Filtration with Water Removal in a Duplex Arrangement
- Customer Defined Arrangement

#### NFD Size 1350, 2650, 5250 - Three Stage

- Fine-Fine Fine Filtration Arrangement
- Coarse-Medium Fine Filtration Arrangement
- Coarse-Fine with Water Removal Arrangement
- Medium-Fine Fine Filtration Arrangement
- Customer Defined Arrangement

### Applications



Agricultural



Gearboxes



Industrial



Power Generation



Pulp & Paper



Shipbuilding



Steel / Heavy Industry

### Technical Specifications

<b>Mounting Method</b>	See drawings	
<b>Port Connection</b>	4" SAE DN 102 Flange Code 61 <i>(with M16 bolts included)</i>	
<b>Flow Direction</b>	1350 / 2650 / 5250	Inlet: Side    Outlet: Side ( <i>opp.</i> )
<b>Construction Materials</b>	Head, Housing, Lid    Aluminum Filter Stage Connections    Carbon Steel Elbows, Manifolds    Ductile Iron	
<b>Flow Capacity</b>	1350	343 gpm (1300 lpm)
	2650, 5250	450 gpm (1700 lpm) ( <i>4" pipe limit</i> )
<b>Housing Pressure Rating</b>	Max. Allowable Working Pressure    360 psi (25 bar) Fatigue Pressure    360 psi (25 bar) Burst Pressure    Contact HYDAC	
<b>Element Collapse Pressure Rating</b>	ON	290 psid (20 bar)
	ECON2, BN4AM, AM	145 psid (10 bar)
<b>Fluid Temperature Range</b>	14°F to 212°F (-10°C to 100°C) Consult HYDAC for applications below 14°F (-10°C)	
<b>Fluid Compatibility</b>	Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.	
<b>ΔP Indicator Trip Pressure</b>	ΔP = 29 psid (2 bar) -10% ΔP = 72 psid (5 bar) -10%	
<b>Bypass Valve Cracking Pressure</b>	ΔP = 43 psid (3 bar) +10% ΔP = 87 psid (6 bar) +10%	

## Model Code

**NFD ON-ON-AM 1350 D A P 5-3-40 C 2.0 / V 3**

**Filter Type** \_\_\_\_\_  
 NFD = Return Line Filter Duplex

**Element Media** \_\_\_\_\_  
 ON = Optimicron®      BN/AM = Betamicon®/Aquamicron®  
 ECON2 = ECOmicron®      AM = Aquamicron®  
 Note: Include filtration media from each stage, inlet to outlet.

**Size** \_\_\_\_\_  
 1350, 2650, 5250

**Operating Pressure** \_\_\_\_\_  
 D = 360 psi (25 bar)

**Type of Change Over** \_\_\_\_\_  
 A = Ball valve (diverter)

**Type of Connection** \_\_\_\_\_  
 P = SAE DN 102 (4") Code 61 Flange (Mates with 4" SAE code 61 flange ports with metric connection bolts)

**Filtration Rating (micron)** \_\_\_\_\_  
 1, 3, 5, 10, 15, 20 = ON      3, 5, 10, 20 = ECON2      3, 10 = BN/AM      40 = AM  
 Note: Include filtration rating from each stage, inlet to outlet.

**Type of ΔP Clogging Indicator** \_\_\_\_\_  
 A = No Indicator (plugged) BM, C, D (Others available upon request)

**Type Number / Modification Number** \_\_\_\_\_  
 2.0 = Inline Filter - ΔP indicator

**Seals** \_\_\_\_\_  
 (omit) = Nitrile rubber (NBR) (standard)      V = Fluorocarbon elastomer (FKM)      EPR = Ethylene propylene rubber (EPR)

**Bypass Valve** \_\_\_\_\_  
 (omit) = 43 psid (3 bar) (standard)  
 B6 = 87 psid (6 bar) (return line extended life)      ] not available with ECON2  
 KB = no bypass (flushing system)

**Supplementary Details** \_\_\_\_\_  
 SO263 = Modification of elements for Skydrol or HYJET phosphate ester fluids  
 L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)  
 cRUus = Electrical Indicator with underwriter's recognition  
 SFREE = Element specially designed to minimize electrostatic charge generation

**Number of Filtration Stages** \_\_\_\_\_  
 2 = Two Stages (2 in a series)  
 3 = Three Stages (3 in a series)

## Replacement Element Model Code

**1300 R 003 ON / V**

**Size** \_\_\_\_\_  
 1300 - for housings: 1350  
 2600 - for housings: 2650, 5210

**Filtration Rating (micron)** \_\_\_\_\_  
 1, 3, 5, 10, 15, 20 = ON      3, 10 = BN4AM  
 3, 5, 10, 20 = ECON2      40 = AM

**Element Media** \_\_\_\_\_  
 ON, ECON2, BN4AM, AM

**Seals** \_\_\_\_\_  
 (omit) = Nitrile rubber (NBR) (standard)  
 V = Fluorocarbon elastomer (FKM)  
 EPR = Ethylene propylene rubber (EPR)

**Bypass Valve** \_\_\_\_\_  
 (omit) = 43 psid (3 bar) (standard)  
 B6 = 87 psid (6 bar)  
 KB = no bypass

**Supplementary Details** \_\_\_\_\_  
 SO263 = (same as above)  
 SFREE = (same as above)

## Clogging Indicator Model Code

**VM 2 C . X / V**

**Indicator Prefix** \_\_\_\_\_  
 VM = ΔP, G 1/2" 3000 psi

**Trip Pressure** \_\_\_\_\_  
 2 = 29 psid (2 bar) (return filters)  
 5 = 72 psid (5 bar) (optional)

**Type of Indicator** \_\_\_\_\_  
 BM = Pop-up indicator (manual reset)  
 C = Electric switch - SPDT  
 D = Electric switch and LED light - SPDT

**Modification Number** \_\_\_\_\_

**Supplementary Details** \_\_\_\_\_

**Seals** \_\_\_\_\_  
 (omit) = Nitrile rubber (NBR) (standard)  
 V = Fluorocarbon elastomer (FKM)  
 EPR = Ethylene propylene rubber (EPR)

**Light Voltage (D type indicators only)** \_\_\_\_\_  
 L24 = 24V      L48 = 48V      L110 = 110V      L220 = 220V

**Thermal Lockout (VM type C, D, J, J4 only)** \_\_\_\_\_  
 T100 = Lockout below 100°F

**Underwriter's Recognition (VM type C, D, J, J4 only)** \_\_\_\_\_  
 cRUus = Electrical Indicator with underwriter's recognition

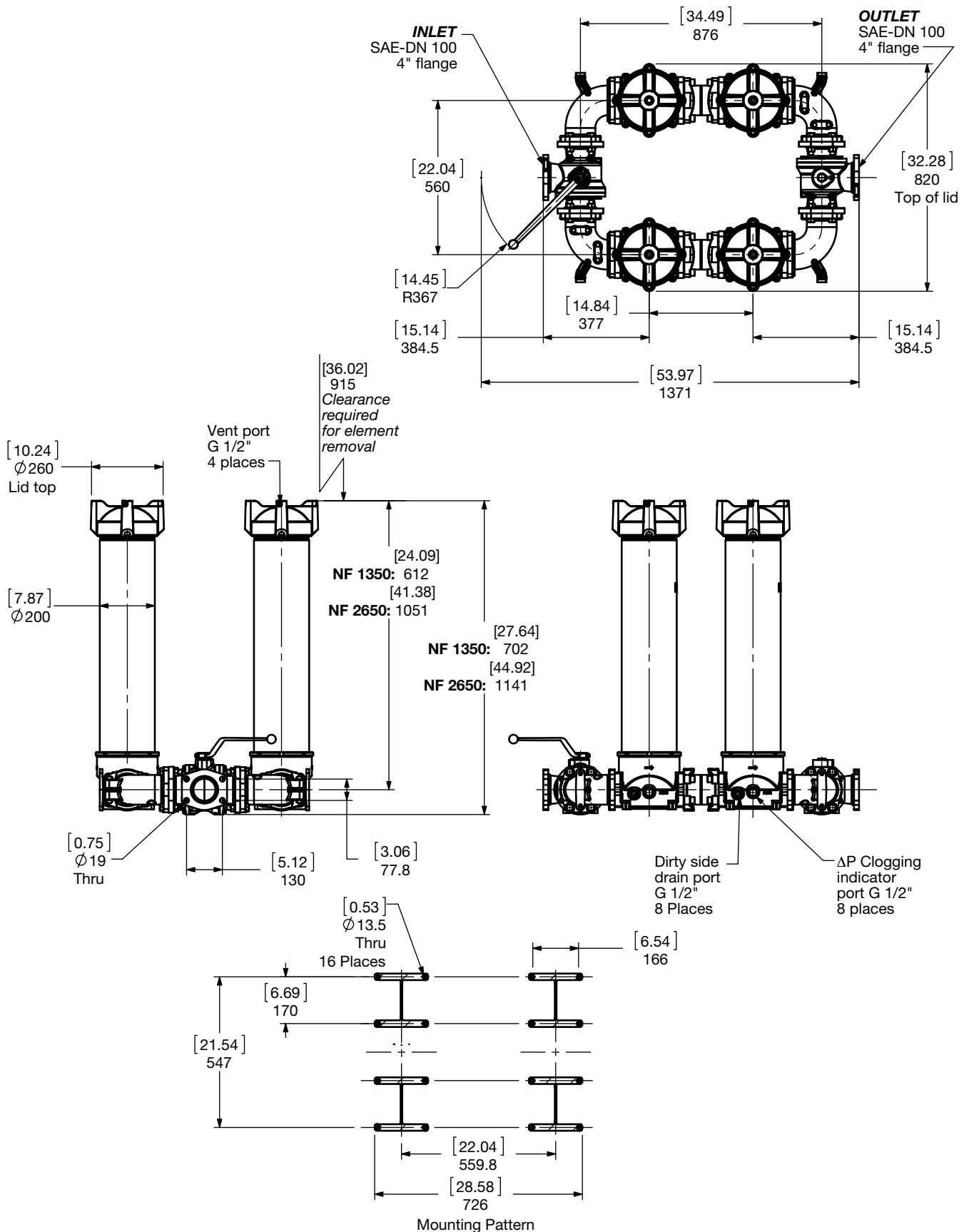
(For additional details and options, see Section H - Clogging Indicators.)

Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

# LOW PRESSURE FILTERS

## Dimensions

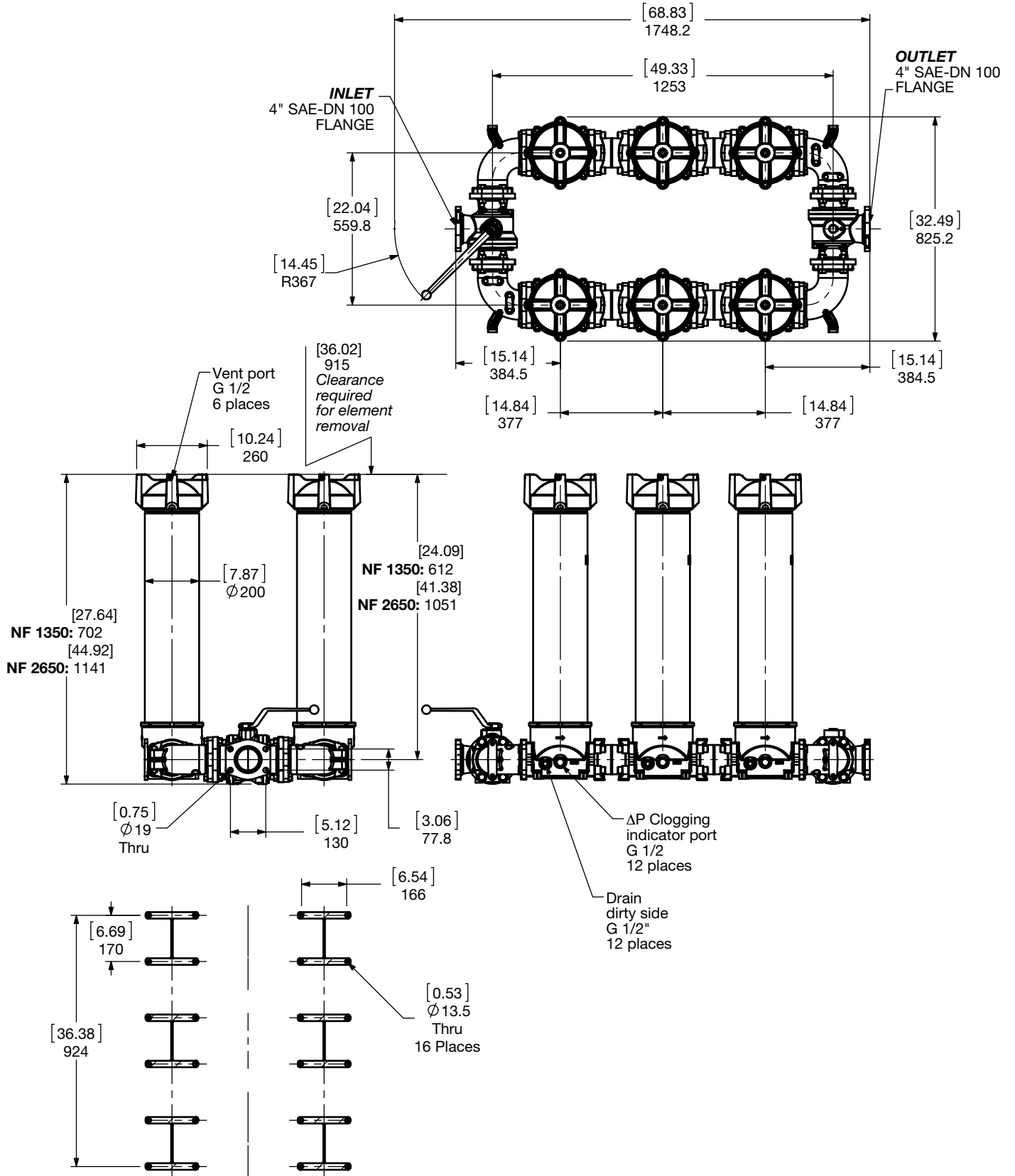
### NFD 1350 / 2650 - 2 Stage Duplex UHE



Size	1350	2650
Weight (lbs.)	323.2	433.8

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.  
For complete dimensions please contact HYDAC to request a certified print.

## Dimensions: NFD 1350 / 2650 - 3 Stage Duplex UHE

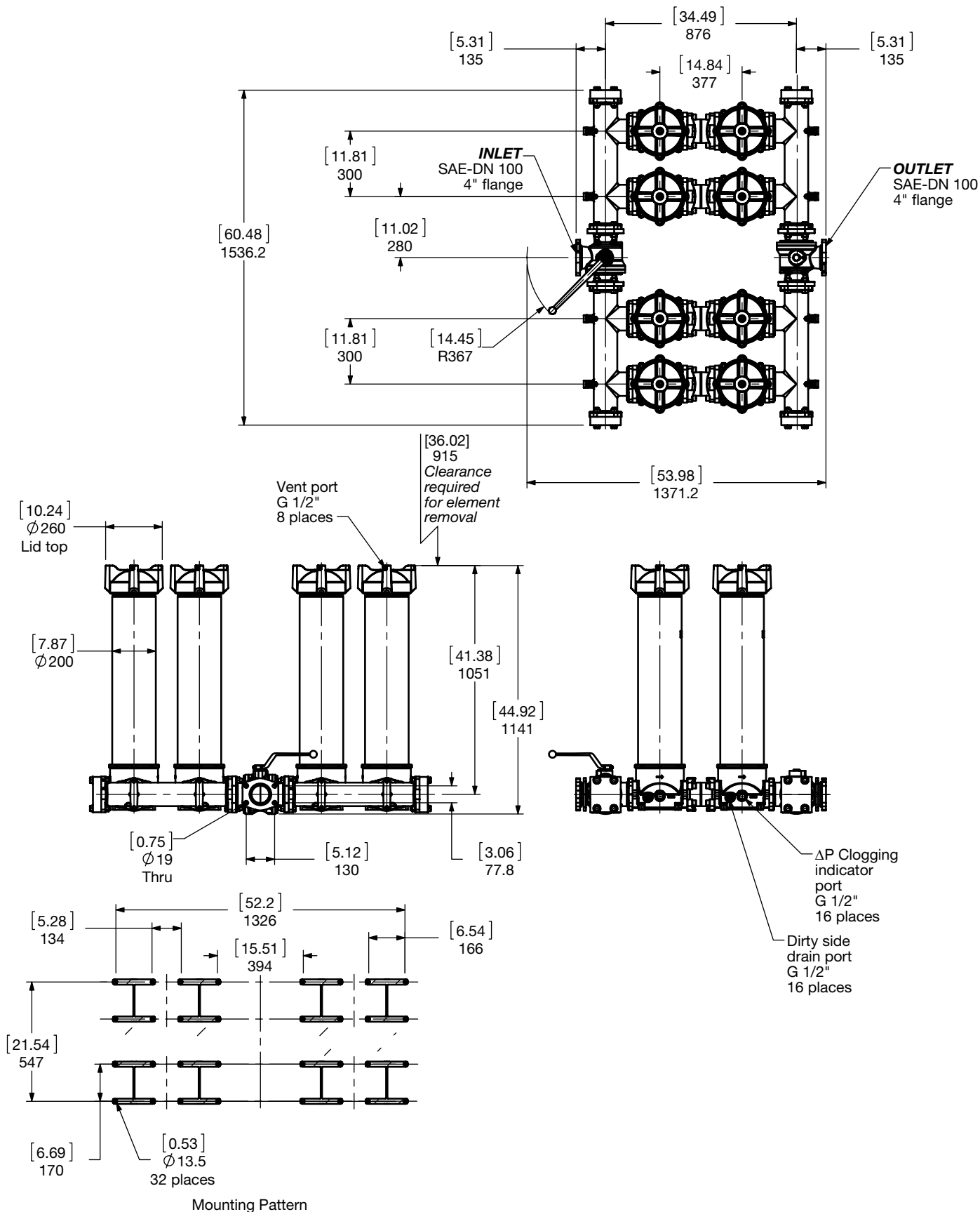


Size	1350	2650
Weight (lbs.)	435.2	584.1

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element. For complete dimensions please contact HYDAC to request a certified print.

# LOW PRESSURE FILTERS

Dimensions:  
NFD 5250 - 2 Stage UHE



<b>Size</b>	<b>5250</b>
<b>Weight (lbs.)</b>	<b>906.7</b>

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element. For complete dimensions please contact HYDAC to request a certified print.



# LOW PRESSURE FILTERS

## Sizing Information

Total pressure loss through the filter is as follows:

$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

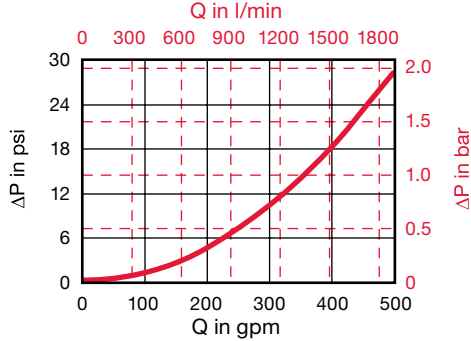
### Housing Curve:

Pressure loss through housing is as follows:

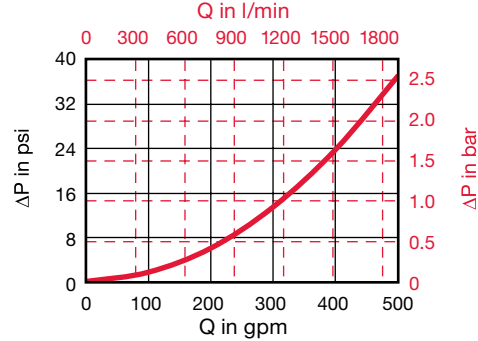
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see "Sizing HYDAC Filter Assemblies" in Section B - Overview)

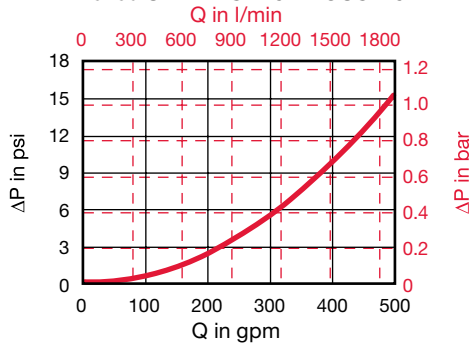
**NFD 1350-2650 UHE - 2 STAGE HOUSING**



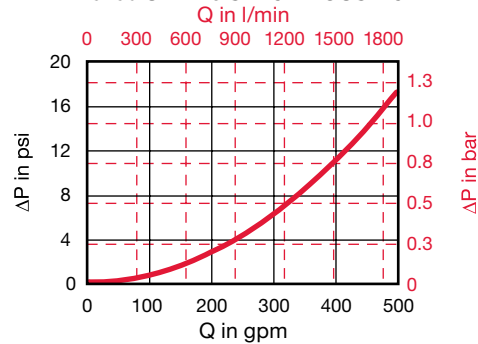
**NFD 1350-2650 UHE - 3 STAGE HOUSING**



**NFD 5250 UHE - 2 STAGE HOUSING**



**NFD 5250 UHE - 3 STAGE HOUSING**



## Element K Factors

$$\Delta P \text{ Elements} = \text{Elements (K) Flow Factor} \times \text{Flow Rate (gpm)} \times \frac{\text{Actual Viscosity (SUS)}}{141 \text{ SUS}} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

(From Tables Below)

Optimicon	...R...ON					
Size	1 μm	3 μm	5 μm	10 μm	15 μm	20 μm
1300 R XXX ON	0.094	0.04	0.032	0.019	0.018	0.012
2600 R XXX ON	0.046	0.02	0.016	0.01	0.009	0.006

ECOMICRON	...R...ECON2			
Size	3 μm	5 μm	10 μm	20 μm
1300 R XXX ECON2	0.044	0.033	0.022	0.016
2600 R XXX ECON2	0.022	0.016	0.011	0.005

Betamicron/Aquamicon	...R...BN4AM	
Size	3 μm	10 μm
1300 R XXX BN4AM	0.088	0.033
2600 R XXX BN4AM	0.055	0.016

Aquamicon	...R...AM
Size	40 μm
1300 R 040 AM	0.026
2600 R 040 AM	0.013

All Element K Factors in psi / gpm.

