

LOW PRESSURE FILTERS

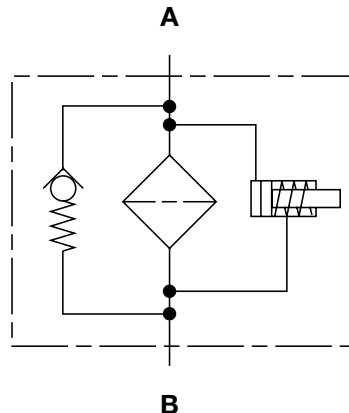
NFH Series

Modular Inline Return Line Filters

500 psi • up to 450 gpm



Hydraulic Symbol



Features

- Top access for easy element changeout.
- All models have an air bleed valve (vent) installed in the lid.
- Single large element with no leak points for highest efficiency and dirt capacity
- Lid with swing bolts for fast servicing without tools
- Drain port (right side of Inlet Port) SAE 12 (3/4")
- Clogging Indicator for local and/or remote signals
- Easily banked in parallel (manifolded) for high viscosity applications.

Notes: This filter is configured with anR.... 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.

Technical Specifications

Mounting Method	
NFH	2 mounting holes - filter head
NFH Manifold	Floor mounting brackets
Port Connection	
	SAE DN 102 Flange Code 61 (<i>single tower</i>)
	SAE DN 102 (<i>multi-tower</i>)
Flow Direction	
	Inlet: Side Outlet: Bottom
Construction Materials	
Head, Lid, Elbows, Manifolds	Ductile Iron
Housing	Steel
Flow Capacity	
1300	343 gpm (1300 lpm)
2600, 5200, 7800, 10400	450 gpm (1700 lpm)
	(Flow limited by 4" pipe size)
Housing Pressure Rating	
Max. Allowable Working Pressure	500 psi (34.5 bar)
Fatigue Pressure	500 psi (34.5 bar)
Burst Pressure	> 1440 psi (100 bar)
Element Collapse Pressure Rating	
ON, W/HC	290 psid (20 bar)
ECON2, BN4AM, AM, P/HC	145 psid (10 bar)
Fluid Temperature Range	
	14°F to 212°F (-10°C to 100°C)
Consult HYDAC for applications below 14°F (-10°C)	
Fluid Compatibility	
Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.	
Indicator Trip Pressure	
$\Delta P = 29$ psid (2 bar) -10% (<i>standard</i>)	
$\Delta P = 72$ psid (5 bar) -10% (<i>optional</i>)	
Bypass Valve Cracking Pressure	
$\Delta P = 43$ psid (3 bar) +10%	
$\Delta P = 87$ psid (6 bar) +10%	

Applications



Automotive



Gearboxes



Industrial



Power Generation



Pulp & Paper



Shipbuilding

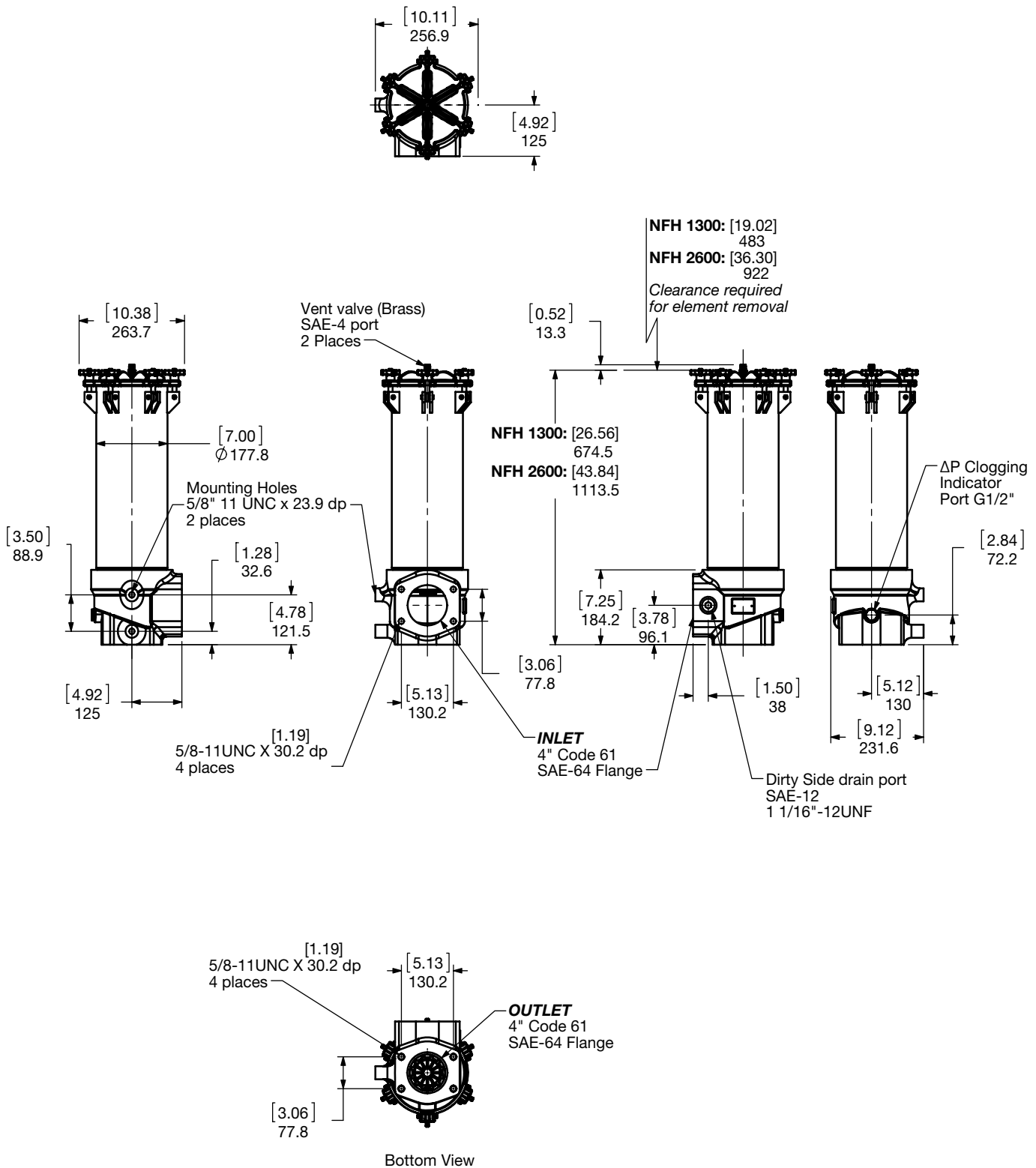


Steel / Heavy Industry

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Dimensions

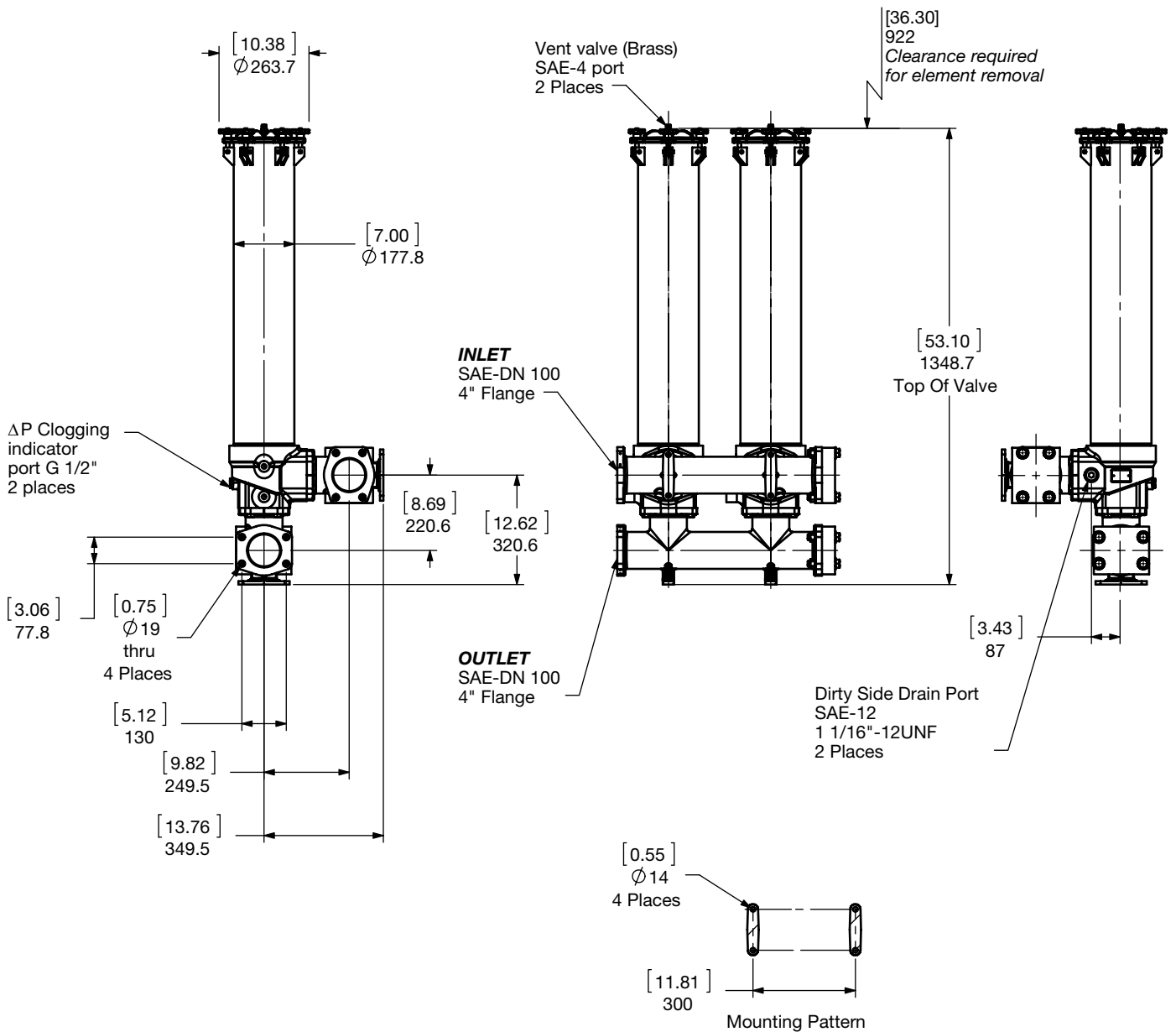
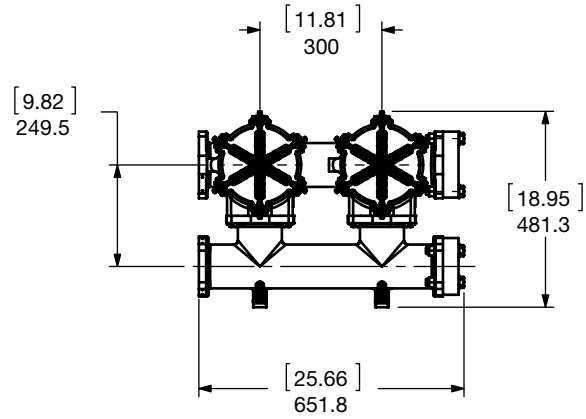
NFH 1300 / 2600



Size	1300	2600
Weight (lbs.)	87.1	115.5

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 NFH 5200

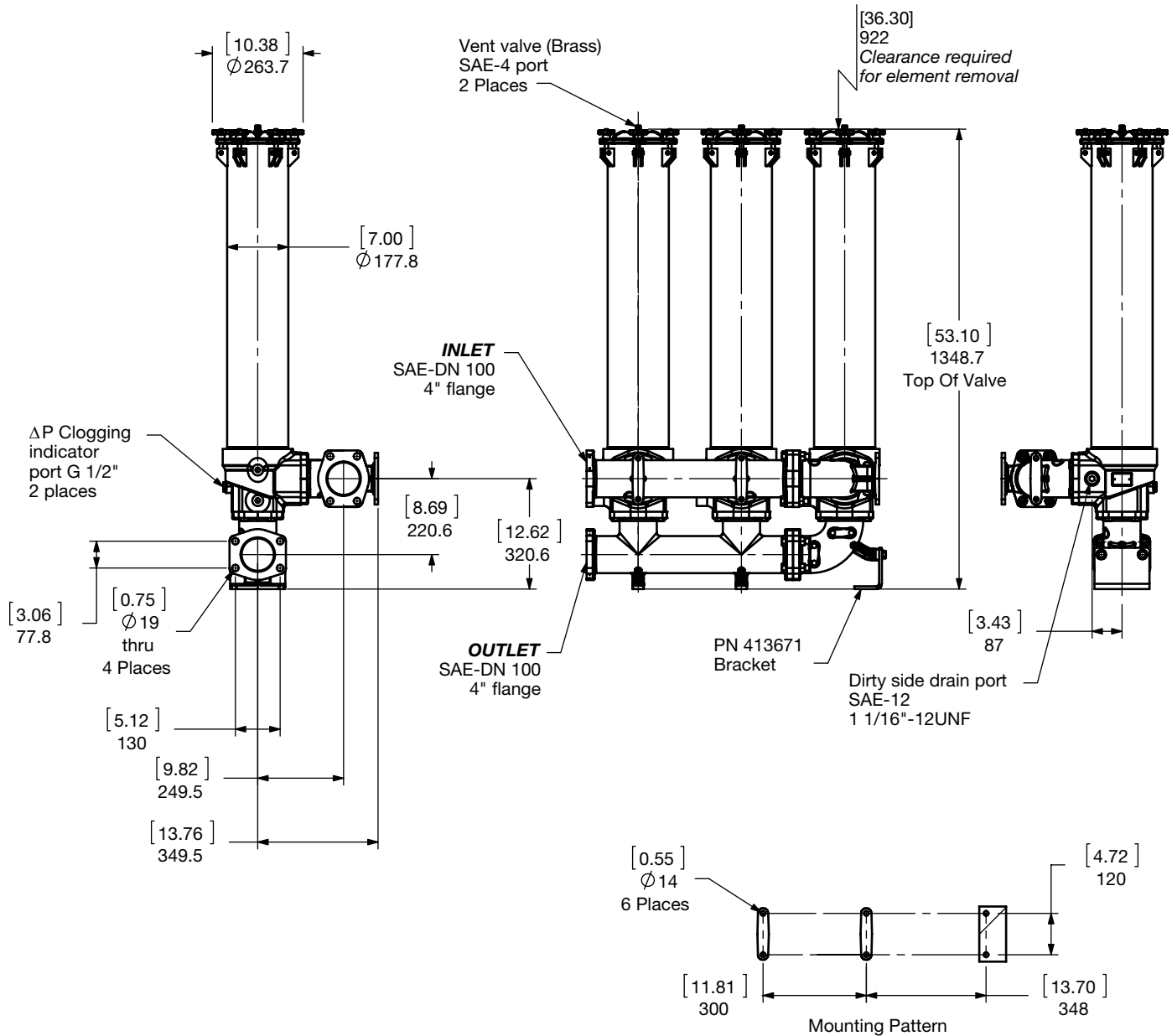
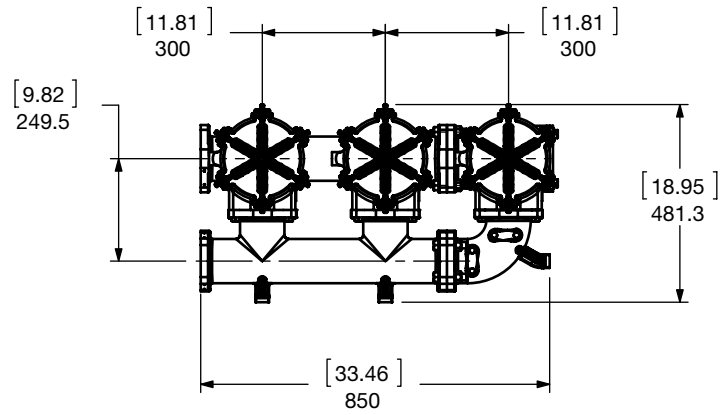


Size	5200
Weight (lbs.)	356

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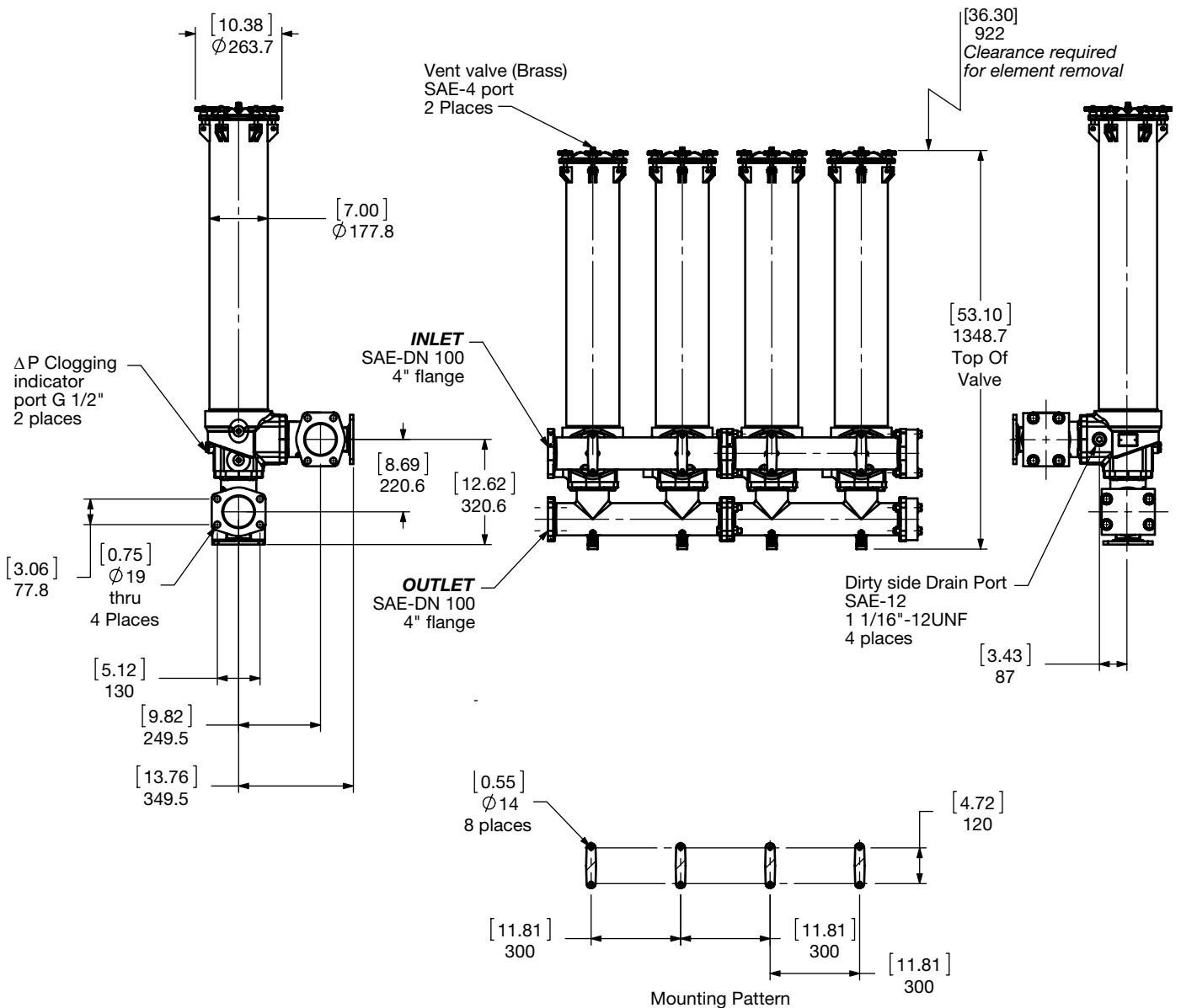
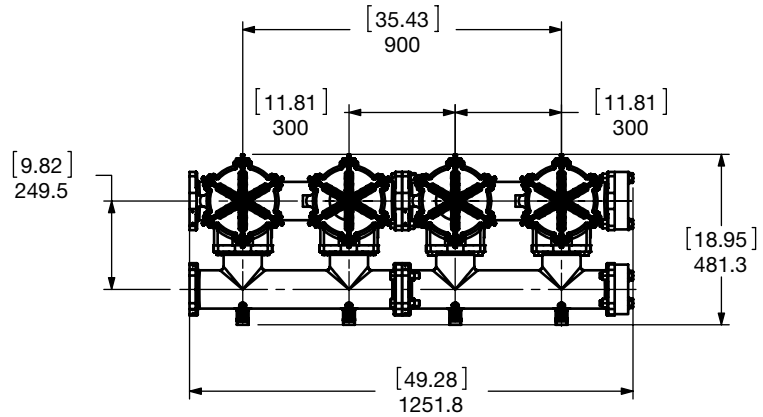
Dimensions
NFH 7800



Size	7800
Weight (lbs.)	477.5

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 NFH 10400



Size	10400
Weight (lbs.)	684

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Sizing Information

Total pressure loss through the filter is as follows:

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

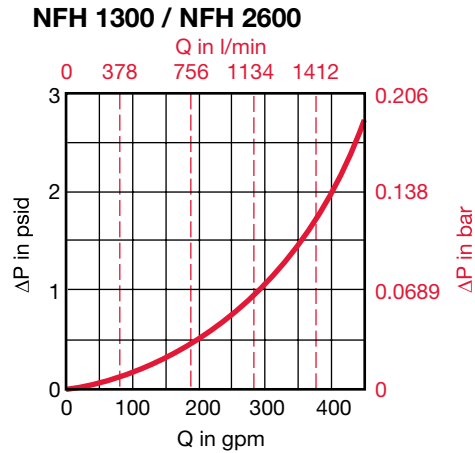
Housing Curve:

Pressure loss through housing is as follows:

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

The curve below shows the clean ΔP through the housing for a single filter. To determine clean housing ΔP for manifolds with multiple housings, multiply the clean ΔP curve value by the percentage values in the table.

ΔP Housing



NFH System	Multiplier
5200	73%
7800	61%
10400	48%

Example

Conditions
400 gpm flow
NFH 5200 manifold specified
ΔP Curve = 2 psid
ΔP 5200 = 2 psid X 0.73
= 1.5 psid <small>Piping & Housing</small>
ΔP Total System = 1.5 psid + ΔP Element

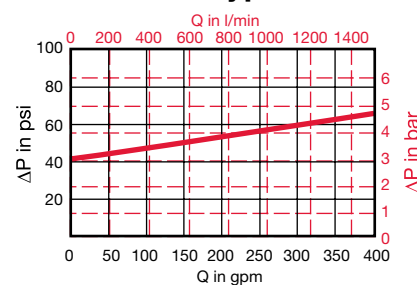
Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see "Sizing HYDAC Filter Assemblies" in Section B - Overview)

Bypass Valve Curve:

Curves shown are applicable for mineral oil with a specific gravity of 0.86. Differential pressure increases in proportion to the specific gravity of the fluid.

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

1300 / 2600 Bypass Valve



Element ΔP Calculations:

Sizing (K) Flow Factors below show the pressure drops across clean elements (*excluding housings and piping*). (K) Factors are calculated from mineral based fluid at viscosity of 141 SUS and specific gravity of 0.86. To determine clean ΔP for NFH manifolds with more than one housing, use the appropriate sized single element (K) factor and multiply (total assembly flow rate divided by the number of housings in the manifold), then correct for viscosity.

Example 1: Lube System

Conditions
Viscosity = 500 SUS @ 120°F
Specific gravity = 0.86
Flow = 75 gpm
Low pressure drop essential
K Factor = 10 μ m Optimicron® filter element
Selection - NFH 2600 Filter
An NFH 2600 filter gives an Adjusted Clean Element ΔP as follows:
Clean ΔP = 75 gpm x 0.01 = 0.75 psid
Clean $\Delta P_{adj.} = 0.75 \times \frac{500}{141} \times \frac{0.86}{0.86} = 2.7$ psid
Housing ΔP = "0" (<i>negligible</i>)

Example 2: System Return Filter

Conditions
Viscosity = ISO 68 Fluid 220 SUS @ 120°F
Specific gravity = 0.86
Flow = 350 gpm
3 μ m Filtration (<i>depth</i>) β (<i>beta</i>) = 1000
K Factor = 3 μ m Optimicron® filter element = 0.04
Selection - NFH 7800 Filter
Element ΔP = (350 \div 3 housings) x 0.04 x $\frac{220}{141}$ x $\frac{0.86}{0.86}$ = 7.28 psid
Housing ΔP = 1.05 (<i>curve</i>) x 0.61 x $\frac{0.86}{0.86}$ x 0.64 psid
Assembly ΔP = 7.28 psid + 0.64 psid = 7.92 psid

