

OPTIMIZER

High Performance Air & Dirt Separators



OPTIMIZER Operation & Performance Data

Air Elimination Performance

Air removal and elimination rates can vary with various system temperatures, pressures, flow rates, and pipe velocities. They can also vary with the type of air elimination equipment used. Some equipment can only remove free air from the system. This type of air removal is usually referred to as venting or purging. Other types of equipment can remove some of the entrained air in the system water, but only to a certain level. Only a high performance air elimination device with a superior coalescing medium design, such as the **OPTIMIZER**, can remove and eliminate air down to a level that can actually absorb and remove air trapped in pockets and high points in the system.

Third party testing by an independent laboratory concluded that the **OPTIMIZER** can consistently remove greater than 99.7% of the dissolved oxygen content in a closed piping system. Removal percentages approaching 100.0% will be achieved after sufficient time is allowed. In all tests, up to 50% of the dissolved oxygen was removed from the test system in less than 1 hour. Some tests showed 50% dissolved oxygen removal in as little as 15 minutes. With sufficient time, the dissolved oxygen content can drop to 0.07%. Since air is 20% oxygen, this equates to only 0.35% air, or 99.65% air free.

This level of air elimination performance will absorb and remove air trapped in pockets and high points in the system, virtually stopping corrosion in piping systems. It also eliminates heat transfer problems and numerous pumping problems associated with trapped or entrained air in piping systems.

Dirt Separation Performance

Air is not the only contaminant that affects systems performance and component life. Dirt particles can erode pump impellers, seals, valve seats and mechanisms and other system components as well as the piping itself. By using an **OPTIMIZER** combination air and dirt separator or a dirt only unit, dirt such as sand, metal shavings, iron oxide, and other harmful materials can be separated out of the circulating fluid.

The **OPTIMIZER** dirt separator is unlike a filter or strainer. As the **OPTIMIZER** removes dirt from the system, the particles drop to the bottom sediment collection area of the vessel and out of the flow path. This results in zero change in pressure drop as the particles are collected, which requires less pumping energy than filter or strainer equipped systems. Particles are easily removed by opening the blow down valve in the bottom of the vessel.

Third party testing by an independent laboratory concluded that the dirt separation portion of the **OPTIMIZER** can remove 89% of the dirt particles in the 17 to 65 micron size range in as few as 50 system cycles and with enough cycles can remove up to 99% of these particles. Larger particle sizes can be removed even more quickly and effectively. (See Chart 1)

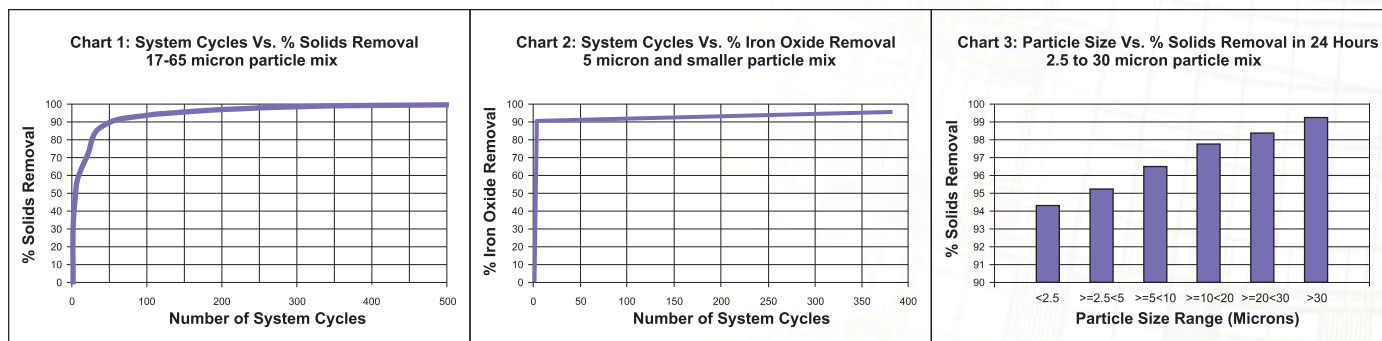
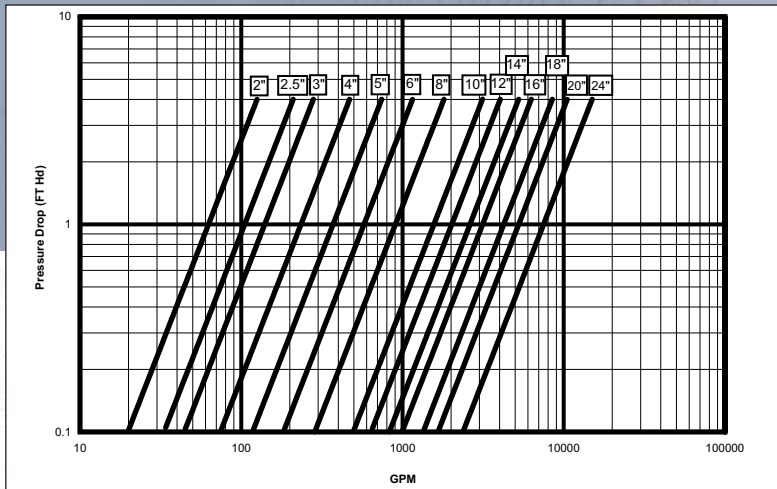


Chart 1: Testing shows that 99% of dirt particles 17 to 65 microns in size can be removed given enough system cycles.

Chart 2: Further testing shows that the **OPTIMIZER** is also effective in removing even smaller particles. In as few as 4 system cycles, up to 88% of iron oxide particles 5 microns and smaller are removed and with enough cycles up to 99% of these particle can be removed.

Chart 3: Other testing shows the percentage of removal effectiveness for a particle size range from 2.5 microns to 30 microns in 24 hours of operation.

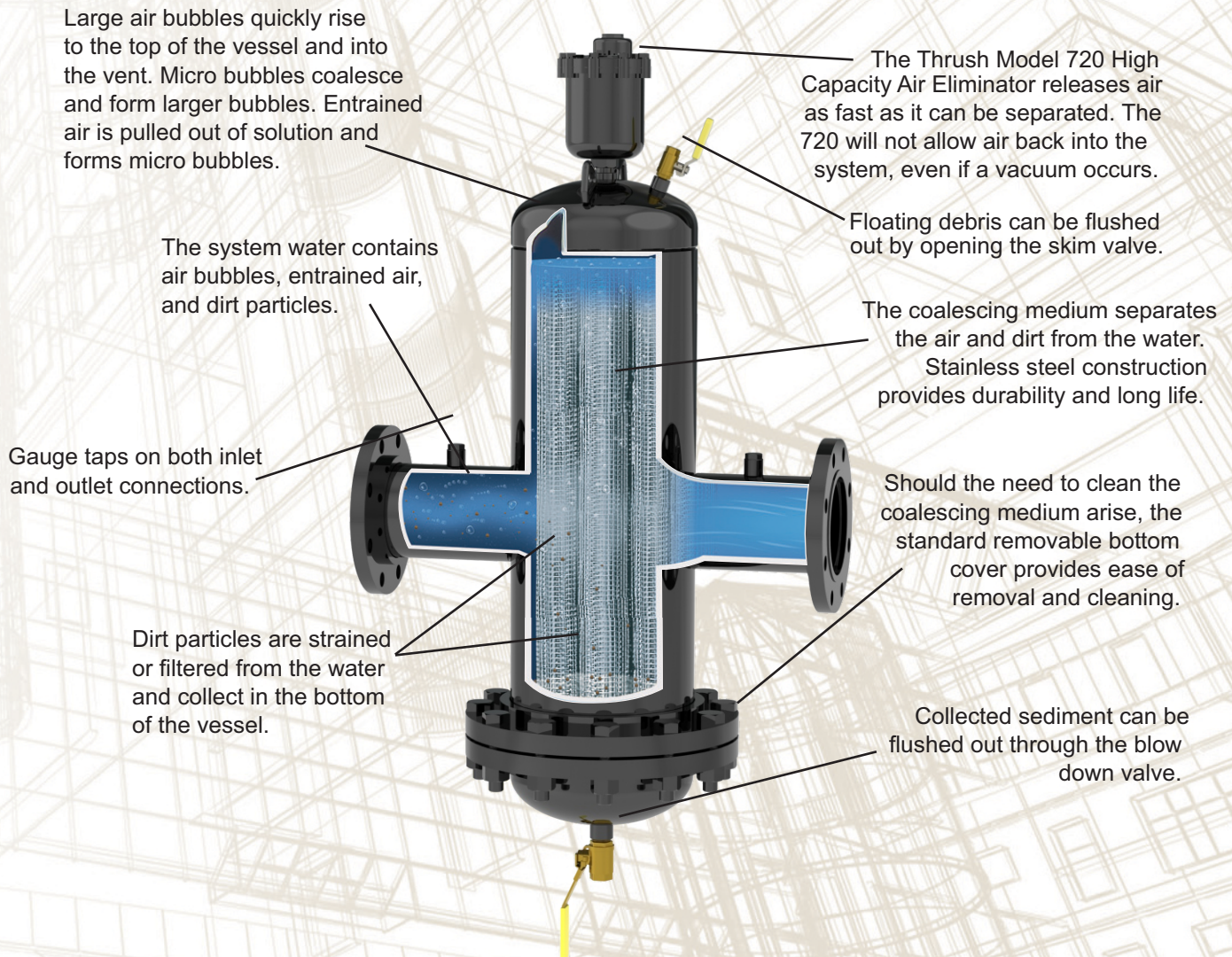
Flow Rate vs. Pressure Drop Chart for All Models



Ideal Flow Rates

Connection Size	Standard Velocity Models Ideal Flow (GPM)	High Velocity Models Ideal Flow (GPM)
2"	63	105
2.5"	90	150
3"	138	230
4"	238	397
5"	374	623
6"	573	955
8"	998	1664
10"	1544	2573
12"	2205	3674
14"	2678	4463
16"	3530	5883
18"	4499	7499
20"	5586	9311
24"	7942	13236

Air Eliminator & Dirt Separator Operation Diagram



Model Designation

G

Grundfos

B

Separation Type

A=Air Only
D=Dirt Only
B=Both Air and Dirt
4=Hydraulic Separator

S

Velocity

S=Standard Velocity
H=High Velocity

R

Head Type

R=Removable
F=Fixed

040

Connection Size

example: 025 = 2.5"
or 100 = 10.0"

W

Options

W=with options
X=less options



Air & Dirt Separator



High Velocity
Air & Dirt Separator



Air Separator

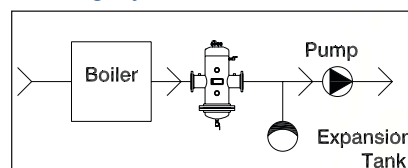


Dirt Separator

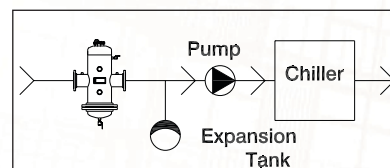
Features & Benefits

- US Patent No. 8,177,975 - First patented air/dirt separator on the market
- The entire separator body is filled with stainless steel coalescing media.
- The stainless steel coalescing media's non-soldered construction provides more durability and is not affected or damaged when installed in sweat fit systems.
- The catalytic effect of the stainless-steel surface creates a small electrical current helping draw dissolved oxygen out of the water.
- Air elimination models utilize Thrush's unique and popular model 720 Air Eliminator, which will not allow air back into the system even if a vacuum occurs.
- Low to negligible pressure drop. On dirt separation models, pressure drop does not increase as the dirt collection area fills.
- Third party tested by an independent laboratory
- Removes 99% of dirt particles as small as 17 microns
- Removes 100% of free and entrained air
- Removes 99.7% of dissolved air
- Removable or Fixed Head
- Drain valve for blow-down of unit
- Skim valve for flushing of floating debris and rapid venting
- Front and rear sight glass for easy inspection
- Gauge tapings on inlet and outlet nozzles
- Manufactured to ASME Section VIII Division 1 standards

Heating System



Cooling System



Optimal performance of the *OPTIMIZER* is determined by proper system location.



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