

Thrush Aar-O-Vent™ Advantages and Standard Features (in no particular order)

1. Stainless steel coalescing medium provides superior corrosion resistance. Its non-soldered construction provides more durability and is not affected or damaged when installed in sweat fit systems.
2. Air elimination models utilize Thrush's unique and popular model 720 Air Vent, which will not allow air back into the system even if a vacuum occurs. (4" and smaller models use the model 715 Air Vent (Patent Pending), which is a smaller version of the model 720 Air Vent.)
3. All models are designed and manufactured to ASME Section VIII, Division 1.
4. Dirt separation models come standard with a removable cover so that the coalescing medium can be cleaned if necessary.
5. Sight glasses are standard on all models.
6. Superior coalescing medium design provides the highest air elimination performance and low to negligible head loss through the unit.
7. On dirt separation models, pressure loss does not increase as the dirt collection area fills.
8. Gauge tapping is provided on the inlet and outlet nozzles of all models.
9. All models feature a skim valve for flushing floating debris from the vessel. It can also be utilized for rapid venting during a system fill.

Aar-O-Vent™ Products



Air Separator



Dirt Separator

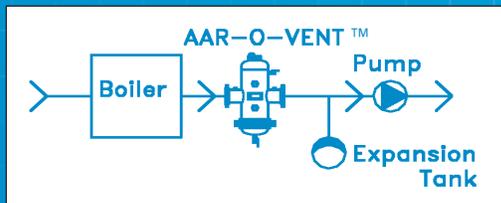


Air & Dirt Separator

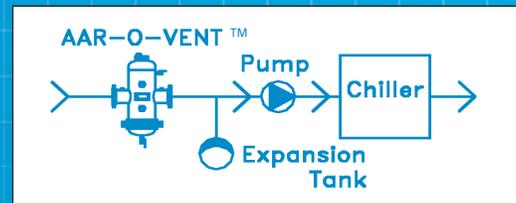
General Notes

1. Patent Pending Design
2. Model Designation
 - a. SVR = Standard Velocity Air Eliminator and Dirt Separator with Removable Cover
 - b. HVR = High Velocity Air Eliminator and Dirt Separator with Removable Cover
 - c. ASF = Standard Velocity Air Eliminator
 - d. ASH = High Velocity Air Eliminator
 - e. DSR = Standard Velocity Dirt Separator with Removable Cover
 - f. DHR = High Velocity Dirt Separator with Removable Cover
3. High velocity models feature extended coalescing mediums and shells
4. Maximum pressure rating: 175 PSI
5. Maximum temperature rating: 250° F
6. Optimum flow rates

Heating System



Cooling System



* Optimal performance of the Aar-O-Vent™ is determined by proper system location.

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AAR--VENT™



High Performance
Air and Dirt Separator

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 Aar-O-Vent™, 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 Aar-O-Vent™ can consistently remove greater than 99.7% of the dissolved oxygen content in a closed piping system and that 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 and virtually stop 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 Aar-O-Vent™ 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 Aar-O-Vent™ dirt separator is unlike a filter or strainer. As the Aar-O-Vent™ 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 Aar-O-Vent™ 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)

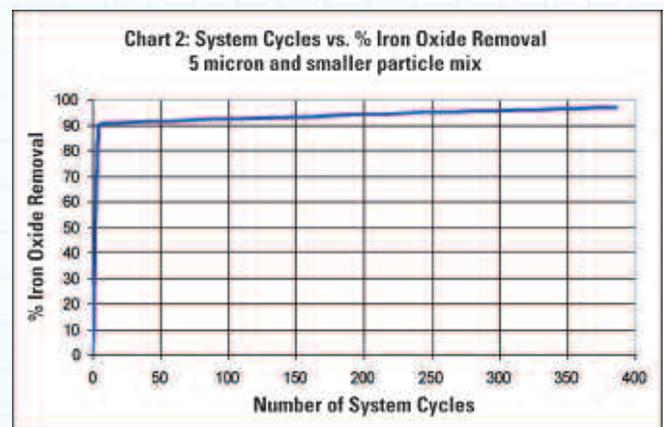
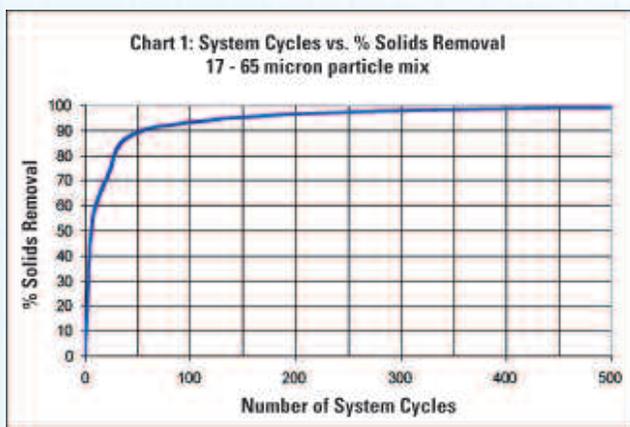
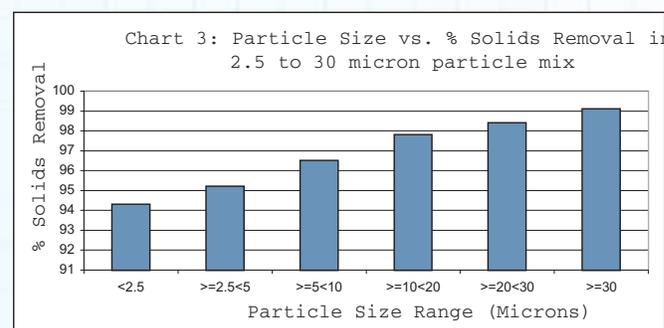
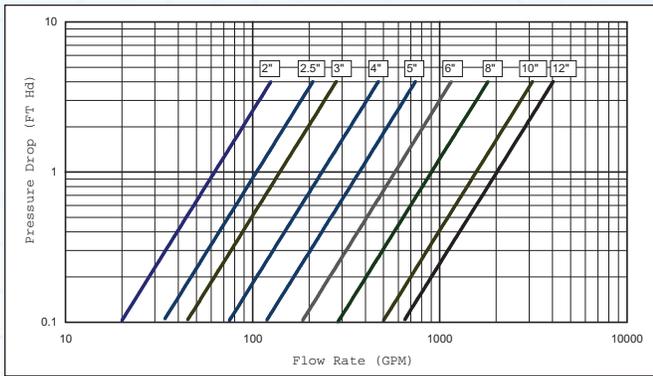


Chart 2: Further testing shows that Aar-O-Vent™ is also effective in removing even smaller particles. In as few as 4 system cycles, up to 88% of iron oxide particles 5 microns and smaller are removed and with enough cycles up to 99% of these particles can be removed.

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



Flow Rate vs. Pressure Loss Chart for SVS, SVR, HVS and HVR Models



Optimum Flow Rate

| Connection Size* | Standard Velocity Models (GPM) | High Velocity Models (GPM) |
|------------------|--------------------------------|----------------------------|
| 2" | 45 | 105 |
| 2.5" | 70 | 155 |
| 3" | 95 | 225 |
| 4" | 170 | 405 |
| 5" | 260 | 630 |
| 6" | 375 | 910 |
| 8" | 625 | 1610 |
| 10" | 950 | 2450 |
| 12" | 1400 | 3500 |

Air Eliminator & Dirt Separator Operation Diagram

Large air bubbles quickly rise to the top of the vessel and into the vent.
Micro bubbles coalesce and form larger bubbles. Entrained air is pulled out of solution and forms micro bubbles.

The Thrush Model 720 High Capacity Air Eliminator releases air as fast as it can be separated. The 720 will not allow air back into the system, even if a vacuum occurs.

The system water contains air bubbles, entrained air, and dirt particles.

Floating debris can be flushed out by opening the skim valve.

The coalescing medium/filter separates the air and dirt from the water.
Stainless steel construction provides durability and long life.

Gauge tap on both inlet and outlet connections.

Dirt particles are strained or filtered from the water and collect in the bottom of the vessel.

Should the need to clean the coalescing medium arise, the standard removable bottom cover provides ease of removal and cleaning.

Collected sediment can be flushed out through the blow down valve.

