

Introduction to AcornVac Vacuum Grease Waste Transport Systems

What is a Vacuum Grease Transport System?

Transportation of grease waste effluent from source to interceptor has long been an issue for anyone that creates or works with conventional grease waste plumbing systems. AcornVac has developed an effective, reliable mode of transportation that conveniently integrates conventional fixtures or floor drains and routes grease waste through a vacuum waste piping network located above grade or slab for direct drainage to a more conveniently located grease interceptor. The system virtually eliminates problems with conventional grease waste line clog and coagulation as well as placement, maintenance coordination and problems associated with local grease traps.

Vacuum Grease Transport Systems are simply a viable alternative to underground piping that use the combined energies of vacuum pressure and gravity for the transport of grease waste effluent through an above piping network that can be routed above grade.

How does it Work?

The AcornVac Vacuum Drainage System consists of three basic components, 1) Vacuum Generating Station 2) a piping network that allows for transportation of grease waste from wherever it's generated to the Vacuum Generating Station, and 3) vacuum interface and collection components.

Vacuum Generating Station

Referred to as the "Vac Center", the vacuum generating station includes vacuum pumps to create a useful vacuum source and storage tanks that collect and discharge the waste into the facilities' sewer main through a code compliant Grease Interceptor.

Operation of the pumps, collection tanks, historical data recording, and alarm reporting is fully automated by controls provided with the Vac Center. The vacuum pumps run only on demand, and full redundancy is always provided.

Piping Network

The piping network for a vacuum drainage system is maintained under continuous vacuum and is generally fabricated out of PVC, Copper, or other smooth bore, non-porous material. The network consists of risers which transport the collected waste vertically from the grease waste source to horizontal mains and branches located in the overhead which lead to the Vac Center. The mains and branches are sloped at a rate of 1/8" per foot toward the Vac Center and waste travels by gravity to the Vac Center, just as is does in traditional underground drainage piping.

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Vacuum Interface Components

At the heart of a vacuum drainage system are the vacuum interface components that allow grease waste to be efficiently collected and transported to the Vac Center for discharge to a grease interceptor. These components include an accumulator, purpose made for grease laden waste water which is located to accept gravity drainage of grease waste effluent from floor drains and fixtures, a vacuum interface valve or Extraction Valve which separates the vacuum in the piping network from atmospheric pressure at the accumulator, and a controller or switch which determines when the vacuum interface valve should be opened to remove the grease waste from the accumulator.

Importantly, the Extraction Valve is a "normally closed" device which eliminates any possibility of cross contamination between the fixture or floor drain and the drainage piping network, Vac Center, grease trap or sanitary sewer main.

When the controller determines that waste water is present in the accumulator, it opens the Extraction Valve, exposing the accumulator and its contents to the vacuum pressure. The difference between the vacuum pressure in the piping network and surrounding atmospheric pressure causes air to enter the accumulator and then through the accumulator and its contents, thereby emulsifying the collected waste into droplets that are carried along in the air stream, through the open extraction valve and into the overhead piping network and onto the Vac Center. Waste is discharged from the Vac Center into a code approved grease interceptor before eventual discharge to sanitary sewer mains.

What are the advantages of vacuum drainage and grease transport?

Vacuum drainage systems offer a number of benefits:

- Vacuum transport systems eliminate the need for costly underground grease drainage piping in the sales area on renovation projects.
- Vacuum transport systems use smaller diameter piping (PVC, copper or stainless) and smaller diameter fittings.
- The drainage piping network servicing a vacuum transport system can be installed vertically or horizontally, providing flexibility in layout and building design, as well as provide an economic alternative for renovation project piping.
- Vacuum drainage systems allow existing buildings with limited drainage to be developed when traditional underground piping upgrades are cost prohibitive because of structural limitations (post tension slab foundations), restrictive site issues (bedrock, inappropriate inverts, historical building categorization), or embedded contaminants in the floor (asbestos).

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Advantages of vacuum drainage and grease transport?

- The operational dynamics of a vacuum transport system result in significant reductions in grease waste build up in the waste piping network when compared to conventional gravity piping.
- Vacuum drainage systems work in concert with the new "open" architectural store environment where electrical and refrigeration services are brought to display cases from overhead. Grease waste piping within the store can now follow these services, allowing for unprecedented flexibility in store layout.
- Vacuum drainage systems are completely adaptable to last minute merchandising changes.
- New construction projects can be completed faster, providing a construction cost savings and allowing a facility to be brought online in a more timely fashion.
- Vacuum drainage and transport systems allow existing buildings with limited drainage to be developed for supermarket use when traditional trenching and underground piping upgrades are cost prohibitive because of site conditions – post tension slab, bedrock, asbestos, high water tables, etc.
- Because trenching is eliminated, store remodel activities are less expensive, safer, more sanitary, and take less time.