Use These Instructions
for Proper Installation and Maintenance

Model #	Cap G.P.M.	Grease Cap. (lbs)	Length	Height	Inlet/Outlet Height	I.D. of Inlet/Outlet	Width
GT-08	4	8	14.125”	11.25”	7.5”	2”	10.5”
GT-14	7	14	16.1875”	12.125”	8.125”	2”	13.5”
GT-20	10	20	20.125”	12”	8”	2”	14.25”
GT-30	15	30	20.375”	13.75”	10.375”	2”	15.25”
GT-40	20	40	22.5”	14.875”	11.5”	3.125”	16”
GT-50	25	50	24.375”	16.5”	12”	3.125”	17.5”
GT-70	35	70	28.5”	19”	14”	3.125”	18.125”
GT-100	50	100	30.375”	21.5”	16.25”	4”	22.125”

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INSTALLATION

A properly sized and designed grease interceptor may not work or may work less efficiently if it is installed incorrectly. As basic as it seems, the interceptor must not be installed backwards. This is mentioned since far too many interceptors which are condemned for not working have merely been installed backwards. The problems relating to installation, however, go beyond the obvious. Regardless of whether the interceptor is a certified Hydro Mechanical Interceptor or a large Gravity interceptor, one of the most important installation practices to follow must be to locate the interceptor as near as possible to the source of the FOG laden water. See Figures 6 and 7. As stated previously, this is important because every foot of piping between the source of FOG laden waste water and the interceptor is unprotected and is a potential maintenance problem.

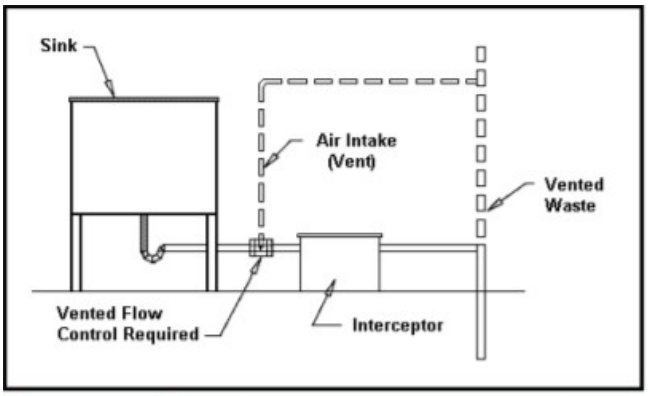

Figure 6: Grease Interceptor serving sink - flow control air intake intersects vent.

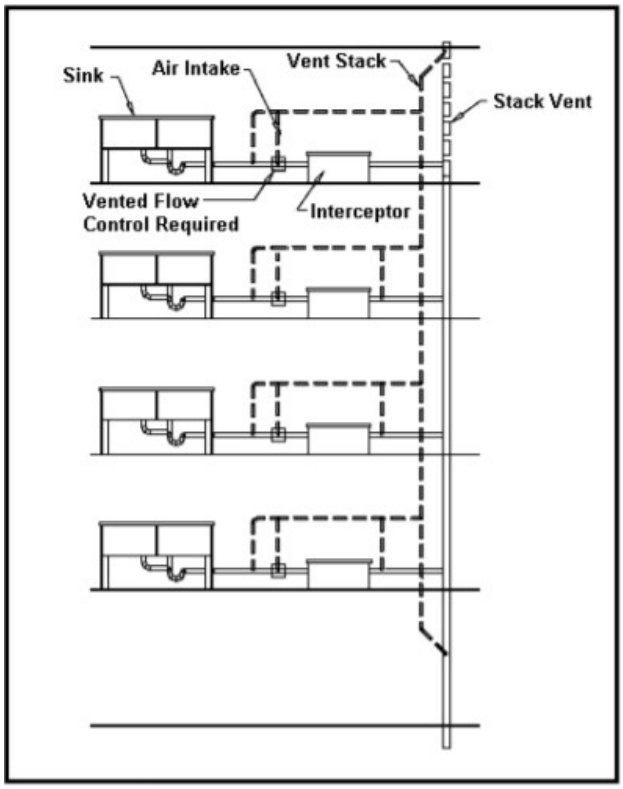

Figure 7: Grease Interceptors serving trapped and vented sinks in a multi-story installation – flow control air intakes intersect vent.

A second reason for locating the interceptor near the fixture: FOG separates best when the effluent is relatively hot.

While the laws of physics dictate that FOG separates from water at a slower rate as temperatures increase, in these applications the separation rates at room temperature and at elevated temperatures (testing has been done up to 200 degrees F º) are so close that the other benefits outweigh the slight improvement in separation rate. For example, in waste water, particularly the FOG laden waste water from

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commercial kitchens, it is likely there will be solids present. These solids and the FOG are more likely to form a globule, the specific gravity of which exceeds that of FOG alone. As the effluent temperature rises however, the FOG will be more likely to separate freely from those solids. Keeping the FOG from coalescing on the solids is important because the resultant material may sink, and ultimately be discharged from the interceptor. If on the other hand, the FOG is free to separate from the solids in the waste water due to the higher temperatures, which tend to make the FOG less viscous, the FOG is more likely to be retained in the interceptor.

FOG laden solids passing through the interceptor create two problems. First, they tend to form balls or aggregates (grease can become very hard) posing a blockage problem in the waste water collection system. Second, if these materials do make it to the waste water treatment plant without creating any blockages, they can make waste water treatment much more difficult since degradation of FOG consumes oxygen necessary for the digestion of the waste in the treatment plant and because FOG decomposition is quite slow, it can pass through the plant. This increases the effort required to treat wastes and can cause violations of the plant's discharge permit.

Unfortunately, many of the codes in existence around the country fail to recognize the benefits of hot water in the FOG laden waste stream and require oversized Gravity Interceptors to allow the waste water to cool. PDI has done extensive testing on the affect of hot water on separation and can support through data the fact that hot water has little effect on separation efficiency. The Environmental Protection Agency, in their document EPA 625/1-80-012 (Design Manual: Onsite Wastewater Treatment and Disposal Systems) is specific in recommending the use of hot water and proximity to the source to enhance retention of FOG.

When discussing the location as a factor in installations, it should also be pointed out that in addition to proximity to the fixture, the interceptor should be located so that maintenance can be easily performed. Although this recommendation also seems so obvious as to not need discussion, some interceptors have been installed under sinks without clearance for removal of the cover. Some interceptors have been placed in the floor and tiled over; some have been located so that they are literally hidden from view; and some large outdoor interceptors have actually been paved over. The placement should allow the cover to be visible and easily removable for cleaning, and clearances should be such that the internal baffling can be serviced. With the cover removed, all wetted surfaces should be visible. This is necessary not only for access to clean the interceptor, but also to have the capability to easily inspect the interior for potential problems such as damaged baffles and blocked air relief bypasses.

The flow control fitting furnished with PDI certified interceptors must be installed in the waste line ahead of the interceptor. It should be located beyond the last connection from the fixture and as close as possible to the underside of the lowest fixture to minimize the effects of head pressure. When the wastes of two or more sinks or fixtures are combined to be served by one interceptor, a single flow control fitting may be used. Any flow control fitting installation not in conformance with these recommendations requires manufacturer consultation.

The air intake for the flow control may terminate under the sink drain board as high as possible above the flood level of the sink in order to prevent overflow. It may also terminate in a return bend at the same height outside the building. When the fixture is individually trapped and back vented, the air intake may intersect the vent stack. All installation recommendations are subject to the approval of the local plumbing code authority. See Figure 8.

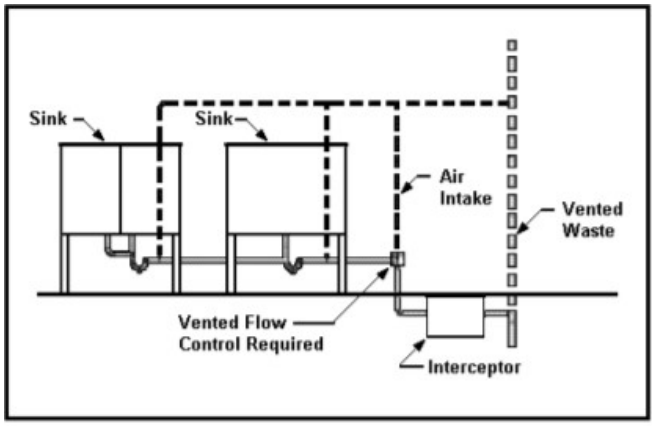

Figure 8: Grease Interceptor serving two individually trapped and vented sinks – flow control air intakes intersects vent.

One of the most controversial issues relating to Installation is: what fixtures or sources must be part of the FOG interceptor system? All drain-borne FOG is a problem and if the problem is going to be solved all sources of FOG must pass through the grease interceptor. There is little controversy about connecting pot sinks. There is some controversy about connecting dishwashers. There are some questions relating to floor drains, but discharge from food grinders (or garbage disposals) is almost universally required to bypass the grease interceptor or to have the pulverized solids removed from the waste stream before it enters the interceptor.

The food grinder (and the associated pre-rinse station at the dishwasher) is one of the single greatest sources of FOG. Yet despite that fact, most codes forbid food grinder discharge from passing through a grease interceptor. Technologically there is no reason for the waste stream to bypass the grease interceptor if the solids have been removed. See Figure 9.

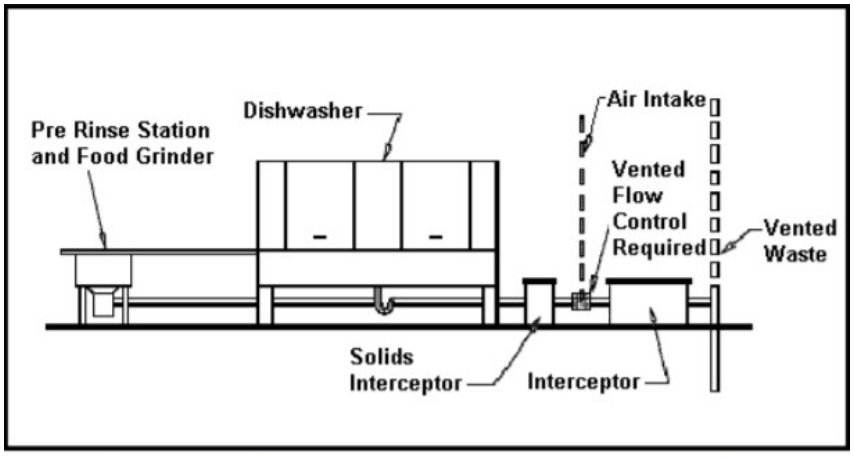

Figure 9: Grease Interceptors with solids interceptor servicing dishwasher with pre-rinse station and food grinder - flow control air intake terminates above flood level.

MAINTENANCE

Even the best designed interceptors, properly installed will fail if they are not maintained. The precise requirements for maintenance are not possible to define since conditions at each installation vary. In terms of the typical code, maintenance must be performed before the grease in the waste water down stream from the interceptor exceeds local limits.

While that is a simple statement to make, it is impossible for the user of a grease interceptor to determine when those limits have been exceeded. The method for determining when an interceptor's rated capacity has been reached is fairly simple if it is a PDI certified interceptor. A PDI certified interceptor has a rated retention capacity equal to twice its flow rate expressed in pounds. For example, a 35 GPM interceptor is rated to retain at least 70 lbs. of grease. A user may determine a cleaning schedule by measuring how much grease has been trapped over a period of time.

Grease will weigh about 7 pounds per gallon, and if it is determined that a 35 GPM interceptor accumulates about 5 gallons of grease every 4 days it would be easily and correctly assumed that the interceptor must be cleaned no less than once a week. In fact, if the user must comply with a code which limits grease to 100 parts per million, cleaning would be recommended every 2 or 3 days. When cleaning is discussed, it should be understood that cleaning an interceptor should always include the removal of grease from the top of the separation chamber as well as any solids which have accumulated along the bottom. See Figure 10.

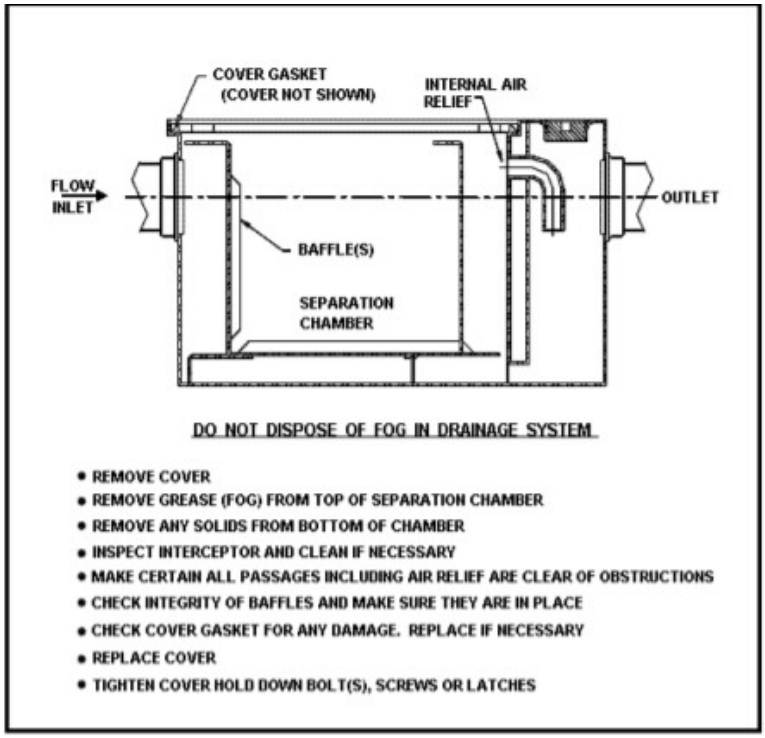

Figure 10: Grease Interceptor cleaning and maintenance.

The actual frequency of cleaning a certified interceptor will vary depending upon a wide variety of factors; the type of food served will determine how much grease will enter the interceptor. An interceptor used for cleaning utensils or limited to serving trays in a restaurant where no food is actually prepared is going to accumulate a lot less grease than one used in a full service restaurant where all of the food preparation equipment and utensils as well as dishes are washed. Another factor affecting the cleaning cycle will be whether a food grinder is discharged into the interceptor, and whether the food specialty is high in FOG.

The allowable grease content in the waste water will also determine the frequency of cleaning. It should be noted that all PDI certified interceptors will separate efficiently enough to meet any grease limits (which may range from 50 parts per million up to as much as 600 parts per million depending upon the jurisdiction). They may require cleaning when as little as 25% of their rated capacity has been reached depending upon the limits established by the administrative authority. This statement is based on an analysis by PDI of accumulated test data. That data was collected at full rated flows, and does vary from product to product.

The cleaning cycle on large capacity interceptors is less easily determined. Anecdotal evidence gathered from a variety of sources and communities indicates that their size is often interpreted as meaning less frequent cleaning is required, and to a degree this may be true. From information gathered from a variety of sources however, the consensus appears to indicate the cleaning frequency for large interceptors is in the range of 2 to 4 weeks. This amount of time is the maximum allowable for large interceptors to still meet the discharge limits on FOG. Due to the nature of the large interceptors, the user is not likely to be the cleaner, and in some cases may actually be prohibited from cleaning the interceptor. Usually cleaning will be done by a renderer, a septic tank service, or a company which specializes in grease interceptor cleaning. The annual cost of regular cleaning is likely to average between $2, 800 and $4, 000 depending again upon the discharge limits and the local market costs. (January, 1998 average cost)

Regardless of what the cleaning cycle is determined to be, it has been shown by actual field experience that one of the biggest obstacles to regular maintenance has been the odors usually associated with interceptors. The easiest way to eliminate that problem is frequent cleaning. If cleaning the grease interceptor becomes a part of the daily routine it usually will only require about 15 minutes and there will be limited or no objectionable odors.

It has been determined that when food grinders are part of the waste system, and a properly sized solids interceptor, cleaned daily, is located ahead of the grease interceptor, the odors normally associated with the grease interceptor are not present because the food particles which decay and cause odors never reach the interceptor.

Use of the solids interceptor improves the grease quality to extent that the recovered grease may be disposed of with the golden fryer grease which is usually purchased by the local renderer. Now instead of paying for disposal, the restaurant may be compensated for the grease, since it can be recycled into a variety of products.

When regular maintenance is not performed the obvious result is a grease interceptor which becomes unable to separate the FOG due to overloading, thus passing these materials downstream. Unless i t is equipped with an electronic, sensor controlled, positive inlet closure valve to prevent such overloading, no grease interceptor will otherwise automatically shut itself down to prevent overload discharge. Apart from violating codes or ruining the on-site wastewater treatment system, sewer blockages and the associated health risks are likely. Some FOG generators would rather do almost anything but clean a grease interceptor. FOG generators have several options, some of which are acceptable alternatives, and some of which are possibly legal, but nevertheless unacceptable.

One alternative is to engage the services of a company which specializes in cleaning. This is not an inexpensive approach, and in the case of large interceptors is required. If the service is performed as often as necessary, it insures the interceptor will function as intended.

Another alternative is the use of an interceptor that is considered to be a Grease Recovery Device (or Grease Removal Device). A GRD is a Hydro Mechanical Grease Interceptor which has as an integral part of its design a means by which grease is removed.

A GRD will be one of two basic types: 1. Timer controlled - See Figure 11. 2. Sensor controlled - See Figure 12.

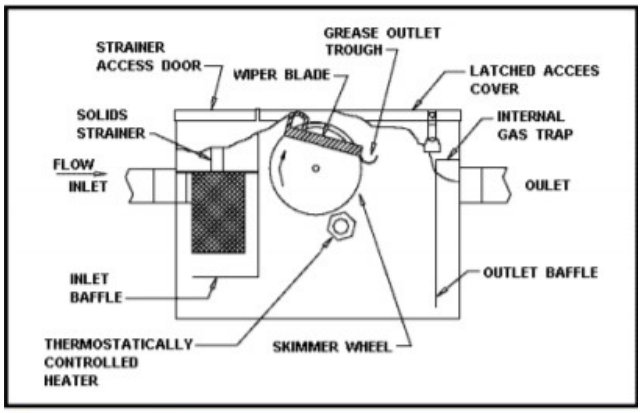

Figure 11: A timer controlled Grease Recovery Device (GRD)

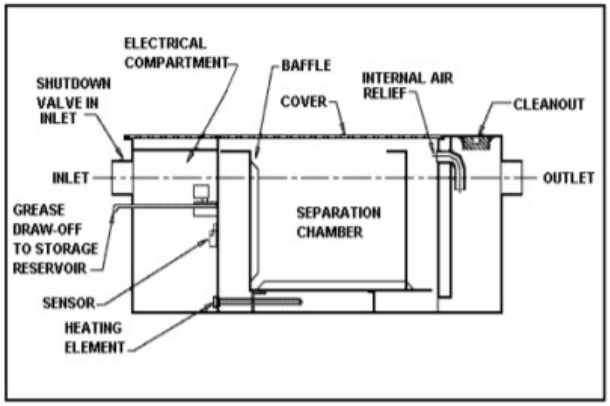

Figure 12: Sensor controlled Grease Recovery Device (GRD)

Timer controlled devices typically utilize a disk or belt which passes through the FOG layer and a squeegee device to wipe the accumulated FOG from the disk or belt into a drain trough and into a FOG receptacle. Other means of removing the FOG include a pump or gravity flow activated by the timer. They are usually regulated by a 24 hour timer which is set upon installation. The timer will operate the FOG removal system for a set time or times each day.

Sensor controlled devices have the ability to sense the presence of FOG. By detecting FOG and initiating the removal process only when necessary and as often as necessary, the GRD can always keep the retained FOG below the rated capacity of the device. The sensor operated devices use valving and gravity or pump assisted FOG removal.

As FOG problems continue to be a factor, in many jurisdictions the use of a GRD, is being mandated. It must be noted that while a GRD eliminates the daily routine of grease interceptor cleaning, these devices do require periodic maintenance to remove trapped solid debris, removal of scum and a check of system operation.

The previous two examples of methods to avoid routine maintenance are certainly good and acceptable choices. Some others are not and are to be avoided in conventional grease interceptors. The first is the use of chemicals, often touted as environmentally friendly enzymes or emulsifiers. These materials may even have names which imply their use is environmentally acceptable. The second is the use of "bacteria" or organisms designed to digest wastes.

In the first category, the materials used work by changing the structure of FOG from a hydrophobic material that is unlikely to mix freely with water (thus allowing separation to easily occur) to a hydrophilic micelle which mixes freely with water thus inhibiting or preventing separation from occurring in the interceptor. The use of these additives only changes the structure of the FOG for a limited period of time, and eventually the FOG will revert back to its original form, usually downstream in the public waste water collection system. While this practice, in conventional interceptors, works to pass the problems on to somebody else, the methods jurisdictions use today to detect FOG content in the effluent are sophisticated enough to accurately identify any violator of the sewer codes.

The second method, the use of bacteria (or bio-remediation as it is called) works. The concept of bio-remediation is sound: trap greases and digest them in the interceptor to convert the grease permanently into the byproducts of digestion. This is exactly what happens in a sophisticated waste water treatment plant. See Figure 13. Bioremediation does not eliminate the need for monitoring the effluent quality, routine maintenance to deal with undigested materials, or inspections to insure all components are clean and functioning properly.

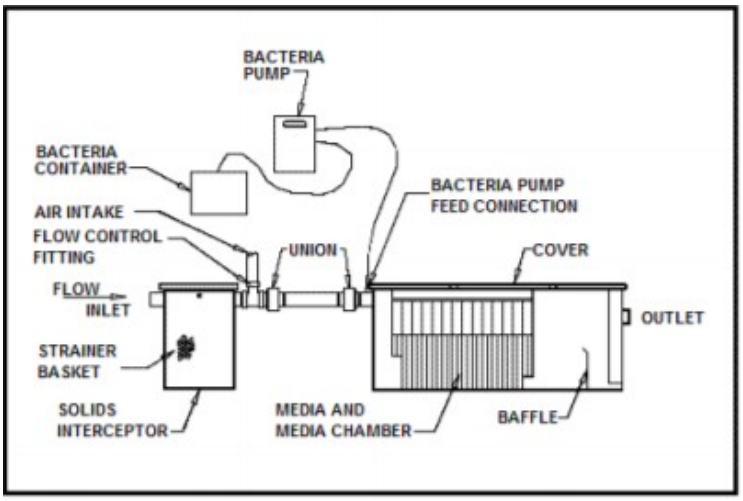

Figure 13: Bio-remediation Grease Interceptor.

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For an additive to have any positive effect, it must be known to produce net reduction in weight and volume of the FOG either through biochemical or catalytic processes. Such disposal methods require engineered devices and professional administration.

When dealing with a conventional grease interceptor, the most practical and economic maintenance practice is to regularly remove the FOG and dispose of it in accordance with applicable solid and special waste disposal regulations.

Above excerpted from:
Plumbing and Drainage Institute
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http://www.pdionline.org/publications/
Guide to Grease Interceptors – *Eliminating the Mystery*

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