



HOW TO CHOOSE A GREASE INTERCEPTOR



BIG DIPPER[®]

Trapzilla[®]

**LITTLE
DIPPER**[®]

Introduction

A grease interceptor is a significant investment. Just purchasing the unit and installing it can easily run several thousands of dollars. Then there's the cost of regularly cleaning out the unit, plus maintenance and potential repairs. Finally, if the unit fails, local regulators could close your facility and levy fines until you get fix it or replace it.

Whether you're replacing a failing grease interceptor or purchasing one for a new commercial kitchen, this guide is intended to help you choose the best interceptor for your needs. Here's what you'll find here:

Chapter 1 — What factors to consider in selecting your grease interceptor or grease removal device.

Chapter 2 — Your options. There are several types of grease interceptors on the market, many constructed of different materials.

Chapter 3 — Special situations. Hospitals and health care facilities, rural food service establishments, school cafeterias, and grocery store kitchens with rotisserie ovens have special considerations. If your facility falls into any of these categories, please review this chapter.

Testimonials — Thermaco customers describe the benefits of using alternative grease interceptors.

Resources — Helpful website links and phone numbers.

Every commercial kitchen and every community is unique. If you have questions we haven't covered in this guide, or if there's something that's not clear to you, please call us at 1 (800) 633-4204. We're happy to help you with technical questions, regulatory concerns or any other issues related to grease interceptors. — The Thermaco team

FACTORS TO CONSIDER WHEN CHOOSING A GREASE INTERCEPTOR

Choosing a grease interceptor is not as simple as looking at a plumbing or restaurant facility catalog and picking a model off the page. Choosing the wrong interceptor, or even the “cheapest” interceptor, can be very costly in the long run.

There are four key factors to consider:

1. Regulatory requirements
2. Capacity needs
3. Maintenance costs
4. Future replacement

We cover each of these in detail on the following pages.

1. Regulatory requirements

Nearly all municipalities require pretreatment for most commercial kitchens, but specific requirements can vary. For example, in some places small commercial kitchens that produce little grease — such as a coffee shop — may not be required to have a grease interceptor at all. In other places, regulations may dictate what type of grease interceptor is permissible or how often it must be serviced. Regulations may also dictate how the unit is installed.

A phone call to your local wastewater authority or plumbing inspector can quickly help you understand your regulatory requirements. Your plumber, an engineer or other professional can also help.

What if my municipality requires me to install a type of grease interceptor that's too expensive for me?

In some cases, municipal wastewater regulations can be very prescriptive. They may, for example, require you install a certain type of grease interceptor, even if that interceptor is bigger and more expensive than you would like it to be. This is a good time to ask questions. In some cases, regulators can make exceptions. If you're seeking to install an interceptor that's not permitted, local officials may be willing to make an exception, called a variance. Often, you must show that space constraints or other site conditions make installing the prescribed interceptor cost prohibitive. You will also probably need help demonstrating to your local regulators that your alternative will work as well as the type of interceptor they usually require.

Thermaco's customer service team can often provide technical specifications and other information to customers seeking municipal approvals for a Thermaco-made interceptor. Call us at (800) 633-4204 if you'd like help with local regulators.

2. Capacity needs

The second critical factor is how much capacity your facility needs. A large cafeteria or steakhouse will generate much more grease than a small sandwich shop. Most food service establishments fall into one of two categories when sizing their grease trap: single-fixture plumbing or multi-fixture plumbing.

In smaller kitchens, the grease interceptor can often be plumbed to just a single fixture, such as the multi-compartment sink. In larger kitchens, several fixtures may need to be plumbed into the grease interceptor.

Single fixture

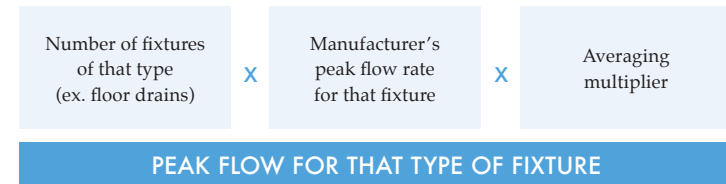
In a single-fixture setting, use the peak flow rate (usually in gallons per minute or liters per second) from the fixture manufacturer to determine the capacity needed in the grease interceptor. Then get choose the grease interceptor with the next highest flow rating. ***Never choose a grease interceptor with a flow rating lower than the fixture being serviced.***



Multi fixture

Multi-fixture settings are a bit more complicated. Simply adding up the peak flow rates for all the fixtures (sinks, dishwashers, pre-rinse station, etc.) is unrealistic. In the real world, those fixtures will never all run simultaneously at peak flow rates.

Based on real-world experience, we've found the best thing to do is include an "averaging multiplier" that provides a truer sense of actual peak flow rates in that kitchen. Here's how the formula works:



Here are common fixtures and the average multiplier we recommend, based on a quarter century of our real-world experience:

FIXTURE	AVERAGING MULTIPLIER
Floor Drains	0.10
3-Compartment Sink	0.25
Pre-Rinse Sink	0.25
Dishwasher	0.30
Mop Sink	0.25
2-Compartment Sink	0.25
Hand Sink	0.25

As with a single-fixture setting, once you've determined the flow rate, select a grease interceptor the next size up to ensure sufficient capacity.

While this method of calculating grease interceptor sizes works, you should always check your local municipal code and consult a licensed plumber to ensure your grease interceptor meets local code requirements.

Other considerations

In addition to the flow rate and volume your interceptor needs, there are two other factors that could affect the type of interceptor you choose and where you install it: Solids and the distance between the fixtures and the trap.

If your commercial kitchen is sending significant solids into the system (imagine rice or bits of cabbage from coleslaw), it often makes sense to install a solids strainer to screen those out before the effluent reaches the trap. By removing solids, wastewater flows freely and grease interceptors function more efficiently.

The other factor is how far wastewater must travel from its source (such as a sink or other fixture) to the interceptor. When those distances are six feet or longer, it often makes sense to install a vented flow-control assembly to control flow rates at higher pressures.

Your grease trap manufacturer should be able to provide appropriate solids strainers and flow-control assemblies so you can be sure these components work together properly.

3. Maintenance costs

Once you've determined your baseline requirements, it's time to start thinking about the total cost of ownership. Like any piece of mechanical equipment, a grease interceptor will usually require some maintenance.

In the case of a well-maintained, point-source interceptor, this maintenance requirement may be very low, with your kitchen staff handling most of the work. For a commercial kitchen using a large grease interceptor, however, you may need to hire a contractor to periodically pump out the interceptor and dispose of waste grease in a landfill or processing facility. This requires special equipment, including a pump truck; it's not a do-it-yourself activity.

In addition to routine emptying and cleaning, a grease interceptor may require new parts from time to time or other maintenance. Some of Thermaco's point-source interceptors have been operating successfully for decades; however, it's safest to assume that your new grease interceptor will require some maintenance or repairs at some point.

As you are talking with local regulators, plumbers and grease interceptor manufacturers, ask these questions:

- How often must this grease interceptor be emptied? Can my kitchen staff do that, or will I need to hire a contractor?
- What parts on this grease interceptor may need to be replaced? Are there components that are especially subject to wear and tear?
- Can local plumbers properly service the unit?
- How available are parts? If I do have a problem, how quickly can I have parts shipped?
- Are technical specifications and other information readily available 24/7?

Total lifetime cost is an important consideration. Some interceptors may be relatively inexpensive up-front, but cost more in the long run due to higher maintenance costs.

Also keep in mind that the costs of maintaining a grease interceptor go beyond routine cleaning, maintenance and repairs. If your interceptor stops working, for example, you may be required to shut down your kitchen until it's fixed. Those kinds of interruptions in your business can be very costly.

Sometimes, failures of your grease trap can result in damage to other businesses in the same building or damage to sewer system pipes. In either case, you may be liable for the cost of those repairs. You might also be subject to fines or bad publicity. So the reliability and track record of your grease interceptor is an important consideration.

4. Future replacements

Finally, you should consider how long your new grease interceptor will last. Lifespans of grease interceptors vary tremendously. A properly maintained interceptor can function for decades. One that receives only minimal upkeep, however, may fail after just a few years.

The durability of the unit will be affected by how the device is engineered and what it's constructed of. (See Chapter 2, "Your Choices" for more details on this.)

Beyond the cost of the interceptor, you should consider the cost of installation. More extensive installation requirements — such as burying concrete interceptors in the ground — cost more and are more disruptive. An interceptor that can be carried in and set on the floor or in a basement, however, will cost less to replace because there's less labor involved. Such installations are also less disruptive to your business, and can often be done in just a few hours.

Interceptors engineered with more durable materials will last longer. And interceptors with more flexible installation choices will be less expensive and easier to manage — now and in the future.

GREASE INTERCEPTOR OPTIONS

There are several major types of grease interceptors on the market now. Not all interceptors are suitable for all commercial kitchens.

Almost all interceptors and grease traps fall into one of four categories:

1. Hydromechanical grease interceptors (HGIs)
2. Gravity grease interceptors (GGIs)
3. Automatic Grease Remove Devices (AGRD)
4. Chemical and biological systems

Below we explain the differences between these four types.

1. Hydromechanical Grease Interceptors (HGIs)

Hydromechanical grease traps use a combination of fluid dynamics and mechanical means to trap and remove grease from kitchen effluent. These are passive interceptors, meaning they work as effluent flows through them, without moving parts.

Most HGIs are installed in point-source configurations, tied directly to the appliance or fixture whose effluent grease must be removed from. They are often installed in commercial kitchens (often beneath the three-compartment sink), but sometimes located outside the building.



HGIs typically have the minimum required grease capacity (at twice the flow rate in pounds of grease capacity), usually less than 300 gallons. They adhere to the ASME A112.14.3-2000, PDI-G 101 or CSA B481 standards.

Newer technology allows some HGIs to hold far beyond what these standards require. These interceptors, usually made out of polyethylene hold more grease in a smaller footprint than traditional HGIs.



2. Gravity Grease Interceptors (GGIs)

Gravity grease interceptors are typically large tanks, often buried in the ground outside. They usually have 300 or more gallons of liquid capacity.

This is the oldest type of grease interceptor, with the first GGIs dating back to the late 19th century. They have no specific performance requirements, but their inefficient design means they often can only hold a fraction of their volume in stored grease, possibly leading to more frequent pumping. Also, because they're often buried in the ground, replacing these units usually requires either excavating the existing one to replace it, or finding a new location to dig a large hole and install the new unit. They are difficult for facilities with less space or without easy access to an outdoor area (such as a parking lot or driveway).

3. Automatic Grease Removal Devices (AGRD)

Automatic grease removal devices — sometimes also described as “active” — have two components. There is an active system, such as a skimmer, that removes grease from kitchen wastewater. The active components are subject to the ASME A.1120.14.3 standards.

A passive tank, which stores effluent, is subject to the same standards as HGIs. These are often installed as point-source devices, and frequently their grease-retention chambers are simple enough to empty that a kitchen employee can do it without special equipment.



The active component, which may include a skimmer or other device to remove grease from water, is activated manually by kitchen workers, or automatically based on electronic controls or a mechanical timer.

4. Chemical and biological systems

In recent years, some companies have introduced chemical and biological systems that purport to handle grease as easily as mechanical systems. These systems use bacteria or enzymes to “digest” retained grease before flushing it into the local sewer system.

In real world conditions, however, these systems are failure prone. The very specific conditions (temperature, oxygen levels and the like) that sustain their chemical or biological processes can be difficult to maintain in a real-world commercial kitchens. Many municipalities have banned these kinds of systems, or require an HGI, GGI or AGRD to be used along with it.

INSTITUTIONAL SETTINGS AND SPECIAL CONSIDERATIONS

Some facilities require special considerations when choosing a grease interceptor. We will outline several of those in this chapter. They include:

1. School cafeterias
2. Rural food service establishments
3. Rotisserie cookers in retail stores
4. Hospitals and health care facilities

1. School cafeterias

School cafeterias, like other food service establishments, are usually required to have grease interceptors to remove fats, oils and grease from their wastewater. However, unlikely many commercial establishments, school cafeterias typically only operate a few hours each day. They are often idle on weekends, over holidays and for months during the summer. These conditions create some unusual challenges for grease interceptors.

First, the flows of grease are uneven. They may be very high during the weekday breakfast and lunch hours when a typical school cafeteria is feeding hundreds of children in a short period. But then over the weekend, on holidays and over summer vacation those activities come to a standstill and wastewater flows (and grease) go to zero.

So why is this a problem? Two reasons. First, schools could incur extra expenses during slow periods (such as the summer) to have a pump truck empty a grease interceptor that may not need it. However, grease traps function better when emptied regularly; this also helps avoid the build-up of dangerous acids and gasses that result from microbial consumption of grease in a trap. But hiring a pump truck is another expense for often-cash strapped schools.

School cafeterias may be better served by a point-source interceptor that is easily emptied by kitchen staff when it's full, but doesn't require a pump truck. These types of interceptors are better suited for the intermittent flows inherent to a school cafeteria.

Point source automatic or active grease removal devices (AGRDs) often use motorized, automated skimmers to remove grease from wastewater. If these motors are not run for long periods — several days or weeks — they may not function properly. Regularly running the motor eliminates this problem. Some automatic grease removal devices, including Thermaco's Big Dipper line, are equipped with timers that automatically "exercise" the motor to ensure the units continue to run properly.

2. Rural food service establishments

Some rural restaurants or other food service establishments (imagine the dining hall at a summer camp), may not be connected to a municipal wastewater system. Instead, they may empty their

wastewater into a septic tank or other stand-alone wastewater treatment system. This, however, does not mean that these facilities should ignore kitchen grease.

Pretreating kitchen effluent is vital to removing fats and some solids that can clog up an on-site treatment system. Pipes from the kitchen to the septic tank can become clogged with fats and oil over time, eventually blocking them and creating a back up that would shut down the kitchen and require expensive repairs.

Besides traditional septic systems, some rural facilities have alternative set-ups, such as mounds or sand systems that use layers of sand and gravel to filter out impurities before allowing the wastewater to soak into the ground. These often use pipes that disperse the water through small holes, and these holes are easily blocked by grease. Here again, an expensive on-site treatment system can stop functioning if grease is allowed to freely flow into them, leading to expensive problems.

For rural food service establishments, the simplest solution is to remove as much grease as possible from kitchen effluent before it reaches the treatment system. A point-source interceptor is often an economical way to do this, though for some high-volume facilities a traditional passive interceptor (such as Thermaco's Trapzilla line) may make more sense.

3. Rotisserie cookers in grocery stores

In recent years, grocery stores have vastly expanded the amount of prepared food they sell. For busy consumers, roasted chicken and other prepared foods sold from stores close to home has been a boon. But this creates new challenges for grocers, who are now operating full-fledged commercial kitchens inside their stores.

Among the biggest challenges are rotisserie cookers, some of which can prepare dozens of birds at once. While cooking, the grease drops off the chickens and collects at the bottom of the cooker. Unlike the grease from a commercial sink, this grease is relatively pure with little water or other materials added. In addition, rotisserie cookers don't operate all the time — and are busier on some days (and during some seasons) than others.



Photo courtesy of Steve Parker / Creative Commons on Flickr

Interceptors for rotisserie ovens have several criteria:

- They must be able to accept a water line to add the water required to separate the grease.
- They must be able to manage periods of heavy activity interspersed with long periods of inactivity.
- They must have flexible installation requirements; it may not be practical to plumb a rotisserie oven to an outdoor grease interceptor.

An automatic grease removal device is ideal for these situations. These units safely segregate the grease, making it easy for staff to handle disposal and reducing the risk of spills. Grease spills increase the risk of slips and falls, and thus the risk of injuries.

Thermaco's Big Dipper series is available with a digital controller with settings designed specifically for rotisserie ovens. The optional SWS-1 Supplemental Water Supply also accepts a plumbed water line to facilitate grease collection.

4. Hospitals and health care facilities

Hospitals and other health care facilities, such as nursing homes, face unique pretreatment challenges. A hospital can have one — or several — commercial kitchens that produce hundreds of thousands or even millions of meals each year. They operate 24/7, serving patients, staff and visitors. And because hospitals are critical facilities, they must stay operational 365 days per year.

On top of this high operational load, consider that hospitals, like other large institutions, may have hundreds or thousands of feet of pipes and plumbing between their kitchen and the local sewer system. Hospitals are subject to stringent health and safety requirements and they face constant pressure to control costs.

The pipes and plumbing lines mean there are many more opportunities for the grease in kitchen effluent to build up and potentially create internal blockages. Repairing those blockages can be costly; because they are within the facility's plumbing, the cost falls entirely on the institution.

Grease interceptor location is also a concern. The best place to locate a cafeteria, for example, might be in the center of the building, to make it accessible from all parts of the hospital. But

if the hospital is using a traditional concrete grease trap buried in a parking lot outside, that will require an extensive pipe run to carry kitchen wastewater to that interceptor. And that creates more opportunities for internal blockages.

When selecting a grease interceptor, health care facilities should consider two possibilities. First, a point-source interceptor (like Thermaco's Big Dipper series) can remove grease before it enters the plumbing. Point-source interceptors can be installed inside a kitchen, often underneath a three-compartment sink. Kitchen staff can empty them, keeping costs down.

Second, when high volumes of FOG are present, perhaps due to the number of meals the kitchen is making each day, a high-capacity interceptor that can be located inside — in a basement, between floors or even inside the kitchen — may be a better choice. The location flexibility allows engineers to minimize the amount of internal plumbing vulnerable to grease blockages. Thermaco's Trapzilla series meets these requirements.

TESTIMONIALS

CHRIS JOHNSON - FACILITIES MANAGER, JASON'S DELI

"A big thing for us is installation time. The quicker we can get in and out, the better. It's so much faster to get it up and running with a Trapzilla. ... The one thing that really stood out to me was the communication with Thermaco. Any question [municipal officials] had, I had an answer for it. Sometimes that means more than dollars."

- Jason's Deli installed a Trapzilla TZ-400 with One-Pour System to replace a failing metal hydromechanical interceptor in a traffic rated zone.

CHARLES TANNER - SENIOR VP OF CONSTRUCTION AND FACILITIES, POTBELLY SANDWICH WORKS

"We are happy to have a product that works great, gets city approval and saves us a ton of time and money!"

- Potbelly installed a Trapzilla TZ-160 in a restaurant which allowed the company to avoid digging a 300-foot long trench for a traditional concrete gravity grease interceptor, saving tens of thousands of dollars.

BILL DAVIS - MAINTENANCE MANAGER, L&M HOSPITAL

"We haven't had any backups related to kitchen grease since we installed the unit. We're pulling out about 25 gallons of grease per week. We're now in complete control of the grease coming from the kitchens, removing it before it has a chance to get into our sewer lines."

- L&M Hospital installed Big Dipper AGRD in hospital kitchen to replace an inefficient steel hydromechanical interceptor costing them thousands in maintenance.

ADDITIONAL RESOURCES

We understand that choosing the best grease interceptor for a commercial kitchen can be complicated. Here are some additional links and resources to help.

Thermaco Inc. website: <http://thermaco.com>

Thermaco's Big Dipper point-source grease interceptors: <http://thermaco.com/big-dipper>

Thermaco's Trapzilla passive grease interceptor: <http://thermaco.com/trapzilla>

Thermaco parts: <http://thermaco.com/parts-store>

Grease trap sizing sheets for Thermaco interceptors: <http://thermaco.com/resources/grease-trap-sizing>

Thermaco grease interceptor specifications and drawings: <http://thermaco.com/about/product-specs-drawings>

To learn more about Thermaco's grease interceptors or get advice with sizing and other technical considerations, please visit us on the web at <http://thermaco.com> or call us at (800) 633-4204. We're happy to answer any of your questions about choosing the best grease interceptor.