



**PRECAST CONCRETE
GREASE INTERCEPTORS**

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Purpose of Grease Interceptors

The purpose of a grease interceptor is to reduce to acceptable levels the amount of Fats, Oils, and Greases (FOG) in wastewater in conformance with local standards. Grease interceptors should provide easy access for maintenance, be large enough to hold large quantities of grease (to reduce pumping/cleanout costs), and be outdoors to facilitate easy inspection and reduce the possibility of food contamination during cleanout.

Sizing Factors

The following factors affect the required size of a grease interceptor:

1. **Retention Time:** Retention time is the amount of time it takes one particle of influent to travel through the system and discharge out of the interceptor. It is a critical factor in removing an adequate amount of FOG. The wastewater entering an interceptor requires a certain amount of time for gravity separation of the FOG to occur. **Therefore, designing an interceptor to maximize retention time is the most important factor in its effectiveness.**
2. **Flow rates:** Wastewater flow rates and retention times are inversely proportional. The greater the flow rate, the lower the retention time.
3. **Concentration:** The strength of influent waste is another important factor. An effective interceptor should be large enough to accumulate a significant amount of grease without affecting the retention effectiveness, but this should not be the predominate sizing factor, as cleaning frequencies should be factored in.
4. **Pumping Frequency:** The size shall be sufficient to optimize cleaning and pump outs (to reduce an owner's operating costs.)
5. **Chemistry:** Emulsifying chemicals affect the rate at which greases and oils will separate from the wastewater. Therefore interceptors should be large to give the emulsifiers time to release their hold on greases and oils.

6. Temperature: Fats, oils, and greases separate from the wastewater more rapidly at higher temperatures. Therefore, the interceptor should be located close to the source of the wastewater.

The following chart, which was prepared by the Washington Suburban Sanitary Commission, demonstrates the effect of temperature and soap on the removal of fats, oils, and greases from wastewater.

FOG STATIC SEPARATION (time in minutes)

Variables added to 450ml <u>Water @ 3 Temperatures</u>	<u>80°F</u>	<u>110°F</u>	<u>140°F</u>
15ml vegetable oil	2:00	1:45	1:30
15ml vegetable oil w/ ½ tsp. powder soap	4:00	2:45	1:45
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15ml butter	3:00	2:20	1:45
15ml butter w/ ½ tsp. powder soap	4:00	2:45	1:50
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15ml bacon fat	3:20	2:30	1:35
15ml bacon fat w/ ½ tsp. powder soap	5:40	5:10	2:05
15ml bacon fat w/ ½ tsp. liquid "Dawn"	31:45	14:00	10:00

Physical Sizing of an Interceptor

There are many different formulas for calculating the size of an interceptor. The US EPA recommends the following formula for restaurants:

$$\text{Capacity of grease interceptor (gallons)} = (D) \times (GL) \times (ST) \times \frac{(HR)}{2} \times (LF)$$

Where:

D	=	Number of seats in dining area
GL	=	Gallons of wastewater per meal, normally 5 gal.
ST	=	Storage factor - - minimum of 1.7 on-site disposal - 2.5
HR	=	Number of hours open
LF	=	Loading factor -- 1.25 interstate freeways 1.0 other freeways 1.0 recreational areas 0.8 main highways 0.5 other highways

Another formula, used by the South Carolina Department of Health and Environmental Control, is effective if the total daily flow is known:

$$\text{Capacity of grease interceptor (gallons)} = \text{GPD} \times \text{LF} \times \text{RF}, \text{ where:}$$

GPD	=	Total maximum estimated daily sewage flow in gallons per day.
LF	=	Loading factor, the approximate proportion of the total maximum daily flow generated in the food preparation areas, as follows: 0.3 - Schools and other institutions (i.e. day care centers, adult residential care facilities, armories, etc.) 0.4 - Restaurants 0.5 - Retail Food Stores
RF	=	Minimum retention and storage factor 2.5 for on-site disposal 1.7 for public sewer

Operation

The manner in which the establishment handles grease is critical to the effective performance of an interceptor. A plan for handling greases and oils that are waste but not part of the sewage wastewater flows must be developed and followed. Kitchen pretreatment is by far the most effective means of grease and oil removal. It would be difficult and expensive to design and maintain interceptors for receiving grease volumes from anything other than necessary wash-up and cleaning. Employees should be made aware that excessive use of water or emulsifying detergents could detrimentally affect the performance of an otherwise effective interceptor.

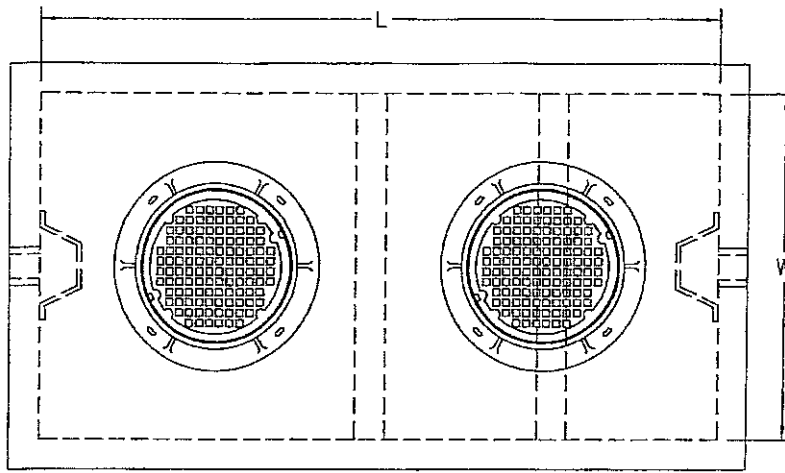
Maintenance and Testing

All interceptors require a certain amount of maintenance to maintain an acceptable level of effluent FOG. This requires a certain frequency of pumping and inspection which is hard to predict for a new installation. For these reasons, it is best for the owner or establishment to obtain and maintain a maintenance contract with a qualified waste removal business. In fact, many jurisdictions require such contracts for the maintenance of grease interceptors because of the lack of accountability associated with the maintenance of indoor grease traps. For new installations, a monthly or bi-monthly cleaning may be required until the maintenance company can establish a predictable level of FOG accumulation for that particular facility. Thereafter, required cleanings may be extended until such a point where the optimum pumping frequency is found.

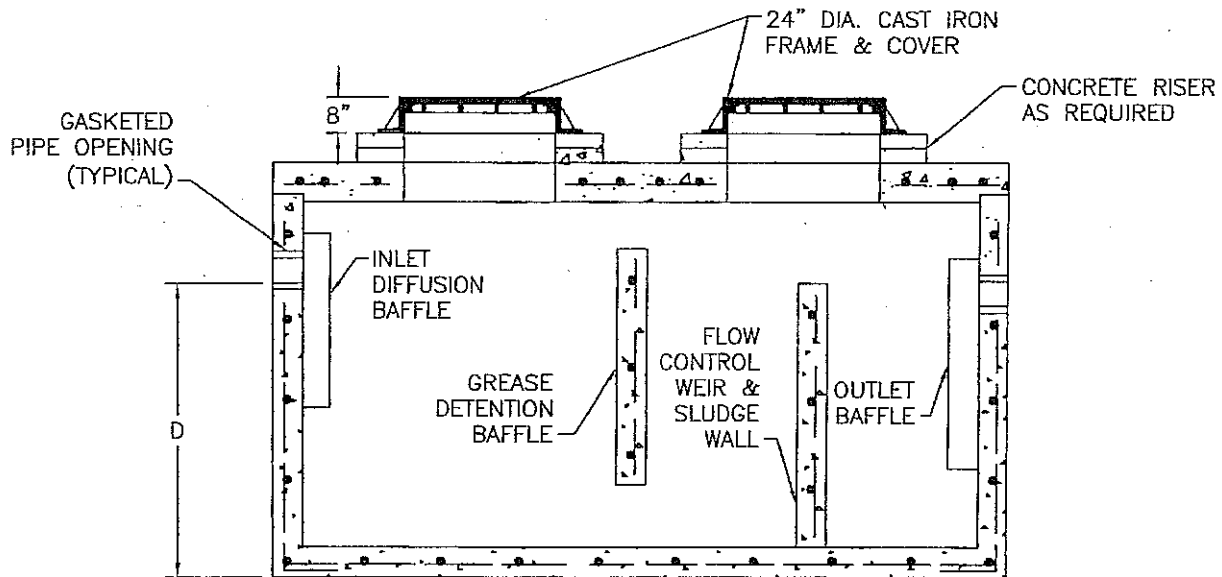
Automated monitoring systems are now available that monitor the levels of FOG's and solids in the tank. They allow the establishments to keep good maintenance records and optimize pumping costs.

Monarch Interceptors

- Monarch Products Co., Inc. offers a variety of standard grease interceptors and also has the ability to custom fabricate interceptors if specified.
- The baffle walls are designed to reduce turbulence in the flow in order to promote separation of the FOG.
- All interceptors are constructed with three internal compartments to insure that no “short-circuiting” of the flow occurs.
- Interceptors are provided with two 24” diameter cast iron covers to facilitate easy cleaning.
- All interceptors are structurally designed for H-20 loading to insure years of trouble-free service.
- Precast concrete grease interceptors do not require expensive interior or exterior coatings to provide corrosion resistance.
- Precast concrete grease interceptors do not require concrete “Deadmen” or any other type of tie-down to resist floatation.
- Precast concrete is the most economical choice for grease interceptors.
- Interceptors are provided with rubber gasketed pipe openings to insure a water-tight installation.



-PLAN-



-SECTION-

<u>Nominal Capacity</u>	<u>Recommended Maximum Grease Volume</u>	<u>Inside Dimensions (W X L)</u>	<u>Depth from Inlet to Base (D)*</u>
1000 gallons	245 gal / 1900#	4'-0" X 8'-0"	5'-8"
1250 gallons	320 gal / 2500#	4'-0" X 9'-0"	5'-9"
1500 gallons	415 gal / 3225#	4'-2" X 10'-0"	5'-9"
2000 gallons	530 gal / 4100#	5'-0" X 11'-6"	5'-9"
2500 gallons	785 gal / 6100#	6'-0" X 13'-0"	5'-10"
3000 gallons	840 gal / 6525#	6'-0" X 14'-6"	5'-10"

*Depth as shown is for a 4" pipe. Deduct 2" for a 6" pipe. Larger pipe diameter will slightly reduce the listed capacity.