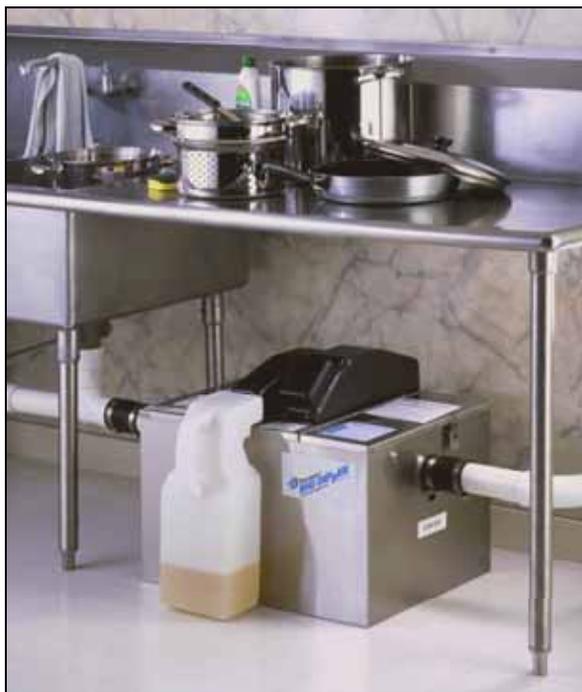


Understanding Automatic Kitchen Grease Trap & Interceptor Systems



*Presented by
Mike Jennings*

for:



05-13-09

WHAT IS FOG?

- FOG is an acronym for Fats, Oils and Grease.
- FOG is composed of animal and vegetable fats and oils that are used to cook with, or are a result of food preparation.



DEFINITION OF FSE

- **Food Service Establishment (FSE) shall mean a facility engaged in preparing food for consumption by the public such as a restaurant, commercial kitchen, caterer, hotel, school, hospital, prison, correctional facility, or care institution.**



Where Does Grease In Kitchen Effluent Originate From?



Money is Being Spent in Restaurants

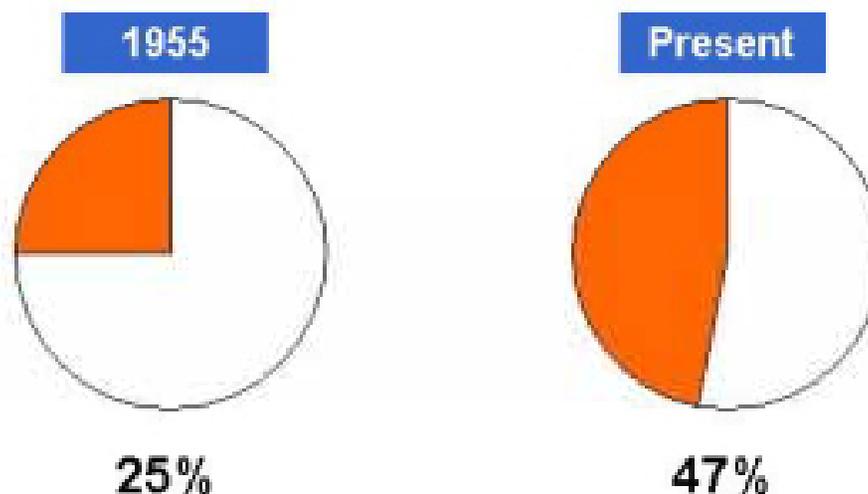
Restaurant Industry's Share of the Food Dollar

Note:

US Population in 1955 was 155 Million.

In 2006, 300 million!

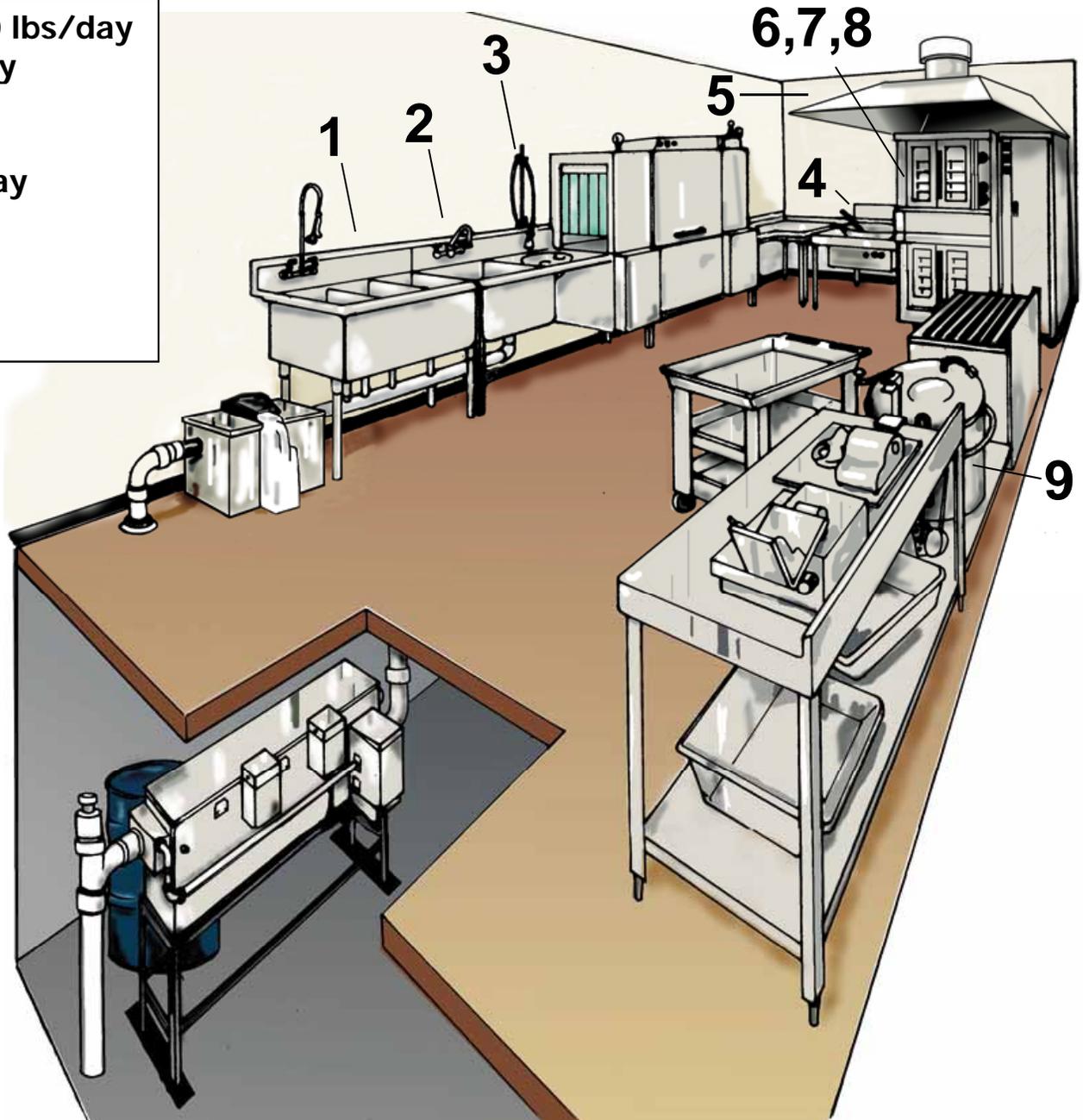
Pie chart does not reflect all the new sources for ready made food that can be found today at grocery stores, specialty food stores and delivery from places like Stop and Shop's Pea Pod home Delivery Service



Source: National Restaurant Association

Major Grease Entry/Production Appliances In A Kitchen

- 1 - Three Compartment Sink 3-10 lbs/day
- 2 - Pot-Washing Sink 3-10 lbs/day
- 3 - Pre-Rinse Station 1-5 lbs/day
- 4 - Wok 7-20 lbs/day
- 5 - Exhaust Wet Hood 1-10 lbs/day
- 6 - Combi-Oven 1-50 lbs/day
- 7 - Rotisserie Oven 5-70 lbs/day
- 8 - Rib Cooker 10-150 lbs/day
- 9 - Tilt Kettle 1-30 lbs/day



Three Types of Pretreatment Systems

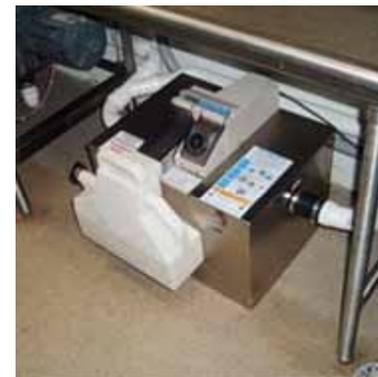
Large, Pre-cast Concrete Grease Traps



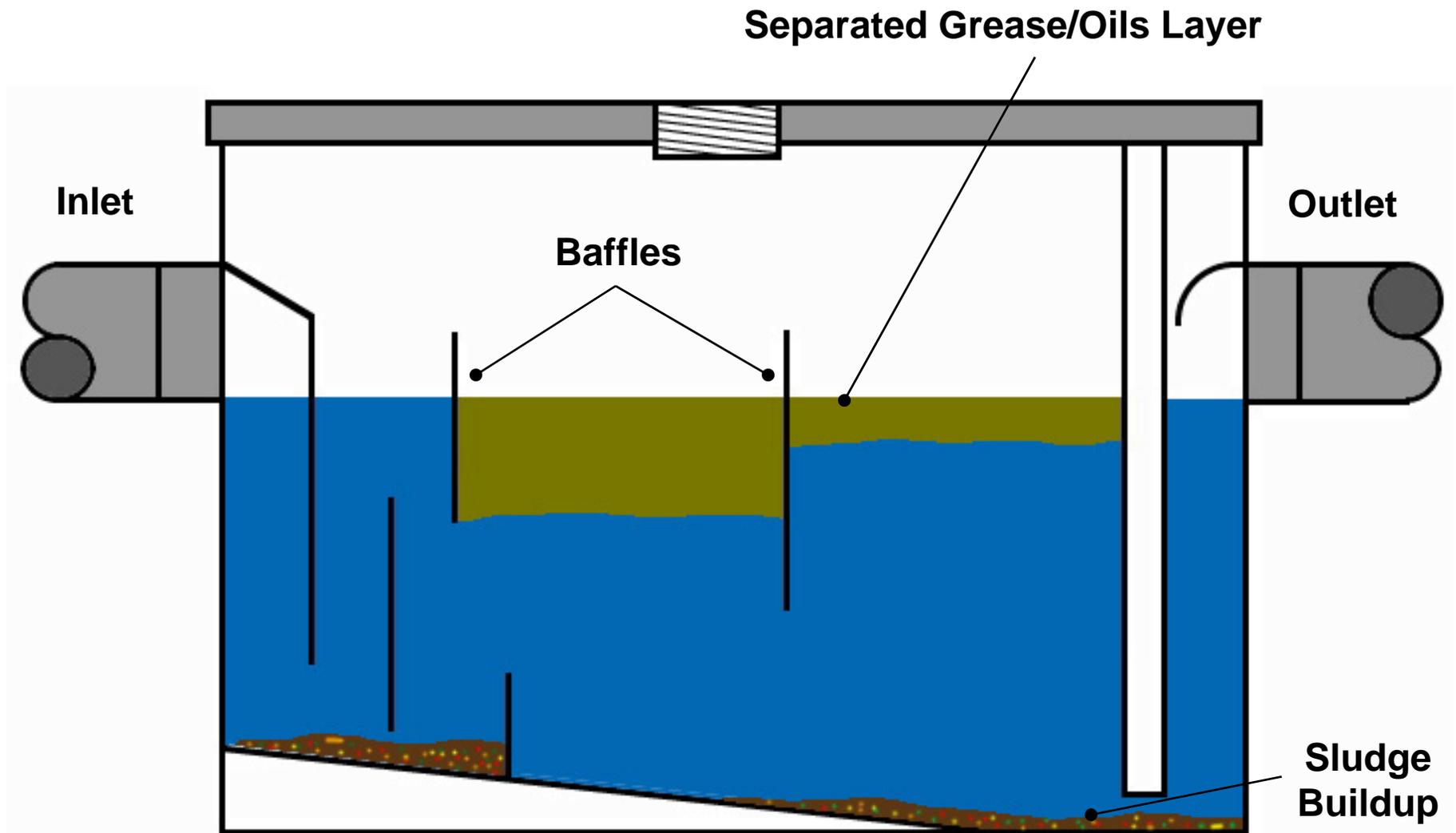
- Passive, Hand-Scooped Grease Traps



- Automatic Removal Systems

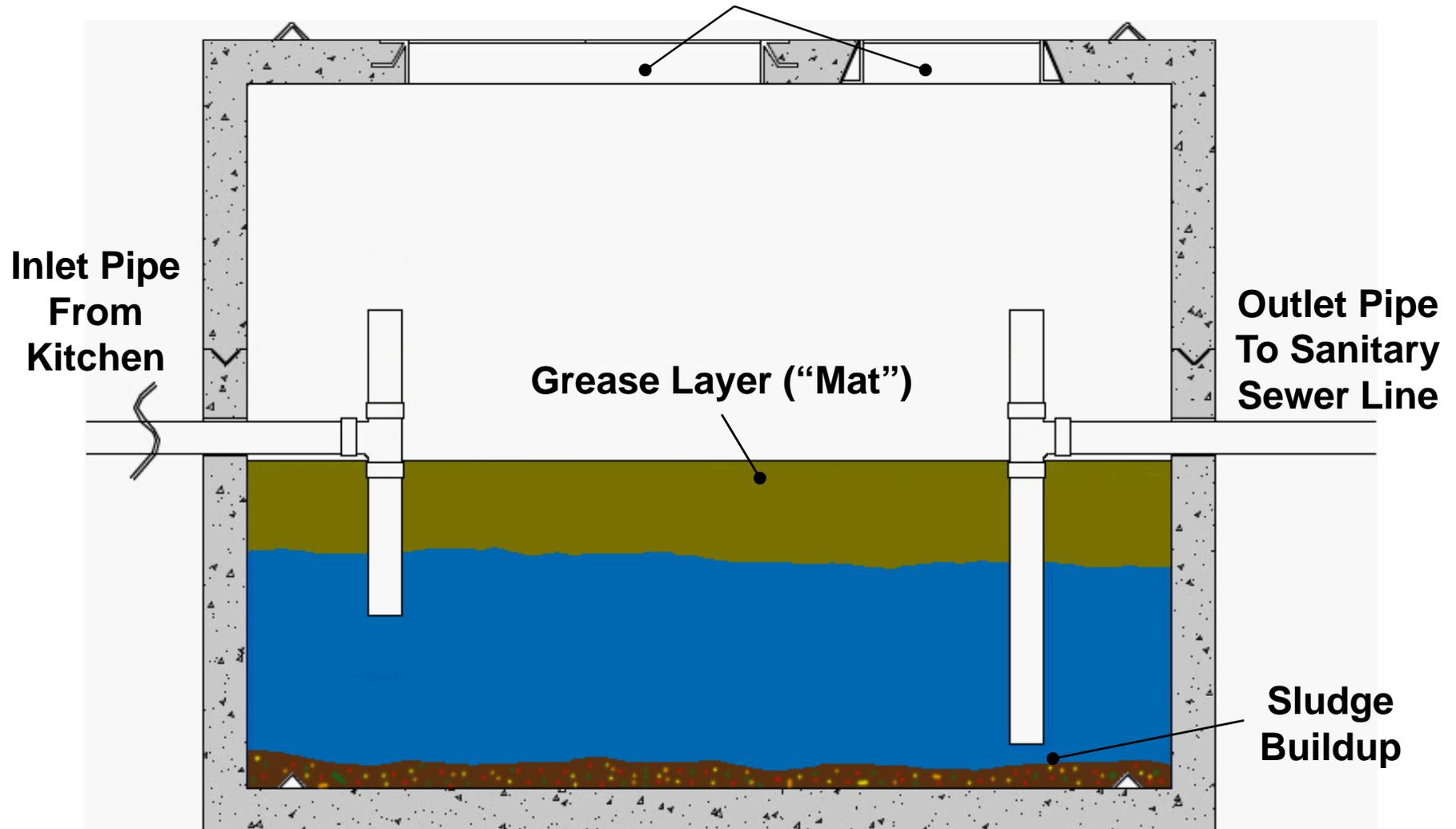


Passive Grease Trap "UNDER THE SINK"

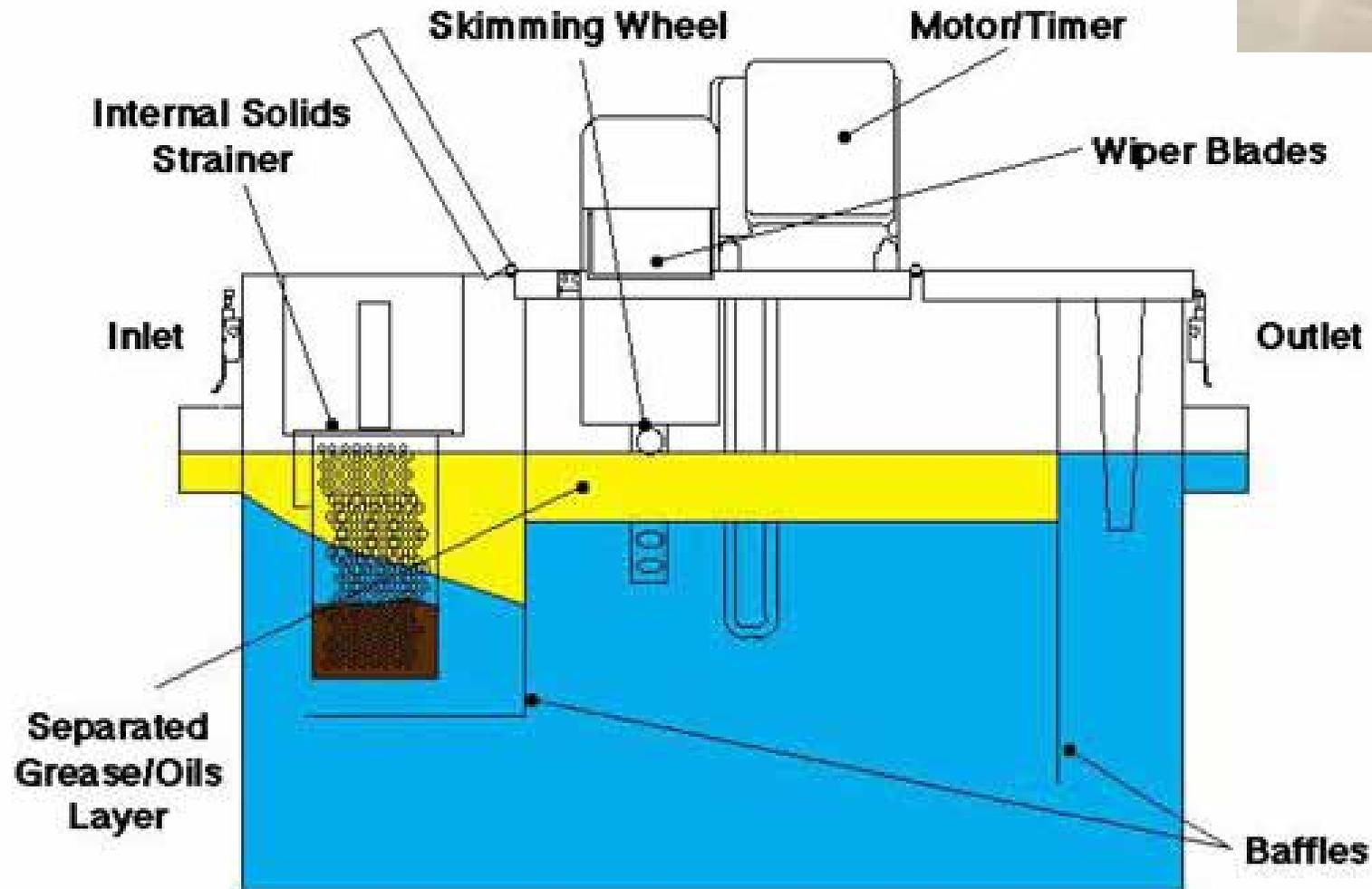


Grease Interceptor "IN THE GROUND"

Access Doors/Manholes



Automatic Removal Systems "UNDER THE SINK"



INTERIOR GREASE TRAPS RESOLVE ISSUES

- There Are Many Places Where The Installation Of An In-ground Grease Interceptor Is Impractical
- Interior Grease Traps Protect The Facility Plumbing
- Interior Grease Traps Reduce The Potential For Back Ups
- Typically, Interior Grease Trap Sizing Is Based Upon The GPM Discharge Calculation Of The Fixture(s) They Are Plumbed To.
 - Most Point Source Traps Are Reasonably Compact In Size

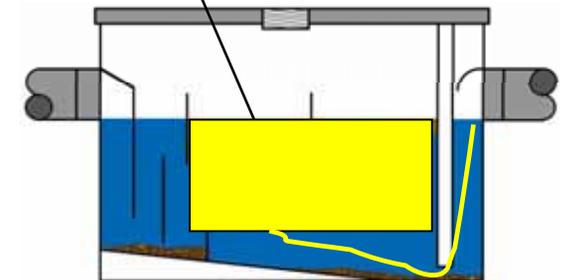
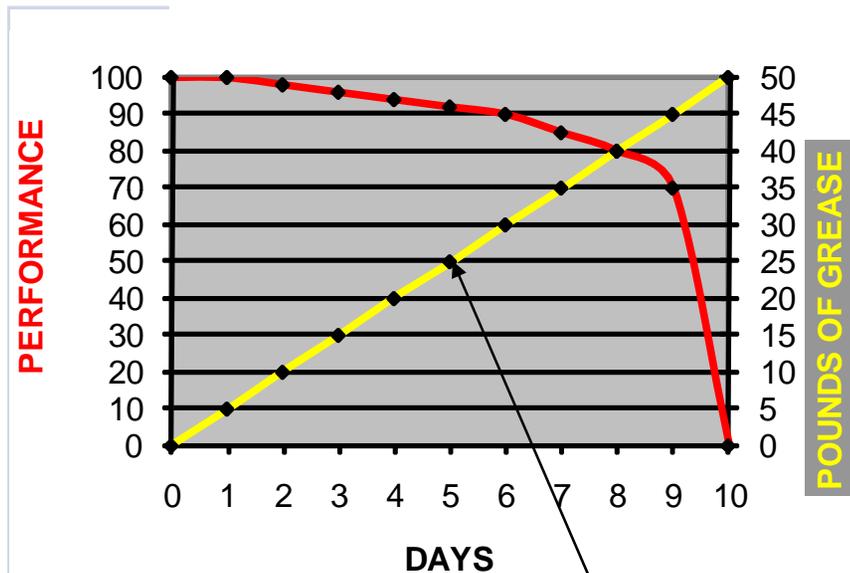
INTERIOR GREASE TRAP DEFICIENCIES

- Sizing Does Not Address The Significance Of Daily Loading Of Fats Oils And Grease Into The Trap.
- Seasonal Population Swings Are Not Factored In
- Menu Modifications Which Impact The Rate Of Grease Generation Cannot Be Predicted
- Traps Require Unpredictable Cleaning Frequency
- Direct Relationship Between Performance And Required/Scheduled Cleaning
- Hard To Enforce Or Monitor Proper Frequency Of Cleaning

Properly Sized With Insufficient Capacity

Example:

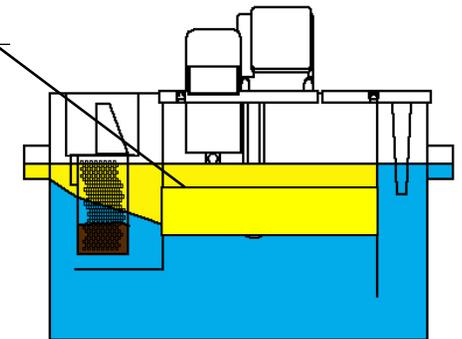
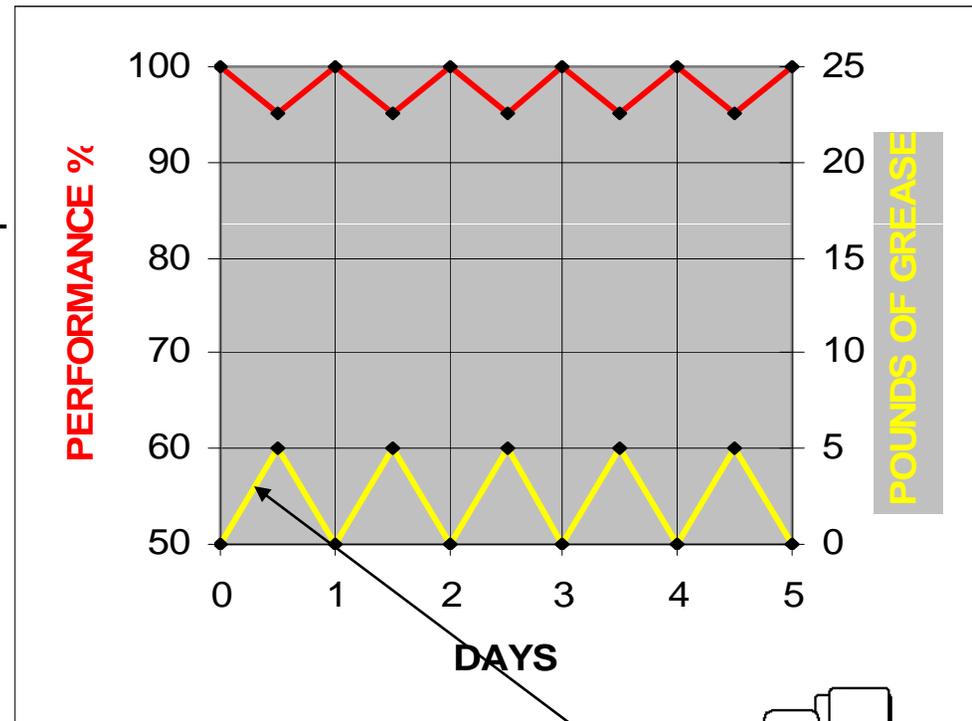
- Generating just $\frac{3}{4}$ of a gallon of oil per day (approx. 5 pounds), an Asian wok will fully load a 50 lb (25GPM) grease trap in 10 days!
- Without proper, consistent and timely cleaning, After 10 days grease passes through the trap and into the collection system



A Properly Sized Automatic Grease Trap Maintains Sufficient Capacity

Example:

- An Automatic Grease Trap that self cleans daily, connected to the same Multi-Station Wok will maintain maximum efficiency over time
- Results: Drains remain clear
- Back ups and health risks due to grease blockages and back ups are minimized

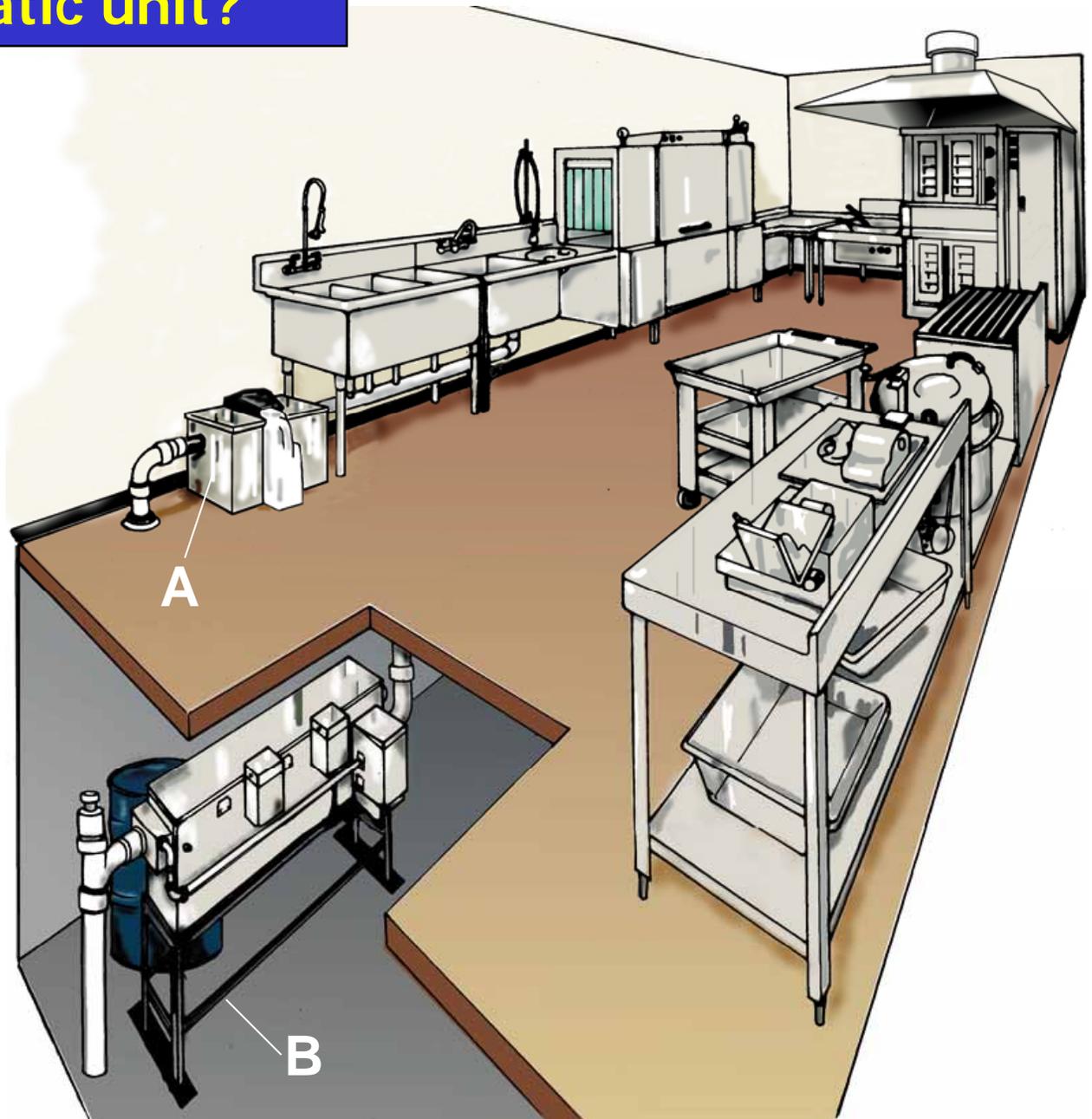


Where in the kitchen would you install an automatic unit?

Types Of Units

**A - Point Source
Removal Unit**

**B - Central Grease
Removal Unit**



Installation Considerations

- Installation Of Automatic Grease Traps Should Be Installed According To Local Plumbing Codes
- Systems Should Never Be Installed Down Stream Of A Food Waste Grinder Or Pulper
- Discharge Venting Is Required For Proper Flow
 - Inlet Venting When Required By Local Plumbing Code Should Be To Atmosphere Or A Mechanical Vent
- Easy Access To The Machine Is Important For Routine Collection Of Collected Grease And Maintenance.

Training and Maintenance

AUTOMATIC SYSTEMS REQUIRE SIMPLE ROUTINE MAINTENANCE

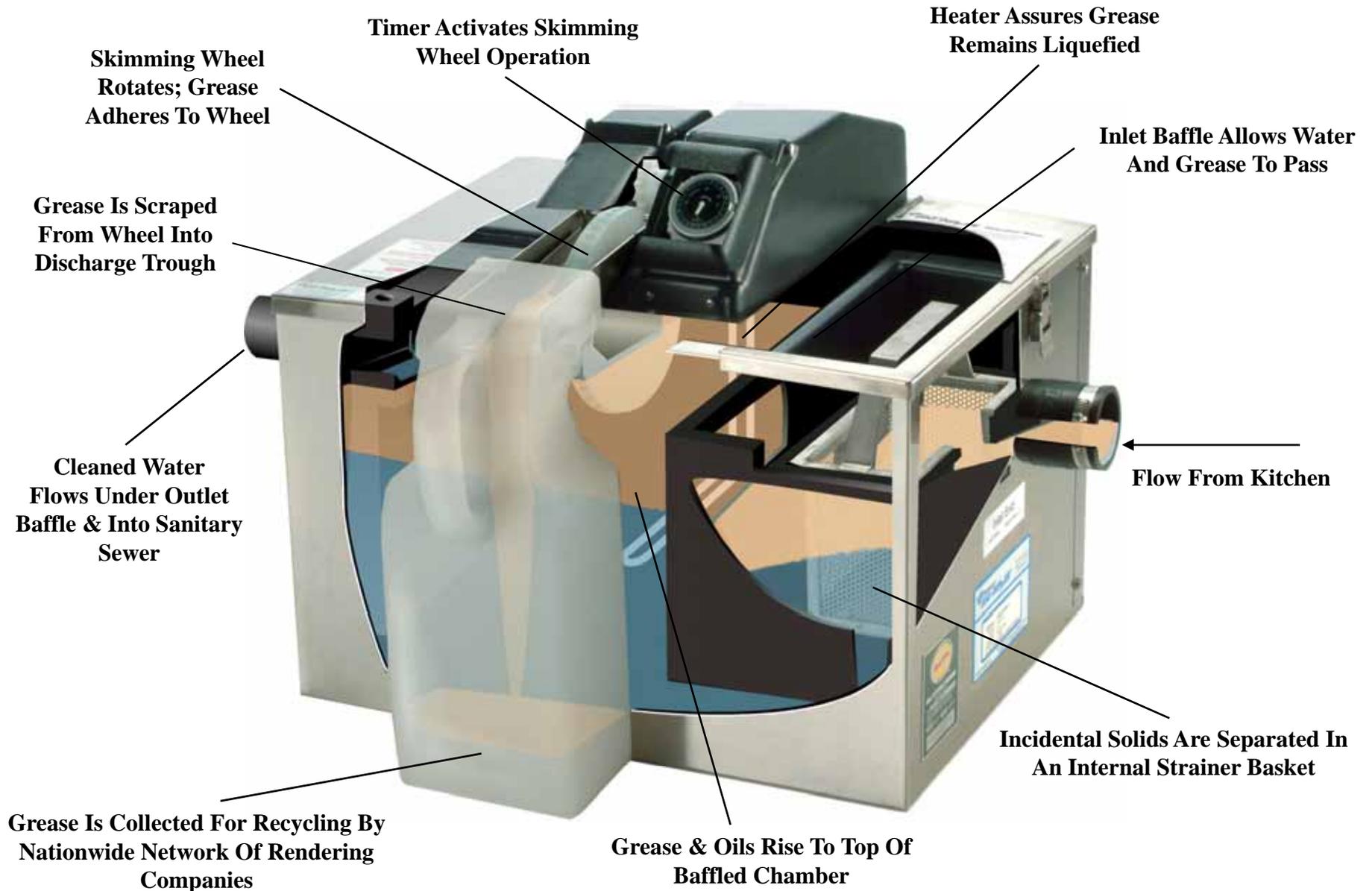
- Two Minutes Of “TLC” Is Required Daily, For The Removal Of Solids From The Internal Strainer And The Proper Disposal Of Collected Grease.
- Instructions Are Provided In The Form Of A Poster To Be Located Near The Machine.
- Instructions Are In A Pictorial Form And In Three Languages
- Simplified, Pictorial Instructions Are On The Machine As Well
- On-site “Start Up” Training Is Only A Phone Call Away
- Training Videos Are Also Available On Youtube.

Big Dipper Point Source Units



Units in the 15-50 GPM Range

Operation Principle Of A Big Dipper® IS Unit



Point Source Grease Traps

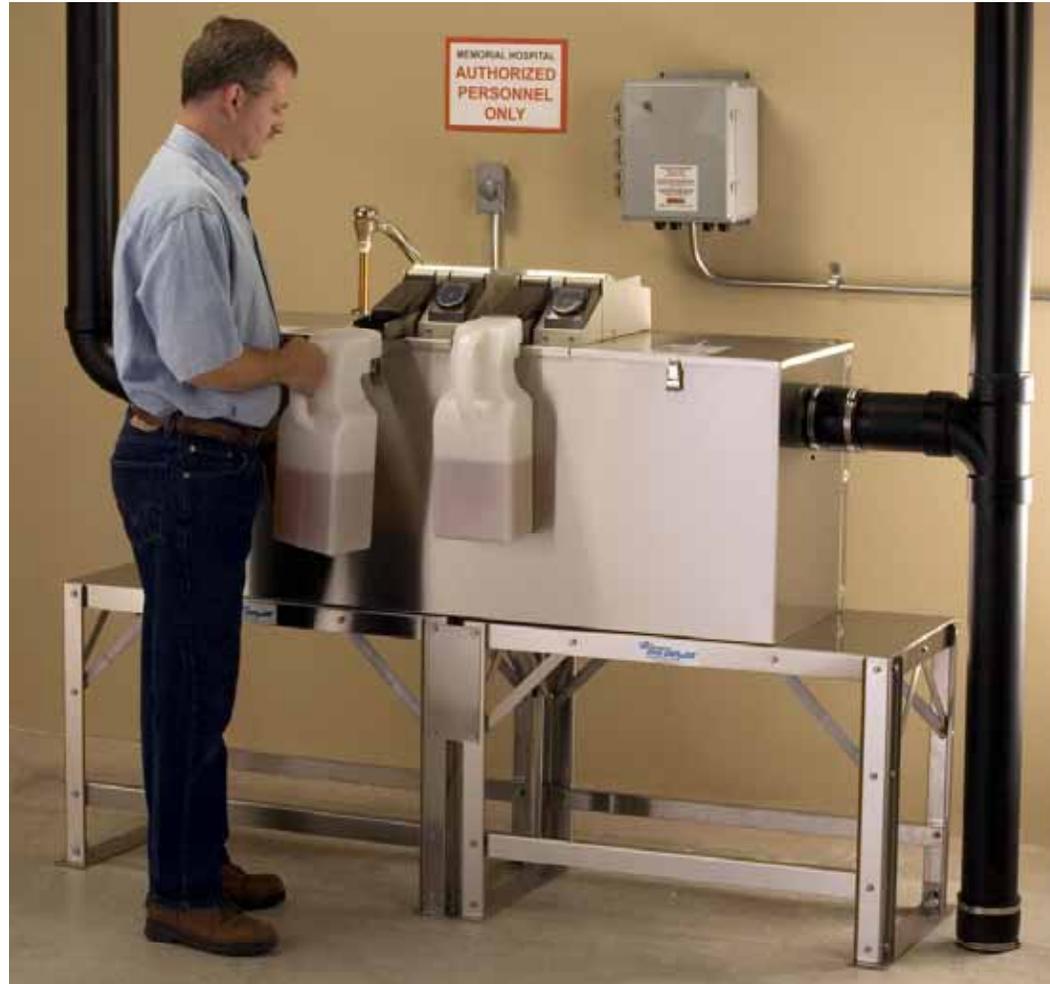


Manual Passive Trap



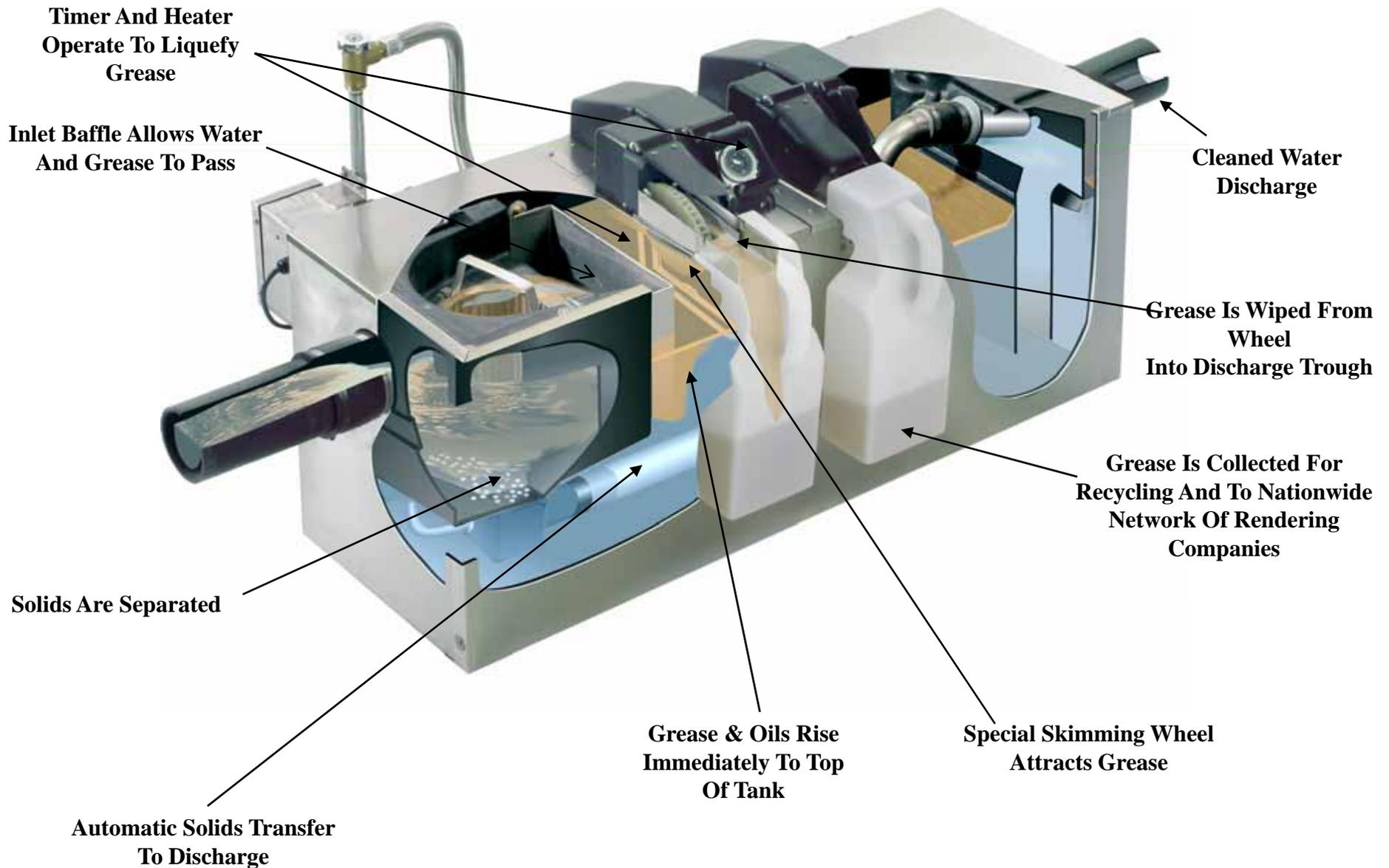
Automatic Passive Trap

Big Dipper Central Grease Removal Units



Units in the 75-125 GPM Range

Operation Principle Of A Big Dipper® AST Unit



Big Dipper Central Grease Removal Units



Indirect Waste/Air Gap Solution



Indirect Waste/Air Gap Solution



Tilt Kettle Application



Chicken Roaster Application



Rotisserie Ovens & Combi-Steam Ovens contribute significant amounts of FOG in kitchen drain water flows. Big Dipper units equipped with the SWS-1 Supplemental Water Supply treat these types of applications directly at the source.

How Do We Size An Automatic Grease Interceptor?

Peak Flow Calculations For Single Fixture

- **Flow Rates**
 - Determine Peak Flow/Gallons Per Minute
- **Formula for typical 3-compartment sink:**
- $((\text{sink volume in cubic inches} \times .75) / 231 \text{ in}^3) \div 2 \text{ minutes} = \text{Gallons Per Minute}$
- **For Example:**
- 3-compartment sink with 24" x 24" x 12" bowls:
- $((3 \times 24" \times 24" \times 12" \times .75) / 231 \text{ in}^3) \div 2 \text{ minutes}$
 - = 67.3 gallons/2 minutes
 - **= 33.7 GPM Peak Flow**

Sizing for Multiple Fixtures

Multiple Fixture Sizing Suggestions

Fixture	# Fixtures	Fixture Value (GPM)	Total Fixture (GPM)	Averaging Multiplier	Flow Rating (GPM)
Floor Drains	#	7.5	# x 7.5	0.10	# GPM
3 Compartment sink	#	25	# x 25	0.25	# GPM
Pre-rinse Sink	#	15	# x 15	0.25	# GPM
Dishwasher	#	30	# x 30	0.30	# GPM
Mop Sink	#	15	# x 15	0.25	# GPM
2 Compartment Sink	#	25	# x 25	0.25	# GPM
Hand Sink	#	7.5	# x 7.5	0.25	# GPM

Note: When servicing fixtures with air-gap type discharge, use next larger size units

$$\text{Flow Rating} = \# \text{ Fixtures} \times \text{Device Flow Value} \times \text{Device Averaging Multiplier}$$

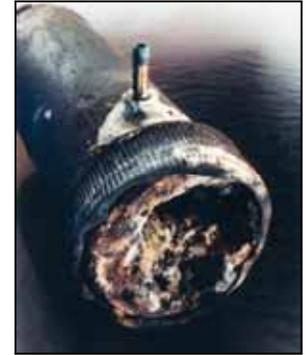
Example:

Fixture	# Fixtures	Fixture Value (GPM)	Total Fixture (GPM)	Averaging Multiplier	Flow Rating (GPM)
Floor Drains	12	7.5	90	0.10	9
3 Compartment sink	2	25	50	0.25	12.5
Pre-rinse Sink	1	15	15	0.25	3.75
Dishwasher	1	30	30	0.30	9
Mop Sink	1	15	15	0.25	3.75
2 Compartment Sink	1	25	25	0.25	6.25
Hand Sink	2	7.5	15	0.25	3.75

Note: Always use next larger size unit than the calculated flow rating.

Total 48.0 gpm

Make Sure Your Plans Go Down The Drain!



Regional Specialist:

Ordinances, Application Engineering, Solutions, Support

Diversified Sales

Jeff Horn 203-393-2020

For more information on pretreatment systems and
automatic interceptors, please visit Big Dipper Online at

www.BIGDIPPERSALES.com

Or send an E-mail to

info@thermaco.com



Copyright ©2003 Big Dipper® Thermaco, Inc.