

PLUMBING DESIGN

How to Determine the Size of Grease Trap

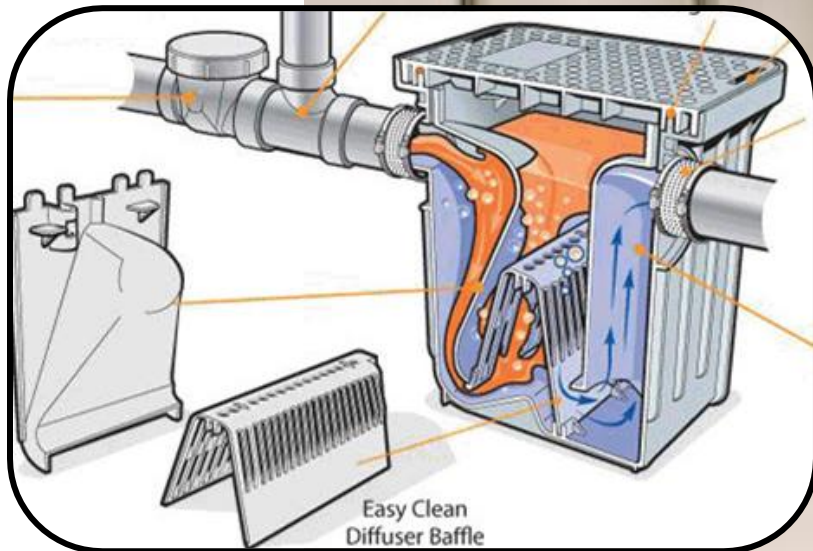
As per Uniform Plumbing Code 2000

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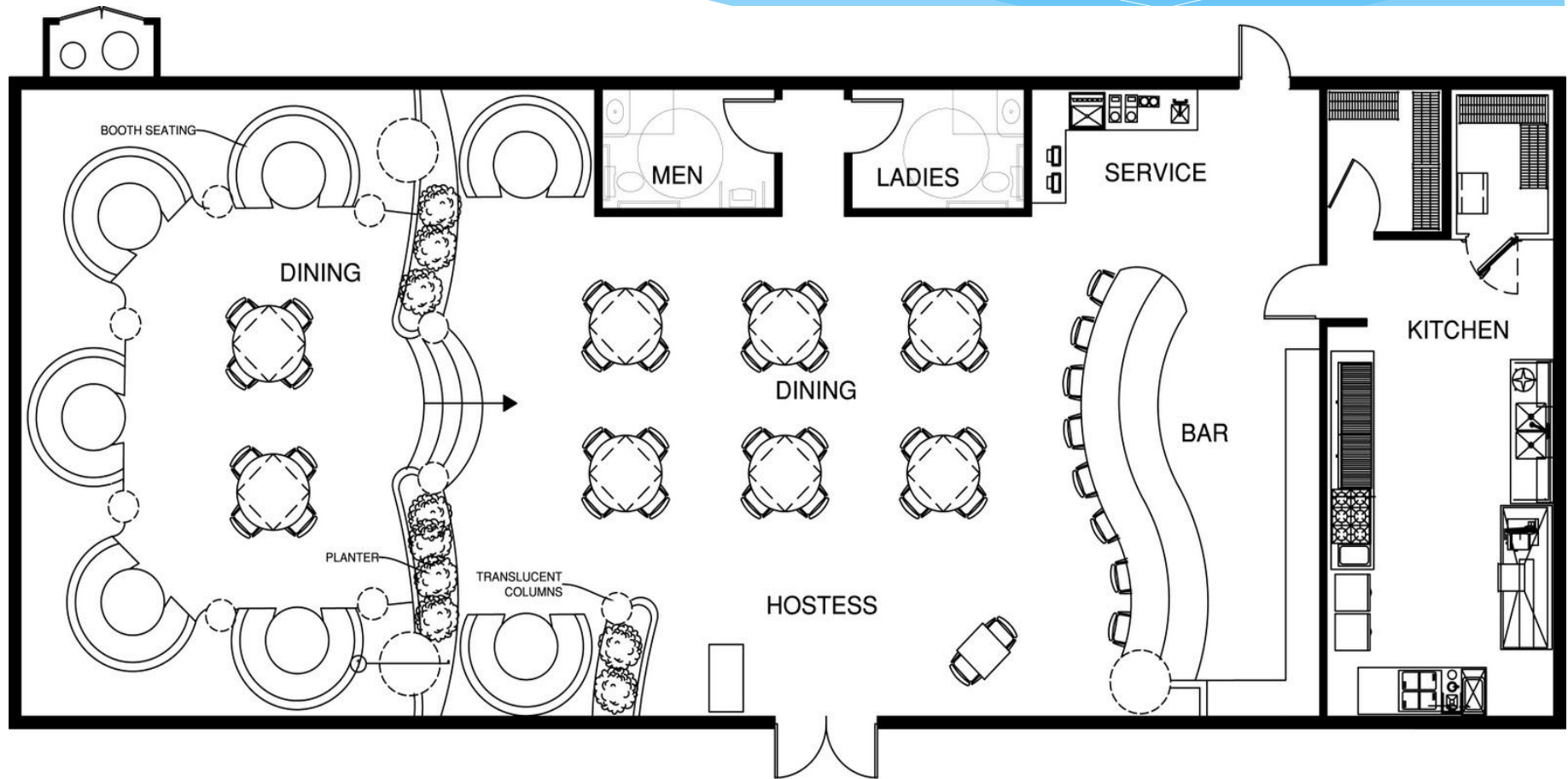


Grease Trap



GREASE TRAP SIZING

Determine the size of grease trap for the proposed floor plan of restaurant with 700 chairs & 12 hours target operation time.



Let us compute!!!

Formula:

Grease and Garbage, Commercial Kitchens

$$\begin{array}{ccccccc} \text{Number of} & & \text{Waste} & & \text{Retention} & & \text{Storage} & & \text{Interceptor} \\ \text{meals per} & \times & \text{flow} & \times & \text{time} & \times & \text{factor} & = & \text{size (liquid} \\ \text{peak hour} & & \text{rate} & & & & & & \text{capacity)} \end{array}$$

Solution:

700 chairs x 22.7 liters per meal x 2.5 hours x 2 storage factor
= **79450 liters per day**

Convert liters per day to liters per minute and per second

= 79450 liters per day / 1440 minute

= **55.7 liters per minute**

= 79450 liters per day / 86400 second

= **0.92 liters per second**

As per Table 7-4

Therefore use **DRAINNET 7 GPM Model**

TABLE K-3 (Continued)

Type of Occupancy	Gallons (liters) Per Day
10. Institutions (Resident)	75 (283.9) per person
Nursing home	125 (473.1) per person
Rest home	125 (473.1) per person
11. Laundries, self-service	
(minimum 10 hours per day)	50 (189.3) per wash cycle
Commercial	Per manufacturer's specifications
15. Restaurants – cafeterias	20 (75.7) per employee
toilet	7 (26.5) per customer
kitchen waste	6 (22.7) per meal
add for garbage disposal	1 (3.8) per meal
add for cocktail lounge	2 (7.6) per customer
kitchen waste –	
disposable service	2 (7.6) per meal
16. Schools – Staff and office	20 (75.7) per person
Elementary students	15 (56.8) per person
Intermediate and high	20 (75.7) per student
with gym and showers, add	5 (18.9) per student
with cafeteria, add	3 (11.4) per student
Boarding, total waste	100 (378.5) per person



Retention Times

Commercial kitchen waste:

Dishwasher and/or disposal.....2.5 hours

Single service kitchen:

Single serving with disposal.....1.5 hours

Sand-silt-oil2.0 hours

Lint-silt (laundry)2.0 hours

Storage Factors

Fully equipped commercial kitchen8 hr. operation: 1

16 hr. operation: 2

24 hr. operation: 3

Single service kitchen1.5

Auto washersself-serve: 1.5

employee operated: 2

Laundries, laundromats1.5 (allows for rock filter)



TABLE 7-4

Discharge Capacity In Gallons per Minute
(Liters per Second)

GPM	(l/sec.)
Up to 7-1/2	(Up to 0.47)
8 to 15	(0.50 to 0.95)
16 to 30	(1.00 to 1.89)
31 to 50	(1.95 to 3.15)

Discharge capacity for over 50 gallons per minute
(3.15 L/sec.) shall be determined by the
Administrative Authority.



DRAINNET BRAND

		Ultra-Compact	Compact Grease Traps			Low Profile	Standard Sizes			
Flow Rate - US Gallons Per Minute (GPM)		4 GPM Model	7 GPM Model	10 GPM Model	15 GPM Model	25 GPM (low boy)	20 GPM Model	25 GPM Model	35 GPM Model	50 GPM Model
Capacity	Grease Capacity Min - lbs (kg)	8	14 (6.35)	20 (9.07)	30 (13.6)	50 (22.68)	40 (18.1)	50 (22.68)	70 (31.8)	100 (45.4)
	Grease Capacity Actual - lbs (kg)	8	31.95 (14.49)	38.07 (17.28)	40.97 (18.58)	53.4 (24.22)	76.4 (34.65)	*56.25 (25.51)	138.5 (62.8)	*122.07 (55.3)
	Liquid holding capacity	2.3 gal	12.96 gal (49.06 L)	12.96 gal (49.06 L)	12.96 gal (49.06 L)	18.9 gal (71.54 L)	21.6 gal (81.8 L)	39.4 gal (149.1 L)	39.4 gal (149.1 L)	52.0 gal (197 L)
	Liters Per Second (LPS)		0.44	0.63	0.94	1.6	1.26	1.6	2.2	3.2
	Average Efficiency % (ASME 112.4.3)		95.5%	92.5%	92.0%	97.1%	95.4%	98%	98.6%	93.9%
Dimensions	A: Length (in.)	15"	17.5"	17.5"	17.5"	31"	23.6"	31.0"	31.0"	31.0"
	B: Width (in.)	10"	14.5"	14.5"	14.5"	23.5"	17.5"	23.5"	23.5"	23.5"
	F: Height (in.)	9.5"	16.3"	16.3"	16.3"	11"	16.3"	17.5"	17.5"	23.5"
	D: Bottom of unit to center of inlet / outlet	5.5"	12.8"	12.8"	12.8"	7"	12.8"	12.2"	12.5"	18.5"
	Approximate weight (lbs)	10 lbs	13.8 lbs	13.8 lbs	13.8 lbs	23.9 lbs	23 lbs	45 lbs	45 lbs	60 lbs
	Connection size (inches)	2"	2"	2"	2"	2"	2"	2" or 3"	3" or 4"	3" or 4"
Model Number (*last two numbers indicate connection size)		D4804	D3907A02	D3910A02	D3915A02C	D3925A02LO	D3920A02	D3925ALT02* D3925ALT03*	D3935A03* D3935A04*	D3950A03* D3950A04*

Grease Capacity Min - lb (kg): Industry minimum grease capacity based on GPM flow rate. Requires minimum 2 lb of grease capacity for each GPM of flow.

Grease Capacity Actual - lb (kg): Actual capacity at breakdown when tested to ASME A112.14.3

*Not evaluated to breakdown capacity (PDI-G101)



TABLE 10-2

Grease Traps (Metric)

Note: For installations with more than four (4) fixtures, the Administrative Authority may permit the use of larger grease traps designed not to exceed the parameters of Section 1014.4, but not to exceed seventy-five (75) GPM (284 liters per minute).

Total Number of Fixtures Connected	Required Rate of Flow per Minute, Liters	Grease Retention Capacity, kg
1	76	18
2	95	22
3	132	31
4	189	45