

BIOLOGICAL SOLUTIONS
FOR A CLEANER, HEALTHIER ENVIROMENT

EUROPE ■ SOUTH AMERICA ■ ASIA

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Introduction

Fat, Oils and Grease (FOG) Generation

The greatest drainage problems faced in kitchens and food preparation areas is the collection of fat, oils and grease (FOG) within the drainage system. These substances form naturally from animal and vegetable foodstuffs that can expensive burden in sewer pipes, leading to blockage and reduced capacity, causing the need for frequent blockage clearing. Sometimes, sewer pipe must be replaced due to solidification of the grease and other debris.

Pipe Failure Cycle

New Condition



A new 4" pipe has a capacity of 450gpm

Critical Stage



Grease clogged down to 3", the capacity is 125gpm, a 70% reduction.

Failure Stage



At 2", pipe capacity is 50gpm, only 11% of new capacity.

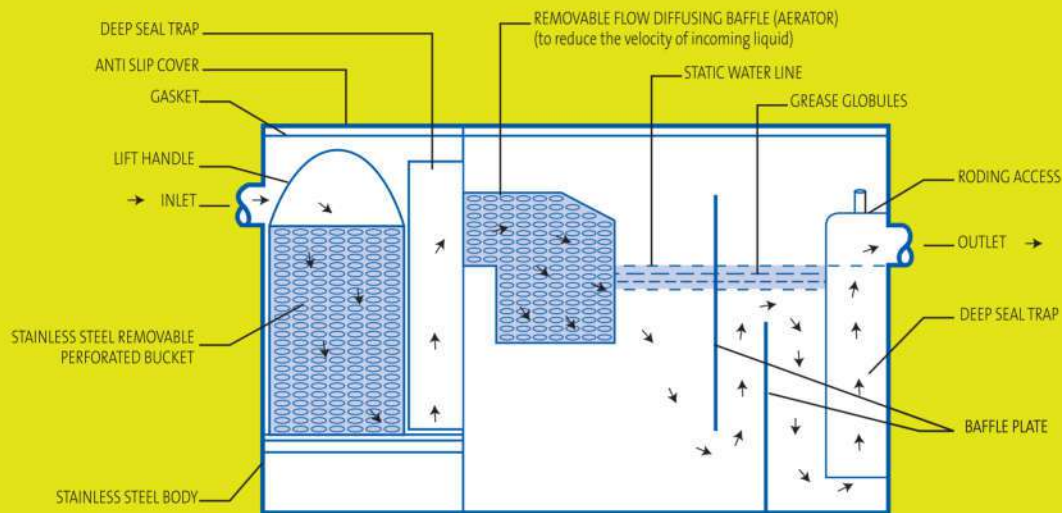
Why Are Grease Interceptors Needed?

- 1) To prevent drainage system in buildings from becoming clogged.
- 2) To prevent sewer lines from clogging and improve operation of sewerage treatment plants.
- 3) To prevent environmental problems caused by FOG with other debris at landfills and in waterways.
- 4) To promote the recycling of recovered clean grease. Recovered grease can be used in manufacturing of fertilizers, soaps, animal feed, cosmetics, and components of explosive such as nitroglycerine.

Hygienic, effective and reliable methods of dealing with FOG therefore vital if a clean and efficient working environmental is to be maintained.

Grease Guardian provides solutions to these problems with wide range of effective grease interceptor and accessories to suit all applications.

Biological Grease Interceptor



Operation

Grease Guardian grease Interceptor is compact, efficient unit that operate by separating FOG from the drainage water by reducing the velocity and hence the momentum of the incoming liquid into the Interceptor. Any heavier solids in the liquid settle into a removable perforated bucket as the turbulence of the incoming fluid reduces and the FOG globules being less dense than water, float above the water.

The separated water is then forced under a stainless steel baffle plate arrangement to ensure any grease, oil or fat residues are not discharged into the main drainage system from the grease interceptor.

Typical Applications

- Kitchens
- Hotels
- Restaurants
- Fast food restaurants
- Public Houses
- Food processing areas
- Canteens

Selection Considerations

When selecting a biological grease interceptor, careful consideration should be given to the following factors:

- Location of the grease interceptor sited inside or outside the building
- In-ground or free standing application
- Traffic/wheel loads for in-ground applications
- Connecting drainage invert levels for in-ground applications
- Correct hydraulic size of grease interceptor for the application



Grease Interceptor Sizing

Selecting the correct size of grease interceptor for a particular application is probably the most difficult task facing the specifier as each installation tends to be unique in the equipment contained in the food production area and the type of food being processed. Unfortunately there are no hard and fast rules to determine the size of interceptor to be used. However there are two areas that do need careful consideration in order to reach a satisfactory conclusion.

Clearly, any grease interceptor must have the hydraulic capacity to cope with the maximum volumetric flow rate entering the interceptor from the drainage system. But in addition, consideration also needs to be given to the concentration of fats, oils and grease within the waste water. For example, a fast food restaurant is likely to produce a higher concentration of FOG from the production process than that of a salad production plant of the same size.

Very often, grease interceptors are generally sized on flow rate alone, but this takes no account of the food production process being used. In practice, this is very difficult to assess as the flow rates from various appliances and fittings within the food preparation area are often unknown. Flow rate alone is therefore not particularly helpful. A more reliable indicator is to combine flow rate with the number of meals per day produced in the food processing area.

Flow Rates

Grease Guardian interceptor, the main consideration in selecting the proper size is the gallon per minute of flow through the drainage line into the interceptor. Volume of grease and other light density substances

entering the grease interceptor should also be taken into consideration. Generally, the larger the interceptor, the higher the flow rate.

- To determine the flow rate from sinks for example, calculate the total volume of all fixtures (length inches x width inches x height inches) and divide by 231 to convert cubic inches to gallons. The actual drainage volume is calculated to be approximately 75% of the total fixture volume due to pots, pans and other utensils displacing around 25% of the water volume, therefore:

Actual drainage volume = Total fixture volume (gallons) x 0.75 gallons.

- To determine the drainage period and flow rate: Drainage period is the actual time required to completely drain the fixture. Normally, good practices dictate a one minute drainage period.

Flow rate = Actual drainage volume / Drainage Period.

Example:

Step 1

A Sink 28" long by 20" width by 13" deep. Cubic content $28 \times 20 \times 13 = 7280$ cubic inches.

Step 2

Contents in gallons: $7280 \div 231 = 31.5$ gallons.

Step 3

Actual drainage load = $0.75 \times 31.5 = 23.6$ gallons.

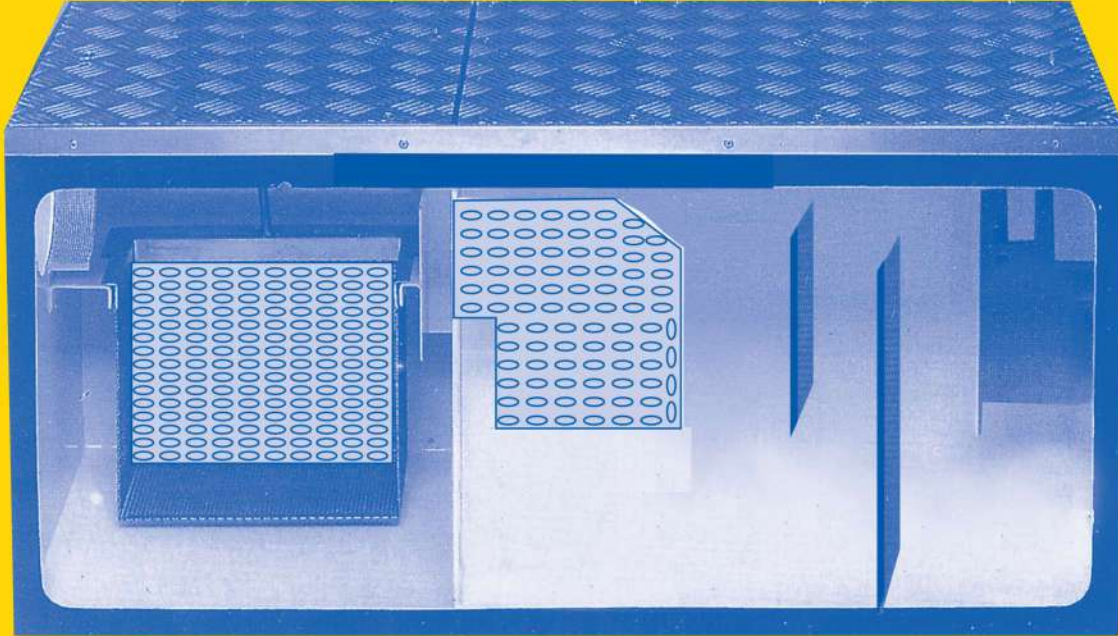
Step 4

Calculate flow rate for one minute period
= 23.6 gallons 1 minute
= 23.6 GPM Flow rate.

Step 5

Select interceptor, for one minute period:
23.6 GPM requires 25 GPM interceptor.

Dimensional Data



Specification Clause

Grease Guardian Biological Grease Interceptor

Main body component manufacture from G.304 (Stainless steel. For in ground / Free / Suspended application(s) complete with the below features)

- a) Extension,
- b) Deep Seal Trap,
- c) Stainless Steel Perforated Bucket,
- d) Removable Flow Diffusing Baffle (Aerator),
- e) Non Skid Gasket Bolt Cover, and
- f) Roding Access for Future Maintenance.

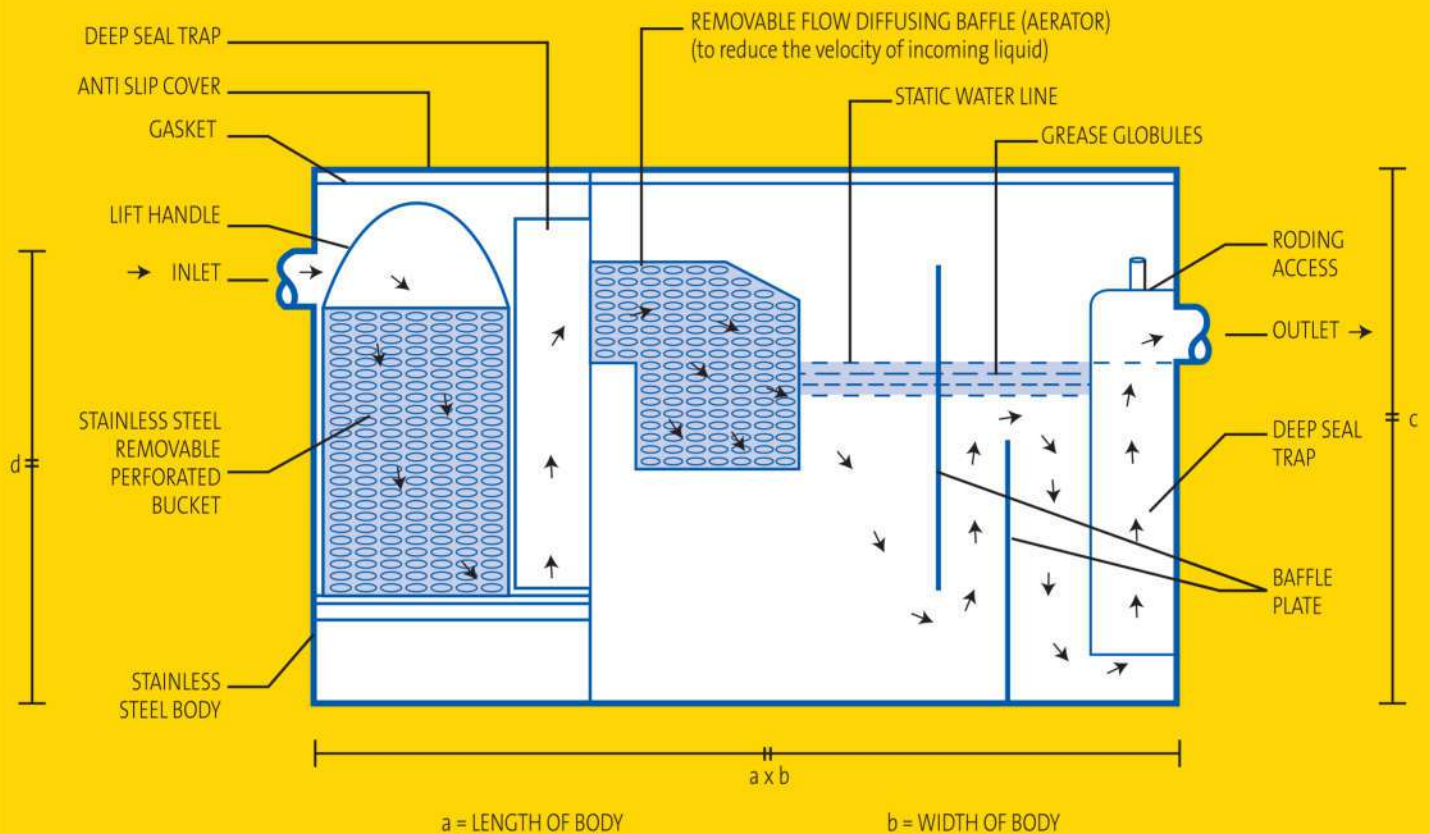
Prior to commissioning Grease Interceptor, kindly contact

Grease Guardian Asia Sdn Bhd

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Interceptor Model	a (mm)	b (mm)	c (mm)	d (mm)	Approx wt. (kg) in full	Inlet/Outlet Diameter (mm)	Approx Meals per Day	Flow Rate GPM	Number of Cover
GG 010	575	350	300	225	68	50	0-100	10	2
GG 015	600	450	350	250	85	75	100-200	15	2
GG 020	700	450	375	300	108	75	200-300	20	2
GG 025	750	500	425	325	124	75	300-400	25	2
GG 035	800	575	450	375	160	75	400-500	35	2
GG 050	1100	500	500	400	215	75	500-600	50	2
GG 075	1200	500	500	425	360	100	600-1000	75	2
GG 100	1200	850	600	575	720	100	1000-2000	100	2
GG 125	1220	1000	700	625	990	100	2000-2500	125	3
GG 150	1500	1050	750	650	1250	100	2500-3000	150	3
GG 200	1525	1100	900	750	1450	100	3000-4500	200	3
GG 250	1525	1200	1200	900	1800	150	4500-6000	250	3
GG 300	2000	1475	1175	1000	2150	150	6000-7500	300	3
GG 350	2400	1500	1200	1100	2350	150	7500-8500	350	3
GG 400	2800	1500	1300	1200	2700	150	8500-9500	400	3
GG 450	2900	1500	1400	1225	3500	150	9500-13500	450	3
GG 500	2925	1525	1450	1300	4500	150	13500 and above	500	3

Biological Activator

“Bio Treatment for Grease Interceptor, Sewage & Effluent Treatment”

Grease Guardian Activator can best be described as a “biological boost” or biological accelerator. It is an aid to Nature’s method of recycling organic wastes.

Grease Guardian Activator is a facultative organism, operating in both aerobic and anaerobic conditions. It is a biological complex of selected micro-organisms, enzymes, nutrients and buffer materials. The micro-organisms are obtained by a fermentation process in which a special mutant culture of Bacillus Spores is grown on a combination of sterile grains including wheat, corn and rice. Major enzymes presents are amylase, protease, lipase and cellulose.

Grease Guardian Activator reduce Unscheduled Drain Line Blockages and Grease Interceptor Overflow Problem, thus Grease Interceptor is able to function efficiently. When used in drain lines and grease interceptor, **Grease Guardian Activator** work in conjunction with indigenous organisms to develop thin, active biofilms that line the surfaces (wall) of pipes and grease interceptors. These highly active microbes continue to grow on the surfaces by degrading FOG and organics found in drain line deposits and in the waste stream. New microbes produced by this growth continue to eliminate FOG and organics in several ways. These new microbes activate the entire waste stream system for FOG removal. Regular addition of **Grease Guardian Activator** maintains a highly active waste stream system.

Grease Guardian Activator is recommended in all type of waste stream system such as, Grease Interceptor, Sewage Treatment Plant, Pump Stations, Oxidation Pond, Septic Tank and etc.

Grease Guardian Activator is easy to dispense and can be administered either manually via the sink outlet or more conveniently via easy to use, cost effective flexible programmable AUTOMATIC DOSING UNIT (ADU).

Grease Guardian Activator is available in the Plastic Container packing of

- 5 Litres
- 20 Litres

Dosage Guideline

Interceptor Model	Flow Rate GPM	Daily Dosage Rate
GG 010	10 GPM	100 ml (0.1 Litres)
GG 015	15 GPM	100 ml (0.1 Litres)
GG 020	20 GPM	200 ml (0.2 Litres)
GG 025	25 GPM	200 ml (0.2 Litres)
GG 035	35 GPM	200 ml (0.2 Litres)
GG 050	50 GPM	400 ml (0.4 Litres)
GG 075	75 GPM	500 ml (0.5 Litres)
GG 100	100 GPM	500 ml (0.5 Litres)
GG 125	125 GPM	600 ml (0.6 Litres)
GG 150	150 GPM	600 ml (0.6 Litres)
GG 200	200 GPM	750 ml (0.75 Litres)
GG 250	250 GPM	750 ml (0.75 Litres)
GG 300	300 GPM	800 ml (0.8 Litres)
GG 350	350 GPM	800 ml (0.8 Litres)
GG 400	400 GPM	1000 ml (1 Litres)
GG 450	450 GPM	1000 ml (1 Litres)
GG 500	500 GPM	1000 ml (1 Litres)

Technical Data

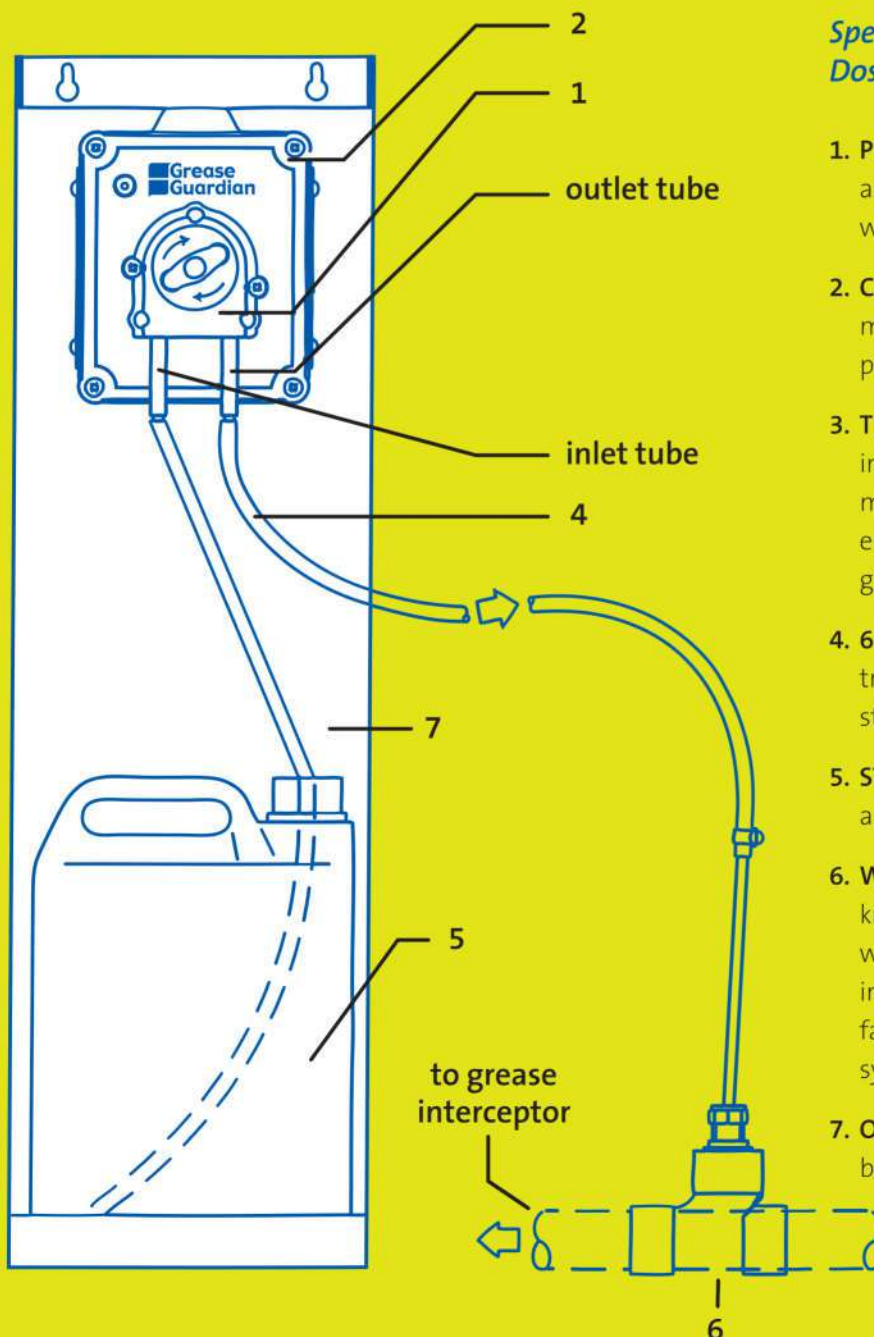
Bacteria Specification :	54.0 x 10 ⁷ cfu/ml (2 trillion/gal)
Bacteria Type :	Blend of Bacillus Spores
pH Range :	4 – 10
Appearance :	Brown Colour Liquid
Fragrance :	No fragrance added
Temperature :	at 35°C to 44°C (Optimum Condition)

Benefits of Biological Activator

- Reduced FOG deposits at surfaces (wall) of grease waste pipe.
- Reduced FOG build up in Grease Interceptor.
- Reduced odors (including sulphide).
- Keep odors of surrounding Grease Interceptor to a tolerable level.
- Reduced ammonia nitrogen.
- Clearer waste water discharged.

Automatic Dosing Unit (ADU)

Grease Guardian Asia Sdn Bhd now offer a choice of programmable ADU for dispensing Biological Activator. Grease Guardian ADU consists of an electrical motor-220-240V, 50HZ, single phase and a 24 hours rechargeable back-up battery in case of power failure. The pump driving a roller guide assembly around a peristaltic tube. The roller guide assembly is made up of two rollers, sprung-loaded to minimise tube wear. These rollers squeeze the activator liquid out of the peristaltic tube whilst keeping the tube closed at any position of the roller guide assembly, and also provide the valve action to prevent fall-back of the Biological Activator.



Specification For The Automatic Dosing Unit

1. **PERISTALTIC PUMP** - 220-240V, 50HZ, a.c current, delivering 10 litres per hour with 4.8mm tube.
2. **CONTROL BOX** - Wall mounting, material made of flame retardant polystyrene with removable cover.
3. **TIMER** - Rechargeable back-up battery in case of power failure. This is to maintains the time programme to ensure the biomatic treatment for the grease Interceptor is regularly.
4. **6mm Nylon tube** - Nylon tube is to transfer the Biological Activator from storage drum to the grease Interceptor.
5. **STORAGE DRUM** - Available is 1 gallon and 5 gallon drum.
6. **WASTE FITTING KIT** - The waste fitting kit comprises a solvent weld 1.5" tee waste pipe connector adapted to include an 8mm O/D copper pipe to facilitate easy connection of dosing system to drainage network.
7. **OPTIONAL** - Stainless Steel G-304 wall bracket for activator storage drum.

Grease Interceptor Maintenance Guide

1. Inspect inside of Grease Interceptor any foreign materials and remove all such materials.

Regular inspection of the Grease Interceptor will be required particularly in the early stages after commissioning to determine how often the solid waste food inside stainless steel perforated bucket need to be remove and whether or not the dosing quantities of biological activator is controlling the grease levels in the system. Each application tends to be different, so it is important to characterize the maintenance requirements for the system at an early stage. It is recommended to clean up the Stainless Steel Perforated Bucket daily or once every few days which is installed before the grease interceptor depending on the volume of incoming solid waste food.

2. Biological Activator

Depending upon the application, Biological Activator needs to be applied to the drainage system on a daily basis preferably applied at a quiet period of the working day when there is little or no drainage activity. Kindly use the Dosage Guideline at Page (9) as a Guideline.

Shock dosing of the grease interceptor is an important element to start the biological process. To rapidly establish a biomass, dose the system with three or four days of Biological Activator to begin the process. Thereafter, apply the Dosage Guideline.

With Biological Activator, Grease Interceptor is needed to be cleaned up twice every month. If Biological Activator is not introduced, manual clean up of the fat, oil and grease (FOG), which is trapped in the grease interceptor, is required and should be carried out once a week. More frequent cleaning if the activities and fat content of wastewater is high.

3. Tubing connection of the Automatic Dosing Unit (ADU)

Cut off the proper lengths of LDPE tubing that will reach from the container of product to the inlet of the **Grease Guardian ADU** and the outlet of the ADU to the drain or grease interceptor.

Insert the chemical supply tubing into the end of the 1/4" ID ADU tube located on the left side of the ADU (1/2" - 3/4" insertion required). Loop one wire tie around the squeeze tube/LDPE tube joint. The other end of the chemical supply tubing can be connected to the 10" PVC pickup tube that has been supplied. This should be done by slipping the LDPE tubing through the compression nut and sleeve and into the threaded end of the pickup tube until LDPE tubing is about 1/4" from the bottom of the pickup tube. The pickup tube can be placed in the containers of Biological Activator. If the pickup tube is not used, the supply tube should be properly secured to the Biological Activator to assure that Biological Activator product is delivered.

Insert the outlet tubing into the end of the 1/4" ID ADU tube located on the right side of the ADU (1/2" - 3/4" insertion required). Loop one wire tie around the squeeze tube/LDPE tube joint. The other end of the outlet tubing must be secured into drain or grease interceptor to assure that Biological Activator is properly delivered. It is suggested to use a 1/8" NPT male x 1/4" compression fitting when fitting discharge into the side of a drain pipe.



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