GREASE TRAP

MACTRAP

PUMPING SYSTEMS FOR GREASE TRAPS

PUMPING SOLUTIONS FOR GREASE TRAPS IN DIFFICULT INSTALLATIONS

WHEN IS PUMPING REQUIRED?

Grease, Fuel/Oil, and sediment traps all rely upon gravity separation of contaminants from settled water. In general terms, contaminated water flows into the grease separator, a series of baffles slow down the flow and settles the water, and then gravity does the rest. Heavier-than-water sediments descend to the bottom of the grease trap while lighter-than-water oils and grease rise to the surface. The grey water exits the grease trap while the contaminants remain within the grease trap to be removed by periodic extraction.

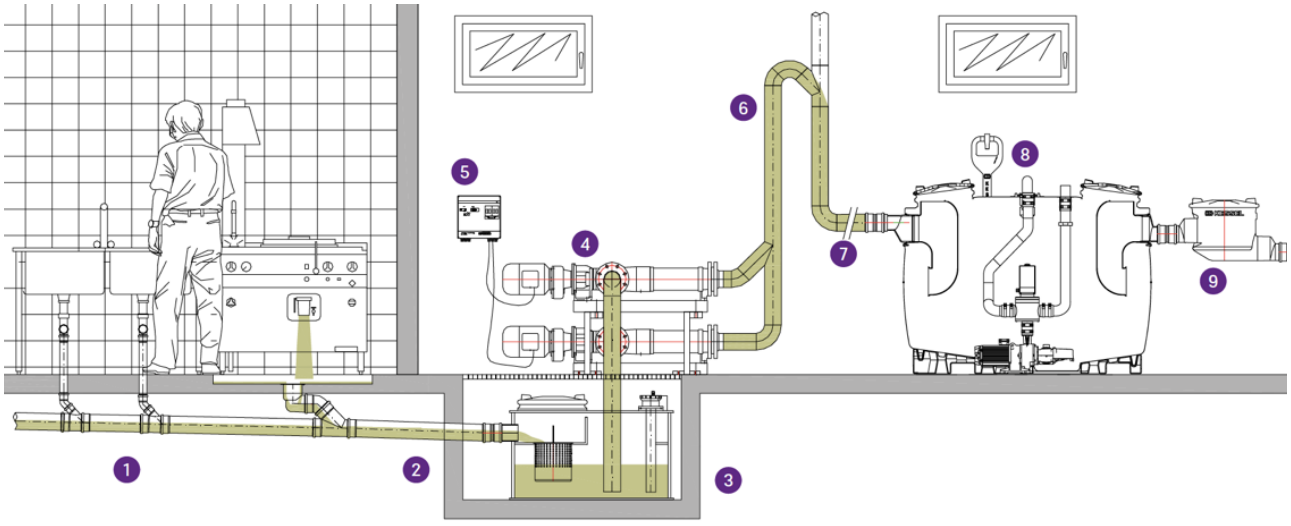
All this works well when the greasy water line from the sinks and other fixtures has sufficient drainage fall to reach the grease trap, and that there is adequate drainage fall from the grease trap to reach the sewer line. When there is insufficient fall, or circumstances demand that the grease trap must be lower than the sewer line, or higher than the greasy water line, then pumping solutions are required.

1. Lifting Greasy Water to the Grease Trap

In the first scenario, the grease trap must be installed at a distance from the kitchen fixtures or above the point where the greasy line from the kitchen fixtures can flow naturally to the grease trap. In this environment the kitchen waste can be picked up from a sump or other collection point and pumped to the grease trap.

Standard lifting stations with vortex or macerating pumps "mix" the wastewater as it is pumped. This causes the food waste and grease from the kitchen to emulsify and fully mix with the wastewater which negatively affects the efficiency of a grease trap. For this reason, positive displacement pumps (also known as screw pumps) are required for use in these cases. Mactrap provides special lifting stations from Kessel for use where the grease trap is located higher than the collected wastewater from the kitchen. A screw pump pushes the wastewater into the grease trap, without any mixing taking place.

The Mactrap greasy water lifting solution is particularly useful when the kitchen has been retrofitted to a building with a concrete slab and exiting drainage is difficult or existing services prevent excessive concrete cutting.



1. Drains in the kitchen
2. Inlet pipe
3. Collecting tank
4. Screw pump double system
5. Control unit
6. Pressure pipe
7. Calmed inlet
8. Grease trap
9. Sampling chamber

In the illustration above, the kitchen fixtures drain to a collecting tank. A Kessel double screw pump system lifts the greasy water via a pressure pipe to a grease trap.

The location of the grease trap is only limited by the capacity of the pumps, and could easily be installed outside of the building, or in a location convenient for the periodic extraction of grease and sediment.

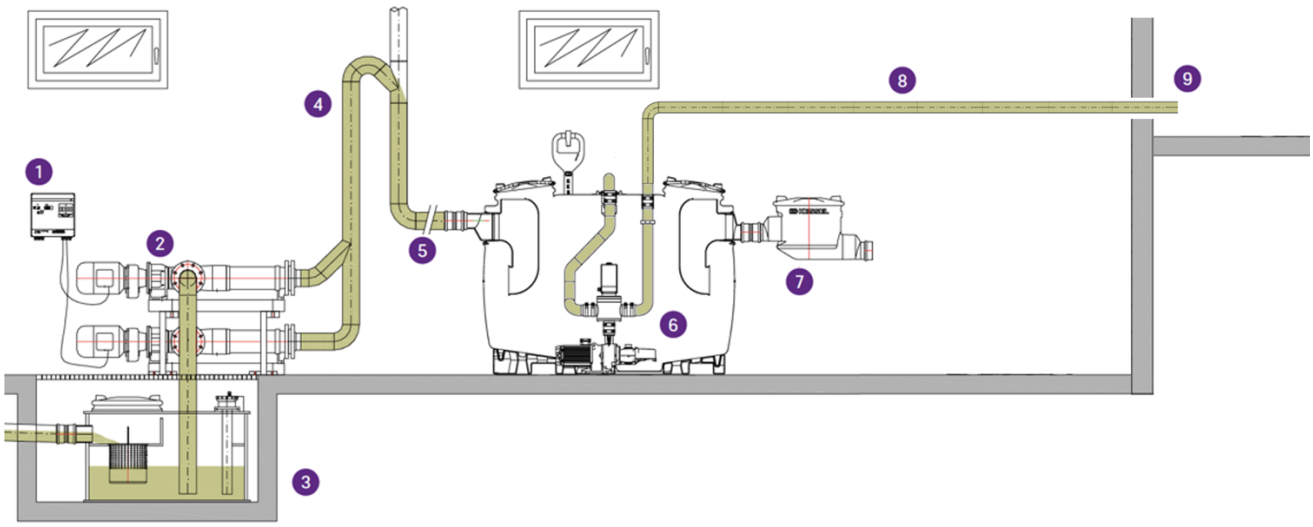
2. Periodic Extraction of Grease and Sediment

In the second scenario, the grease trap is in a location that makes the extraction of the grease and sediments difficult. The grease trap could be in a basement or located in a carpark with a low ceiling. It could be as simple as the grease trap is located next to an open-air dining area and the proprietor wants to avoid the odours associated with cleaning.

If the vacuum truck can't get to the grease trap, then it makes sense to pump the contents of the grease trap to the vacuum truck. But it's not as easy as simply turning on a pump. The contents of the grease trap will be layered – grease, fat and oil at the surface, grey water in the middle, and sediment at the bottom.

The Mactrap pump-out solution begins with a Kessel Shredder-Mix system. A sturdy pump is used to mix the contents of the grease trap until grease and sludge are pumpable. Any solid materials such as bones, pieces of plastic, cords, peel etc. is chopped up by a macerating system.

During this process, the homogenised tank contents are injected back into the grease trap chamber with high kinetic energy. This removes deposits and any soiling clinging to the inside tank walls and cleans the grease trap from the inside. The high energy macerating pump then pumps out the sludge to the waiting truck. The refill process of the grease trap cleans the internal sides and refills the unit ready for its next duty cycle.



1. Control Unit
2. Screw pump double system
3. Collecting tank
4. Pressure pipe
5. Calmed inlet
6. Shredder mix system
7. Sampling chamber
8. Pressure pipe pump-out
9. External pick-up point

The illustration now includes the Kessel shredder mix system and a pressure pipe to pump out the homogenised contents of the tank to an external pickup point.

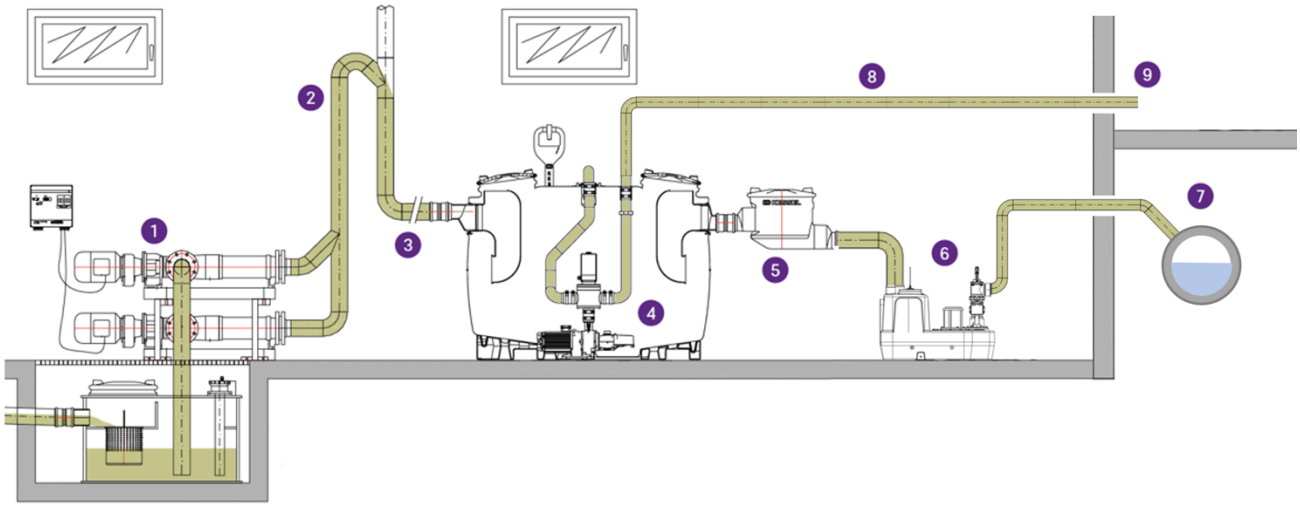
The external pickup point can be equipped with a manual or automatic control station to allow the mixing and pump out to be completely controlled from the external location.

3. Lifting the Grey Water to the Sewer Line

In the final scenario, the circumstances that demanded a pump out of the contents of the grease trap may also demand that the output of the grease trap is lifted to the sewer line. If the sewer line is higher than the drainage point, the wastewater must be lifted to the sewer line with a lifting station via a backwater loop.

The Mactrap pumping solution adds a Kessel lift pump designed for use after a separator and specified to the requirements of the installation.

Wastewater from the grease trap flows into the lift pump's integrated tank, where a sensor control system activates the pump, and the wastewater is pumped to the sewer line.



1. Screw pump double system
2. Pressure pipe
3. Calmed inlet
4. Shredder mix system
5. Sampling chamber
6. Lift pump
7. Sewer line
8. Pressure pipe pump-out
9. External pick-up point

The illustration is now complete with the addition of the Kessel lift pump. The lift pump is activated by an internal sensor and pumps the wastewater to sewer.

All three pumping solutions are combined in an integrated and managed solution.

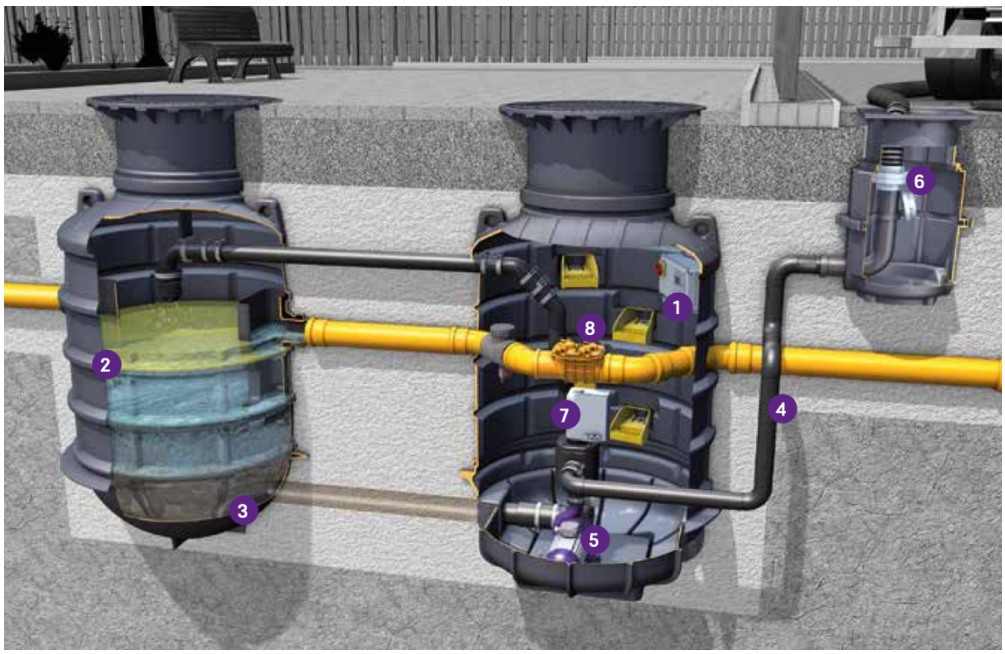
4. Eliminating the Greasy Lift Pump

The Greasy Lift Pump, while an elegant solution in certain circumstances, is necessarily complicated and can consume significant space. In many scenarios the obvious alternative is to lower the grease trap to the sump level, typically in a basement or lower-level carpark. This alternative eliminates one complete pumping sequence.

Having eliminated a pumping sequence we now have an underground grease trap that still requires lifting of the grey water to the sewer line and safe, hygienic, odour free extraction of the contents.

The Shredder-Mix pumping solution for underground installation

An underground installation is a safe and clean alternative to free-standing grease traps when space is at a premium. In this scenario the grease trap is installed underground, and the greasy water flows directly into the grease trap. The grease trap is combined with an Engineering Chamber, equipped with pumps and controls, to provide a program-controlled Shredder-Mix and disposal system. The pumps within the engineering chamber perform exactly as described in Section 2. above, resulting in fully automated, odour free disposal from underground installations.



1. Control unit for grease trap
2. Grease trap
3. Suction hose
4. Disposal line
5. Shredder-Mix system
6. Connection for disposal truck
7. Actuator valve
8. Sampling chamber

5. Telemetry System – TeleControl

The Mactrap pumping solutions can be upgraded to include the Kessel TeleControl system which allows pump activity, messages or errors to be sent via a GSM interface to up to three mobile phones. This keeps the pump operator informed about the current operational status of the lifting station and allows a quick reaction time if required.

In addition, the grease trap can be fitted with level detection of fat oil and grease so that the operator never risks missing an essential cleanout, or more importantly, never pays for a clean out that is unnecessary.