

# Geotech Gas Guzzler

Installation and Operation Manual





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## DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:



### WARNING

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



### CAUTION

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



### NOTE

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

## **Section 1: System Description**

### **Function and Theory**

The Geotech Gas Guzzler Product Recovery System (Gas Guzzler) has been designed to efficiently collect free floating hydrocarbons in 2" (5 cm) or larger recovery wells. The system consists of a pneumatic dual diaphragm pump coupled with a Skimmer with floating intake cartridge (or buoy), an air filter, regulator, well cap, and a Tankfull Shut-off Sensor. An air source capable of delivering 6 cfm (.17 cmm) minimum at 45 psi (3 bar) is required to operate the system.

The pump creates a vacuum, drawing product from the Skimmer attachment, and discharges it into a recovery tank (not supplied). The intake assembly on the Skimmer follows the water table fluctuations and places the screen at the water/product interface, skimming light product (such as gasoline or diesel fuel) down to a sheen within the range of the float travel. As the system cycles, product is drawn through the intake screen and is transferred to the pump through a coiled hose and the Skimmer's transfer shaft. Optional heavy oil and high temperature Skimmers, using intake buoys, are also available to recover product in 4" (10 cm) diameter and larger wells.

The air filter and regulator remove particles from the air stream, which may damage the pump, and provide the proper air pressure for system operation.

The Gas Guzzler's Tankfull Shut-off Sensor shuts off the pump when the discharge tank becomes full. The Tankfull Shut-off system consists of a sensor tube and a level control valve. The sensor tube is installed to a 2" NPT bung opening in the recovery tank. As the tank fills, pressure created in the sensor tube by the rising product is transmitted to the level control valve. The Tankfull Shut-off will activate when the product level has risen approximately 11" (28 cm) up the sensing tube, shutting off the air supply to the pump. After the tank is emptied, the level control valve for the Tankfull Shut-off will automatically reset, allowing the system to resume normal operation.

### **Specific Gravity and Viscosity Limitations**

The specific gravity of the product to be recovered must be less than 1.0 and its viscosity less than 50 SSU for use with the "light" oil filter, and 400 SSU for use with the "heavy" oil filter cartridge. Consult Geotech for product recovery operations with viscosities outside that range.

This type of filter technology is designed to be used in wells with free product of at least 1/8 inch (3 mm) thickness.

The presence of surfactants or detergents in the product requires careful application. When confronted with these contaminants please consult Geotech.

## System Components

### Pump

The Gas Guzzler utilizes an air driven dual diaphragm pump. The pump fittings are pre-attached, and the pump can be configured in several different ways to ease installation. For more information consult the Manufacturer's Service and Operating Manual for the pump. Figure 1-1 is an example of the Gas Guzzle pump.

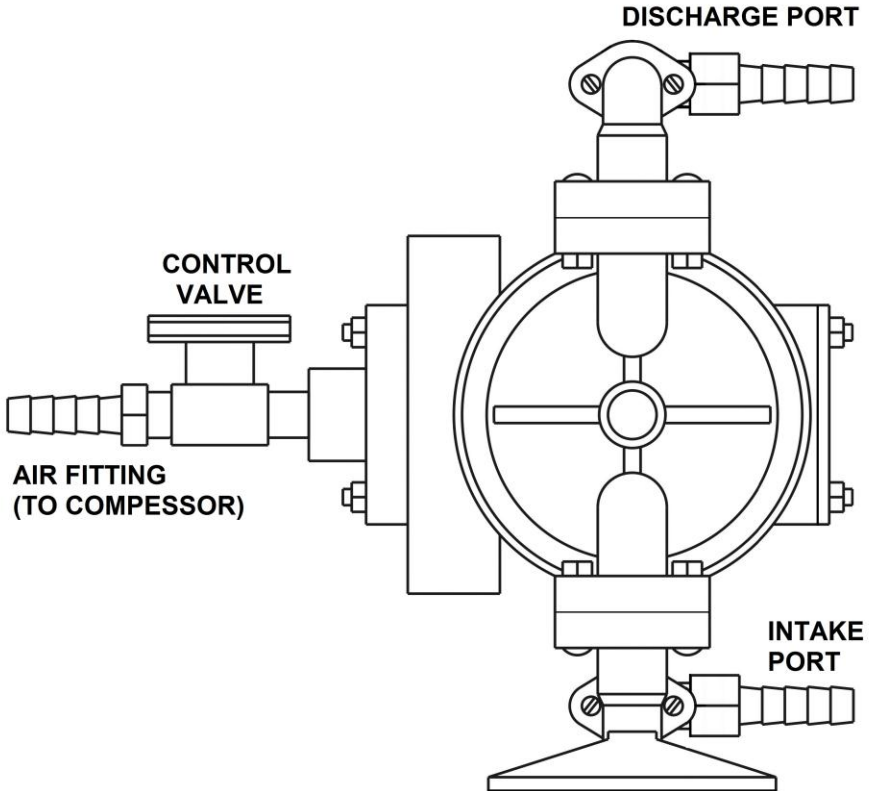


Figure 1-1 – Gas Guzzler Pump

## Skimmer Attachment

A Gas Guzzler's standard Skimmer attachment is designed for use in either 2" (5 cm) diameter wells or 4" (10 cm) diameter and larger wells. Figure 1-2 shows an example of the two most common Geotech Skimmers. These Skimmers come with a standard 100 mesh intake screen. A 60 mesh intake screen is also available for use with higher viscosity fluids. See Geotech Manual "Hydrocarbon Viscosity Test Kit" for more information on choosing the correct intake cartridge.

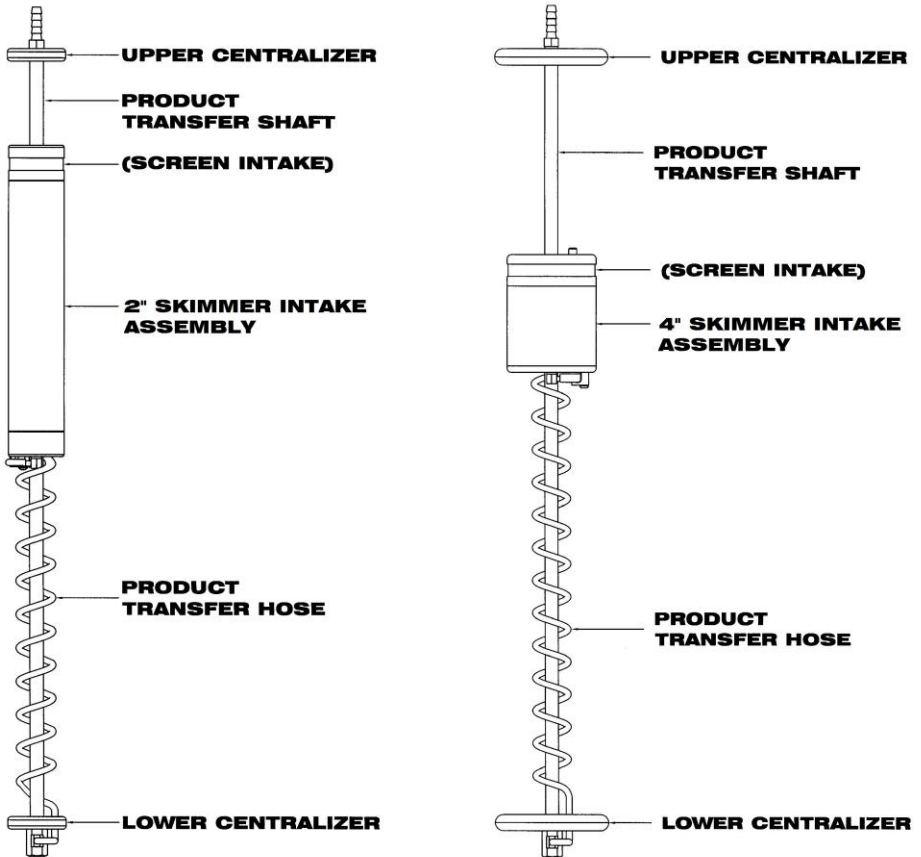


Figure 1-2 - Standard 2" and 4" Skimmer Attachments

The Skimmer assembly is connected to the Gas Guzzler pump with durable, fuel grade hose. The Skimmer consists of a product intake float, a coiled product transfer hose, and a transfer shaft. Well centralizers are placed at the top and bottom of the Skimmer shaft to protect the intake float and to allow unobstructed travel within the well. Standard Skimmers can provide 12" (30.5 cm) to 24" (61 cm) of intake travel. Geotech can provide up to 5' (1.5 m) of travel (4" Skimmers only) on a custom order basis.



A Skimmer assembly will not draw water unless the intake cartridge is forcibly submerged, surfactants are present, or when the "conditioning" of the intake screen has been removed. See Section 4 for information on reconditioning the intake screen.

### **Heavy Oil Skimmer Attachment**

The optional heavy oil Skimmer attachment is designed to recover a range of fluids from gasoline to gear oil, skimming the product down to .01' (3 mm) in 4" (10 cm) diameter and larger wells. This option is best suited when the viscosity of the hydrocarbon is greater than the capability of the filter screen technology (screen can no longer pass the hydrocarbon fluid).

The heavy oil Skimmer consists of a polypropylene intake buoy, a coiled product transfer hose, and a transfer shaft with well centralizers placed at the top and bottom. The intake buoy on the heavy oil Skimmer is designed to "ride" at the oil water interface and has a travel range of 24" (61 cm).

The intake buoy can also be "fine-tuned" by adjusting the intake fitting on the top of the buoy. Turning the fitting clockwise will lower the intake fitting relative to the product/water interface. Turning the fitting counter-clockwise will raise the intake fitting away from the interface. Figure 1-3 is an example of a heavy oil Skimmer assembly.

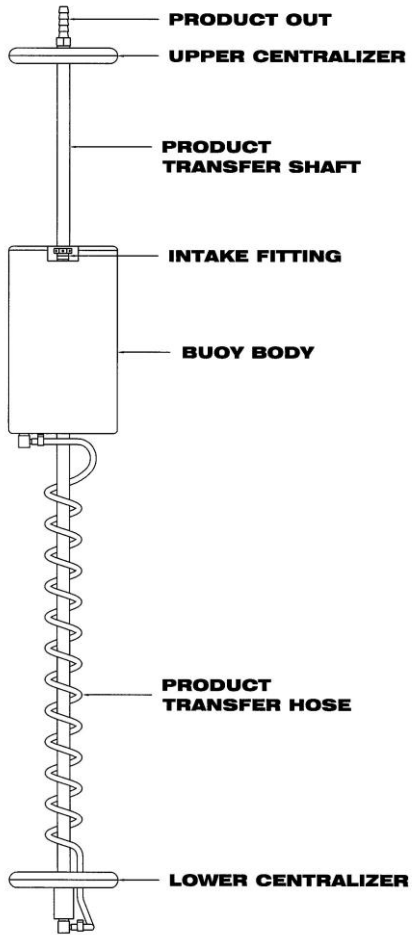


Figure 1-3 – Heavy Oil Skimmer Attachment (optional)

## High Temperature, Heavy Oil Skimmer Attachment

For high temperature well environments, Geotech provides a high temperature, heavy oil (HTHO) Skimmer that incorporates an ultra-high molecular weight (UHMW) polyethylene intake buoy. The HTHO Skimmer has stainless steel end caps placed at the top and bottom of a stainless steel screen to keep out debris. The intake buoy of the HTHO Skimmer has a travel range of 26" (66 cm).

Like the heavy oil Skimmer, the intake buoy can be "fine-tuned" by adjusting the intake fitting on the top of the buoy. Turning the fitting clockwise will lower the intake fitting relative to the product/water interface. Turning the fitting counter-clockwise will raise the intake fitting away from the interface. Figure 1-4 is an example of the high temperature, heavy oil Skimmer.

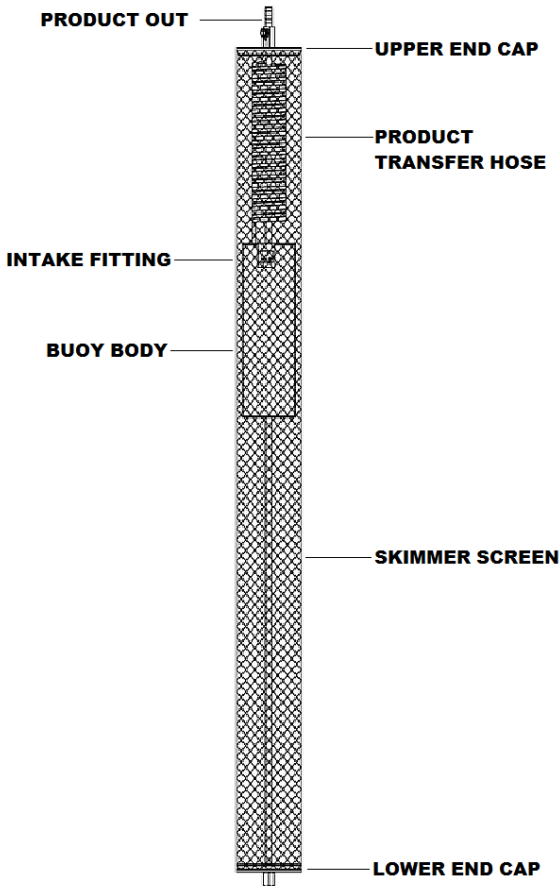


Figure 1-4 – High Temp, Heavy Oil Skimmer Attachment (optional)

## **Air Control**

The Gas Guzzler system is supplied with an air filter/regulator. This device is preassembled and works best when mounted near the pump. The air filter is designed to remove particles and liquids in the air stream, and has a drain on the bottom of the bowl to empty the filter when it becomes full.

The regulator is pre-set to 45 psi (3 bar), which should be suitable for most applications. Higher pressures are only required if the discharge head is greater than 100 feet (30.5 m). The air requirements for the system will vary with the operating speed of the pump. As the pumping rate increases, the airflow requirement increases. At maximum speed, the pump requires 6 cfm (.17 cmm) of air. (During normal operation the Gas Guzzler uses approximately 2 cfm (.05 cmm) to 4 cfm (.11 cmm) of air.) In freezing conditions, adding an air dryer to the system may be necessary to avoid stalling the pump.

### **Product Recovery Tank (not provided with the Gas Guzzler System)**

A product recovery tank with a 2" NPT bung opening for the Tankfull Shut-off Sensor tube, a product inlet opening, and a vent are required for proper operation – typically a 55 gallon (208 liter) drum or other suitable container. Check government regulations regarding fuel storage before selecting a recovery tank.

### **Tankfull Shut-off Sensor**

The Tankfull Shut-off Sensor assembly (Figure 1-5) consists of a sensing tube, a level control valve and 50 feet (15 m) of sensor air line. The level control valve is attached in-line to the air filter/regulator and pump and must be mounted within 50' (15 m) of the discharge tank.

When the product rises approximately 11" (28 cm) up the side of the sensing tube, the level control valve shuts off the air supply to the pump. Once the tank is drained, the system will automatically reset and continue operation. The level control valve may be mounted at the recovery tank or directly to the air filter/regulator, provided that it is within 50 feet (15 m) of the recovery tank.

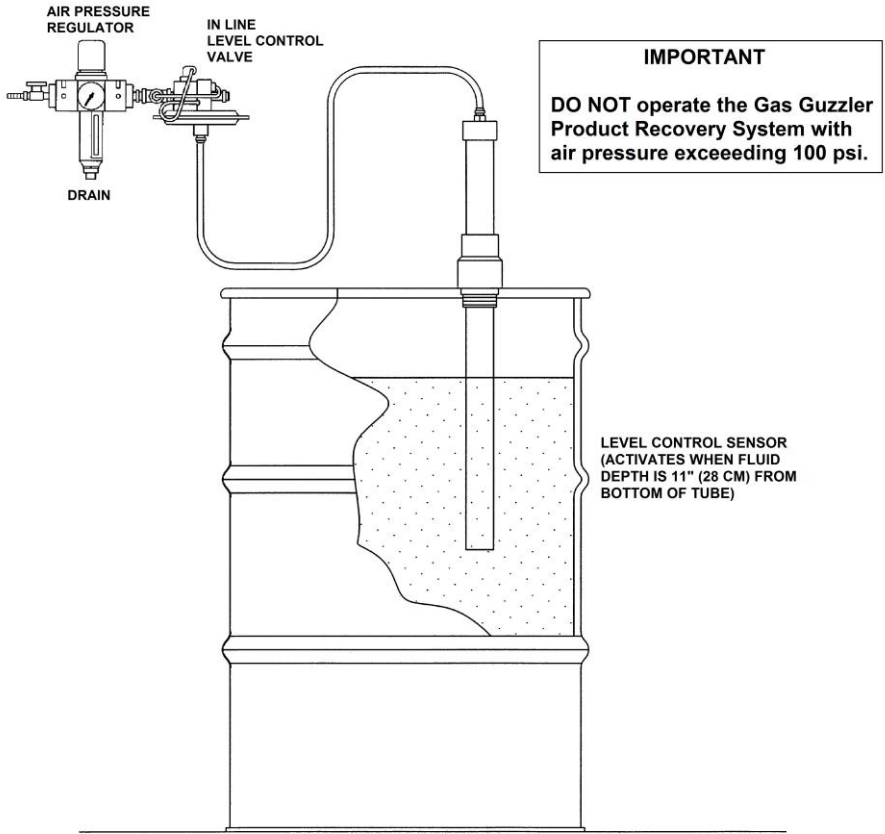


Figure 1-5 – Tankfull Shut-off Sensor Assembly (recovery tank not supplied)

The standard Tankfull Shut-off Sensor assembly, as shown in Figure 1-6, is also available in stainless steel (with the level control valve plumbed to the sensor tube) or in stainless steel with a manual reset box attached. A listing of the available sensor assemblies can be found in Section 8. Contact Geotech to discuss which application is best for your product recovery needs.



Figure 1-6 – Optional Tankfull Shut-off Sensor Assemblies

### Air Line and Discharge Hoses

The Gas Guzzler comes with 100 feet (30.5 m) of 3/8" (9.5 mm) ID hose which may be used for both the air and discharge lines. The hose can also be used to connect the pump to the skimmer.

Typically, conduit or 2" (5 cm) PVC pipe, buried below grade, should be used to protect the air and discharge lines from damage. Failure to safeguard the air and discharge lines may lead to uncontrolled pump discharge and/or compressor failure. The discharge port of the pump accepts standard 1/4" NPT and 1/2" FPT pipe threads. The dimensions of the air lines to the listed devices are:

Air source / Discharge Line	3/8" ID x 100ft (30.5m)
Level Control Valve to Sensor Tube	1/4" OD x 50ft. (15.2 m)

## Section 2: System Installation

### Planning Guidelines

To successfully plan the installation of the Gas Guzzler system, use the following guidelines to determine a suitable location for the pump, (optional) air compressor, Tankfull Shut-off Sensor, and recovery tank.

1. The standard Gas Guzzler system does not include an air source. When installing an air compressor (6 cfm (170 lfm) at 45 psi (3 bar) minimum), do not locate the compressor in areas where there may be explosive vapors. Compliance with Section 5 of the U.S. National Electric Code Handbook and any local codes is essential for an electrically safe installation. The compressor requires a cool, well ventilated environment to operate efficiently, and may require an air dryer in freezing or humid environments.
2. The product recovery tank should be located within 50' (15 m) of the level control valve when the Tankfull Shut-off Sensor is used. The air filter and regulator are attached to the level control valve, but they may be separated. It is not necessary for the level control valve to be mounted near the pump for the system to operate normally.
3. Run all air and discharge hoses through pipe or conduit to protect them from damage. All air and discharge hoses must be installed correctly for the system to operate properly. The cut ends of the hoses must be straight, and the connections leak free.

### Install the Skimmer to the well



Prior to installation of the Skimmer, ensure that the intake screen is "conditioned" (or primed, with diesel fuel or a similar hydrocarbon.) The optimum fluid would be to use the same downwell hydrocarbon recovered. Use a soft, bristle brush to avoid damaging the screen intake.

Remove the inner ring of the well cap, and secure it to the well casing using the three set screws located on the perimeter of the ring (for those systems using a well cap).

Calculate the tubing lengths required to install the Skimmer. Tubing lengths cannot exceed 25' (7.6 m) depth to fluid. To calculate the amount of discharge hose required to suspend the Skimmer in the well, first determine the following lengths:

- Measure the static water depth in the well using a Geotech Interface Probe.
- Measure the distance between the wellhead and the Gas Guzzler pump.
- Measure the distance between the Gas Guzzler pump and the product recovery tank.



See Figure 2-1 for a view of the Skimmer in relation to the well cap and static water level.

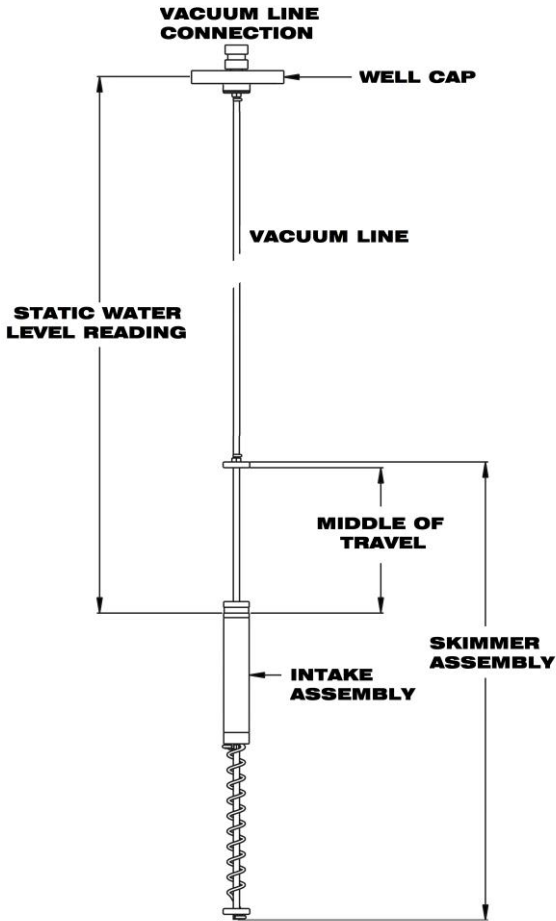


Figure 2-1 – Skimmer and Static Water Level

Do not make any cuts to the tubing until all measurements, between the pump and wellhead and from the wellhead to recovery tank, have been made.

Pull the measured lengths of discharge hose through the fitting on the well cap (when applicable). Fully tighten the compression fittings around the hose and tubing at the well cap. The well cap is designed to suspend the Skimmer assembly by the hose. After attaching the needed lengths of tubing, place the Skimmer assembly into the well so that the midpoint of the intake float travel lies on the static water level measured.

## **Pump Installation**

The Gas Guzzler pump must be securely mounted at the well head for best performance. For larger sumps, the pump may also be mounted on a stand or attached to the side of the casing and then placed in the well. The pump has a variety of product inlet and discharge piping options. The pump is pre-configured but may be plumbed differently using the labeled ports around the outside of the pump.

Support any hard plumbing used to prevent undue stress on the pump housing. Place the pump, pump controls, discharge tank, and air compressor where desired, then cut the appropriate lengths of hose for air supply, product intake and product discharge.

Attach the intake (vacuum) hose from the well to the pump. Connect the product discharge hose from the pump to the product recovery tank. Attach all hoses using the hose clamps provided. Ensure that all lines are kept level and that there are no kinks or sags in the lines. When possible, enclose the lines within a secondary pipe or conduit to protect them from damage.

## **Tankfull Shut-off Sensor Tube Installation**

The Tankfull Shut-off Sensor is installed in line between the air filter/regulator and the pump. See System Schematic, Figure 7-1.

Install the Tankfull Shut-off Sensor tube in a 2" NPT bung opening on your recovery tank. Adjust the position of the tube so that 12" (30 cm) to 13" (33 cm) of the tube is within the tank. When the fluid level reaches approximately 11" (28 cm) on the sensor tube side the level control valve will activate to shut off the pump.

Connect the 1/4" OD black air line to the bottom fitting on the level control valve and to the Tankfull Shut-off Sensor tube. Tighten the fittings to achieve a 100% seal on the tubing: to achieve a 100% seal, push the tubing firmly into the fitting, hand tighten, then one turn past hand tight with a wrench.

### Section 3: System Operation



Do not operate the Gas Guzzler system with air pressures exceeding 100 psi (6 bar).

The Gas Guzzler system will immediately operate when the air supply is turned on. Before the system is turned on, make sure the air pressure is set to 45 psi (3 bar) (or with the pressure regulator knob turned down). Once the system is operating, the air pressure may be adjusted between 30 (2 bar) – 100 (6 bar) psi. To adjust the pressure, rotate the knob at the top of the air pressure regulator while the system is operating (see Figure 1-5).



Higher air pressures will not yield a higher recovery rate, and should only be used to overcome high discharge head pressures.

#### Level Control Valve and Tankfull Shut-off Sensor Operation

Once the Tankfull Shut-off Sensor has been installed it can be tested by immersing the sensor tube in a pail of water (at least 12" (30.5 cm) deep) while the system is operating. Within a few seconds, the sensor will shut off the air supply and stop the pump. When the sensing tube is removed from the pail, the pump will automatically resume operation. If the system does not function as described, recheck the orientation of the tubing attachments, check the fittings at both the control valve and sensing tube, and check for kinks in the tubing.

#### Adjust the Pumping Rate

The fastest pumping rate possible on the system varies according to pumping depth, distance from the pump to the product recovery tank, and the product layer thickness. The speed control valve is located at the air inlet on the pump and may be rotated counter-clockwise to increase the rate, and clockwise to decrease the rate.



The pump must never be increased to the point where the air compressor is running at more than a 50% duty cycle. The pump should be adjusted so that it runs at its slowest steady speed. Higher pump speeds will not yield a higher pumping rate, and will cause premature compressor wear.

## Section 4: System Maintenance

The Gas Guzzler system has been designed to require very little maintenance. With proper installation, and by using the following periodic maintenance procedures, operation of the system will remain efficient and trouble free. Pump maintenance information is provided in a separate manual supplied with the system.



In cold climates where the temperatures may fall below freezing, the air supply should be run through an air dryer to prevent the pump from stalling.

### Weekly Maintenance

1. The system is equipped with an air filter on the air regulator. If there is fluid in the filter bowl, turn the knob on the bottom of the filter clockwise to open the drain. When the filter has drained completely, retighten the knob.
2. Recheck the pressure setting to the Skimmer. Verify that the Skimmer is set at the correct operating interval for the collection of free product, and that the speed of the pump is correct for the amount of product available.
3. Pull the Skimmer from the well and inspect it, making sure the coiled hose is not tangled and that the buoy moves freely over its travel range. Inspect the buoy body and clean or replace it as needed.



Always ensure all hose and tubing fittings at the Gas Guzzler pump and between the pump and Skimmer are tight prior to deploying the unit into the well.

### Monthly Maintenance

- Pull the Skimmer from the well.
- Inspect all tubing for cracks, kinks and damage. Replace any old and brittle tubing.
- Inspect the coiled tubing for physical damage or obstructions. Verify the intake assembly moves freely over its travel range.
- Inspect the float (buoy) and intake screen. Clean the intake screen and float using the method described in this section.
- Inspect the Skimmer assembly for signs of physical damage. Scrapes or dents in the screen intake may cause the Skimmer to take on water. If such damage is found, a new 2" (5 cm) or 4" (10 cm) intake assembly may be necessary.
- Clear away any debris collected in the well vault (or above ground casement).
- Measure the well and record product layer thickness and depth to water from top of well casing.
- Verify pump vacuum is adjusted for the recharge rate of the well.

- Place a Skimmer positioning mark or zip tie on the discharge hose (usually black) even with the top of well casing.
- Re-deploy the Skimmer, aligning new depth to water mark on discharge hose with top of well casing.
- Check the Tankfull Shut-off Sensor tube for proper operation. Clean if necessary.

### **Quarterly Maintenance**

- Pull Skimmer.
- Clean the well screen (site specific, primarily to clear bio growth and keep thick degraded product from impeding conductivity to the well at the product layer. Frequency to be determined by user).
- Place float assembly in water to verify the screen stays out of the water at the top of the traverse range. If it does not, replace the coiled tubing and retest. If it still does not, replace the float assembly.

### **Yearly Maintenance**

- Clean and prime the Skimmer intake screen using the method described in this section.

### **Cleaning the Skimmer and Intake Screen**

Standard 2" and 4" Skimmers will usually come with a float containing a 100 or 60 mesh intake screen. When required, gently clean the screen with WD40 or kerosene, using a soft, bristle brush, to remove emulsified product, bio growth or other debris. Take care to avoid damaging the screen intake. Rinse the product intake assembly with clean water and make sure it is completely dry before reconditioning the intake screen.

For heavy oil Skimmers, use warm soapy water first, followed by WD40 or kerosene to remove debris or bio growth from the buoy body, then rinse and let dry.

Using warm soapy water, clean all debris and bio growth from the Skimmer shaft and coiled tubing.

### **Conditioning the Intake Screen**

Prior to initial deployment, and after every cleaning, the intake screen must be conditioned (or primed) with diesel fuel or other similar hydrocarbon. Use a soft, bristle brush to saturate the screen portion of the intake thoroughly. The optimum fluid would be to use the downwell hydrocarbons being recovered. Take care to avoid damaging the screen intake.

## Section 5: System Troubleshooting

**Problem:** The Gas Guzzler operates but recovers no product.

**Solutions:**

Product has been removed.

- Decrease the pumping rate to conserve air.

Pump is operating too fast, pumping rate exceeds product recharge rate.

- Decrease the pumping rate.

Fluid level is below skimmer assembly.

- Adjust the skimmer as outlined in System Installation section of this manual.

Viscosity of the product is too thick for the buoy to recover.

- Contact Geotech at 1-800-833-7958.

Discharge piping plugged or damaged.

- Verify that the discharge piping is clear and undamaged.

Filter material on the skimmer buoy is plugged.

- Clean or replace the filter.

**Problem:** Pump discharges water only.

**Solutions:**

Water level has exceeded the allowable travel of the skimmer buoy.

- Pull the skimmer out of the well and purge water out of the buoy by allowing the system to pump until all water is removed from the buoy. Refer to the System Installation section of this manual and reset the pump and skimmer.

The Skimmer position has slipped, or the Skimmer was installed below the water level in the well.

- Prime the intake cartridge screen and re-position the Skimmer.

The intake assembly will not slide freely, or the coiled hose is tangled.

- Inspect the Skimmer assembly and repair as necessary.

Loose hose or tubing on fittings below intake level.

- Check all fitting connections.

The standard 4" Skimmer buoy will travel 24 vertical inches (61 cm) within the well, and will not pump water unless forcibly submerged. If the water table fluctuation exceeds the available travel of the buoy, the system may recover water. If the well is slow to recharge and/or there is only a small volume of product to pump, the pumping rate should be decreased by turning the speed control valve clockwise to conserve air and minimize compressor wear.

**Problem:** The pump discharges air only, no product.

**Solutions:**

Product has been removed.

- Recalculate and reduce the pumping rate at the Sipper controller.

The Product layer is below the bottom of the Skimmer's travel range.

- Adjust the position of the Skimmer assembly within the well and then reset the Sipper controller.

The Skimmer assembly has detached from the pump (due to a cut hose or loose hose clamp.)

- If the Skimmer assembly cannot be "fished" from the well then a new Skimmer will be needed.

**Problem:** The pump cycles but does not discharge product.

**Solutions:**

The viscosity of the product is too thick for the Skimmer.

- Contact Geotech to discuss other Skimmer options for the type of product in the well.

The intake screen is obstructed or the coiled hose is kinked.

- Verify that the intake is clean of debris and bio growth
- Check the condition of the coiled hose.

**Problem:** Pump does not operate.

**Solutions:**

Product recovery tank is full.

- Turn the air supply "OFF". Empty the recovery tank, and turn the air supply "ON". The system will automatically resume operation.

Air supply operating pressure is too low.

- Verify that the air supply is providing air (45 psi (3 bar) maximum), and that the speed control on the pump is open enough to operate the pump.

There is a pump malfunction.

- Refer to the pump manual or contact Geotech at 1-800-833-7958.

## Section 6: System Specifications

Application:	2" (5 cm) or larger recovery wells
Maximum Depth to Fluid:	25 feet (7.6 m)
Maximum Pressure:	100 PSIG (6.9 bar)
Air source / Discharge Line:	.375" ID x .5" OD * (Polyethylene or fuel grade Synthetic Rubber) * (if over 100' 30 m), increase pressure to pump)
Level Control Valve to Sensor Tube:	.170" x .25" OD x 50ft. (4.3 mm x 6.4 mm x 15 m)

### 2" Skimmer Assembly

Size:	35.5" L x 1.75" OD (90 cm L x 4.5 cm OD)
Weight:	1.75 lbs. (0.8 kg)
Materials:	304 SS, Polyethylene, PVC, Polypropylene, and Brass Fittings
Effective Travel:	12" (30.5 cm) Standard Travel
Operating Temperature:	32° to 100° F (0° to 38° C)

Minimum fluid level to activate Skimmer = 15" (38 cm)

### 4" Skimmer Assembly

Size:	35.5" L x 3.75" OD (90 cm L x 9.5 cm OD)
Weight:	2.25 lbs. (1 kg)
Materials:	304 SS, Polyethylene, PVC, Polypropylene, and Brass Fittings
Effective Travel:	24" (61 cm) Standard Travel, up to 5 feet (1.5 m) available
Operating Temperature:	32° to 100° F (0° to 38° C)

Minimum fluid level to activate Skimmer = 9" (23 cm)

### 4" Heavy Oil Skimmer Assembly

Size:	40" L x 3.75" OD (102 cm L x 9.5 cm OD)
Weight:	2.5 lbs. (1.1 kg)
Materials:	304 SS, PP, and Brass Fittings
Effective Travel:	24" (61 cm) Standard Travel
Operating Temperature:	32° to 100° F (0° to 38° C)

Minimum fluid level to activate Skimmer = 15" (38 cm)

#### **4" High Temperature, Heavy Oil Skimmer Assembly**

Size:	40" L x 3.75" OD (102 cm L x 9.5 cm OD)
Weight:	2.5 lbs. (1.1 kg)
Materials:	304 SS, HDPE, and Brass Fittings
Effective Travel:	24" (61 cm) Standard Travel
Operating Temperature:	32° to 212° F (0° to 100° C)

Minimum fluid level to activate Skimmer = 15" (38 cm)

## Section 7: System Schematics

### Dual Diaphragm Pump:

See the Manufacturer's Service and Operating Manual, included with pump, for complete details on the Gas Guzzler pump.

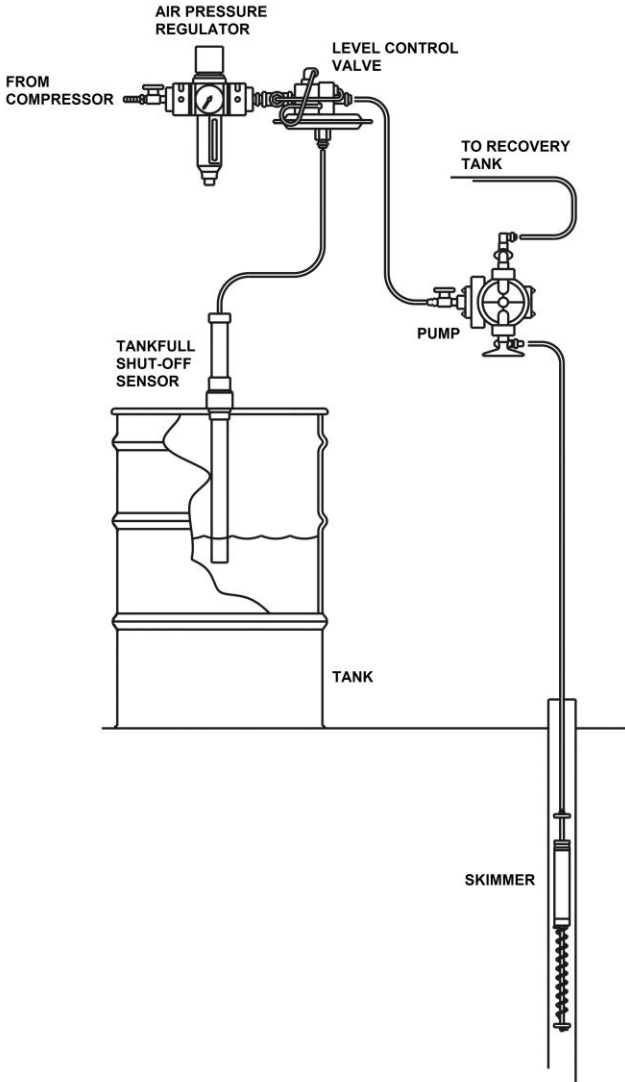
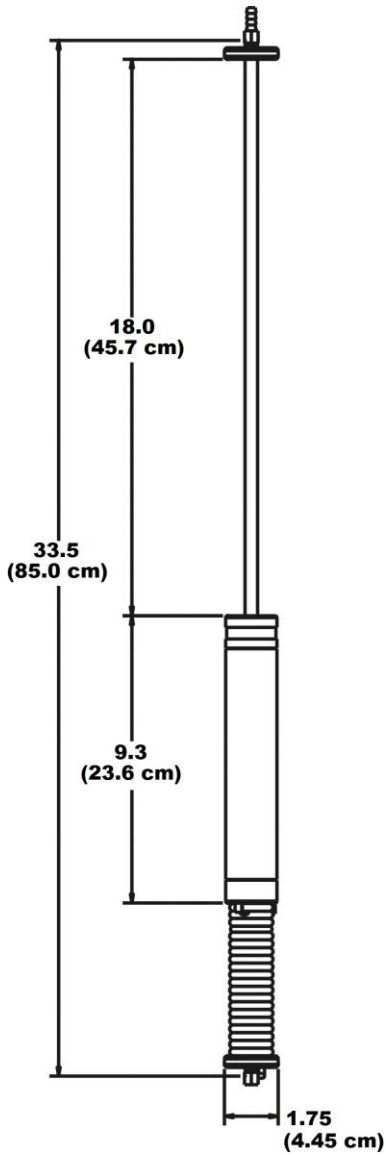
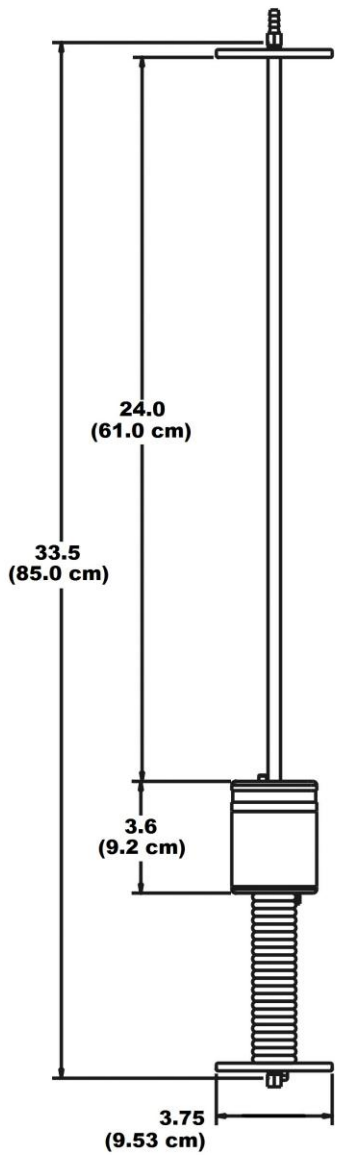


Figure 7-1 – Standard Gas Guzzler Configuration



**2" SKIMMER ASSEMBLY**



**4" SKIMMER ASSEMBLY**

Figure 7-2 - Standard Skimmer Dimensions

Section 8: Replacement Parts Lists

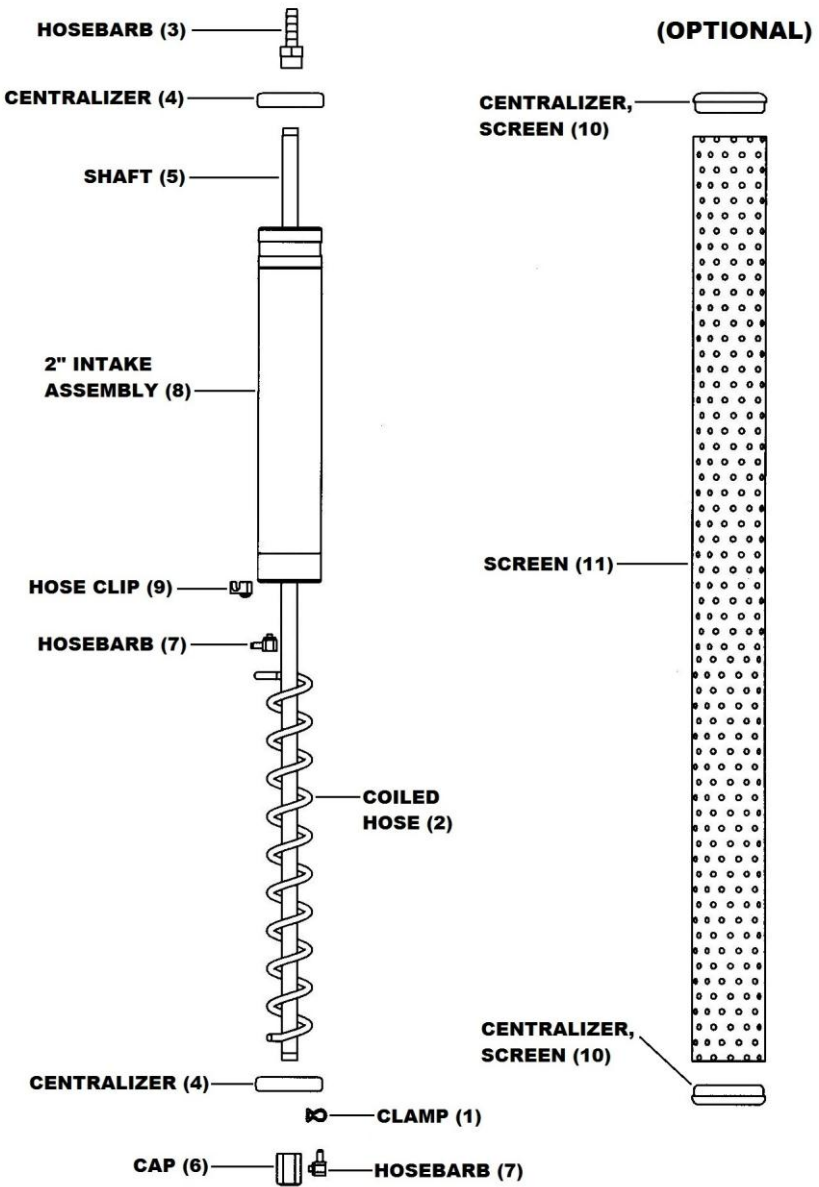


Figure 8-1 – Standard 2" Skimmer Assembly

## 2" Skimmer Assembly – 100 mesh (56600003)

Item #	Parts Description	Parts List
1	CLAMP,SS,STEPLESS EAR,7MM	16600005
2	HOSE,COILED,PR2	26650304
3	HOSEBARB,BRS,3/8"X1/8FPT	16650308
4	CENTRALIZER,PVC,SKIMMER,2"	26650306
5	SHAFT,SS,SKIMMER,33.5",PRC	26600002
6	CAP,BRS,1/8FPTx10-32 90 DEG	16600064
7	HOSEBARB,BRS,1/8"X10-32,90DEG	17500149
8	ASSY,BUOY,SKIMMER,2"100MESH	56650309
9	HOSE CLIP,SKIMMER FLOAT	26650028

## 2" Skimmer Options

8	ASSY,BUOY,SKIMMER,2" 60 MESH	56650312
10	CENTRALIZER,PVC,SCREENED PR2	26600186
11	SCREEN,SS,1.88"ODX32.7" STRAIGHT WELD	26600188

## Additional 2" Skimmers

	HOUSING,RECLAIMER,1.66,SS4,36"	56600064
	ASSY,SKIMMER,2",60 MESH	56600069
	ASSY,SKIMMER,2",60M,W/SCREEN	56600071

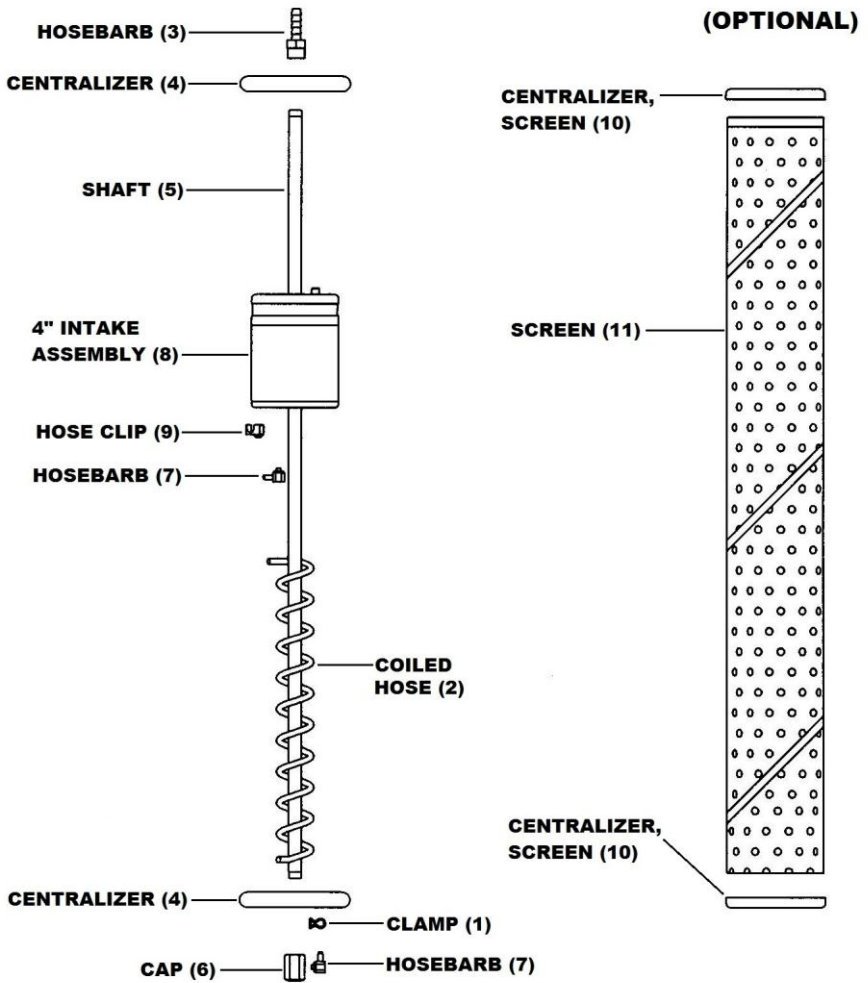


Figure 8-2 – Standard 4" Skimmer Assembly

#### 4" Skimmer Assembly – 100 mesh (56600004)

Item #	Parts Description	Parts List
1	CLAMP,SS,STEPLESS EAR,7MM	16600005
2	HOSE,COILED,PR4	16650312
3	HOSEBARB,BRS,3/8"X1/8FPT	16650308
4	CENTRALIZER,SKIMMER,PR4	16600048
5	SHAFT,SS,SKIMMER,33.5",PRC	26600002
6	CAP,BRS,1/8FPTx10-32 90 DEG	16600064
7	HOSEBARB,BRS,1/8"X10-32,90DEG	17500149
8	ASSY,BUOY,SKIMMER,4"100 MESH	56650310
9	HOSE CLIP,SKIMMER FLOAT	26650028

#### 4" Skimmer Options

8	ASSY,BUOY,SKIMMER,4" 60 MESH	56650313
10	CENTRALIZER,PVC,SCREENED PR4	26600187
11	SCREEN,SS,3.67" DIAM X32.7"	26600189

#### Additional 4" Skimmers

	ASSY,SKIMMER,4",100M,W/SCREEN	56600055
	ASSY,SKIMMER,4",100 MESH,5 FT EXTENDED TRAVEL	56600008
	ASSY,SKIMMER,4",60 MESH	56600070
	ASSY,SKIMMER,4",60M,W/SCREEN	56600072
	ASSY,SKIMMER,4",60 MESH,5 FT EXTENDED TRAVEL	56600073

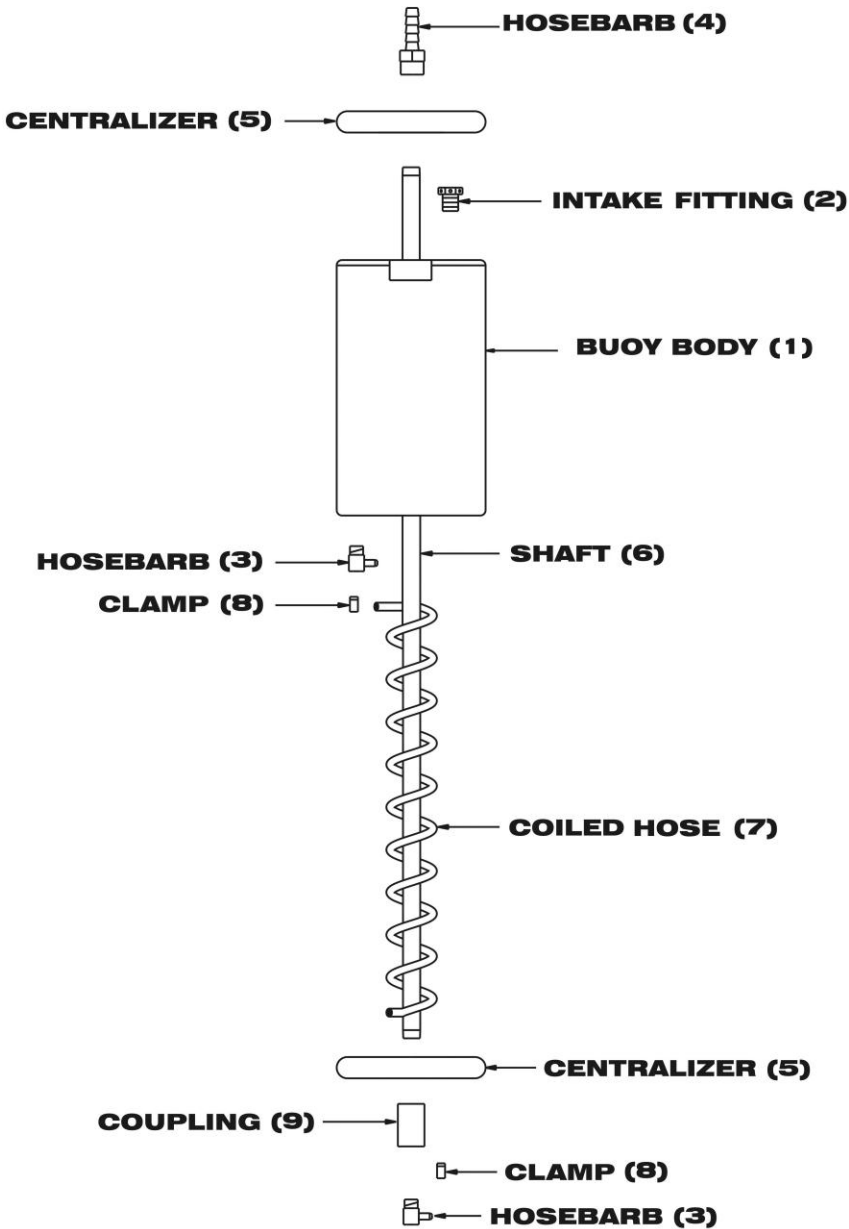


Figure 8-3 – 4" Heavy Oil Skimmer Assembly

#### 4" Heavy Oil Skimmer (56600005)

Item #	Parts Description	Parts List
1	BUOY,PP,HEAVY OIL	26600004
2	FTG,INTAKE,OIL BOUY	26600005
3	HOSEBARB,BRS,.170"X1/8MPT,90D	17500148
4	HOSEBARB,BRS,3/8"X1/8FPT	16650308
5	CENTRALIZER,SKIMMER,PR4	16600048
6	SHAFT,SS,OIL SKIMMER,38"	26600006
7	HOSE,COILED,OIL SKIMMER	26600007
8	CLAMP,SS,DBL PINCH,9/32-23/64"	11200273
9	COUPLING,SS4,.125"	16600006

#### 4" Heavy Oil Skimmer Options

ASSY,BUOY,OIL SKIMMER,4"	56600060
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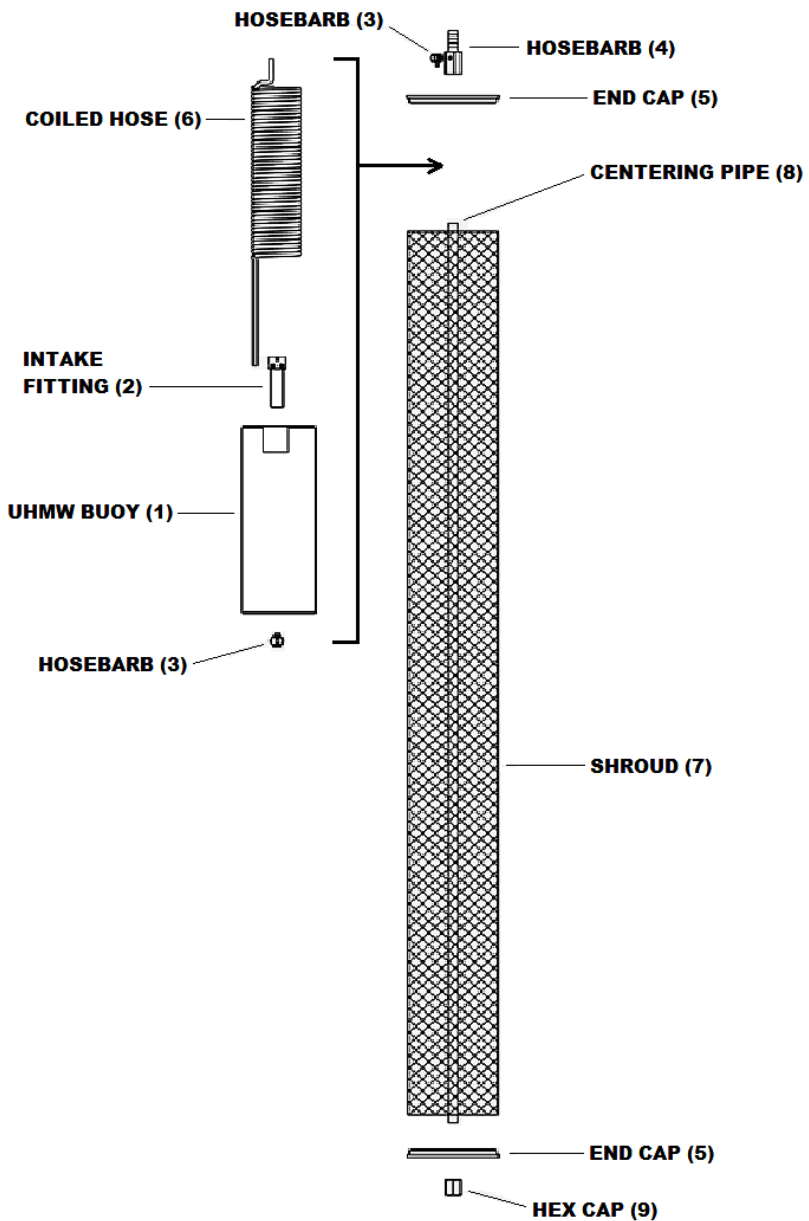


Figure 8-4 – 4" High Temperature, Heavy Oil Skimmer Assembly

## 4", High Temp, Heavy Oil Skimmer (56600012)

<b>Item #</b>	<b>Parts Description</b>	<b>Parts List</b>
1	BUOY,UHMW,HEAVY OIL,HI-TEMP	26600206
2	FITTING,BUOY INTAKE,HTHO	26600207
3	HOSEBARB,BRS,1/8"X10-32,90DEG	17500149
4	HOSEBARB,EXT,1/8M/F NPT,10-32	27200012
5	END CAP,BUOY INTAKE,HTHO	26600209
6	TUBING, COILED, PTFE, HTHO	56600074
7	SKIMMER,SHROUD,4",HTHO	26600210
8	PIPE,CENTERING,SCH80,1/8",HTHO	27500005
9	FITTING,HEX CAP,1/8FPT,HTHO	27200013

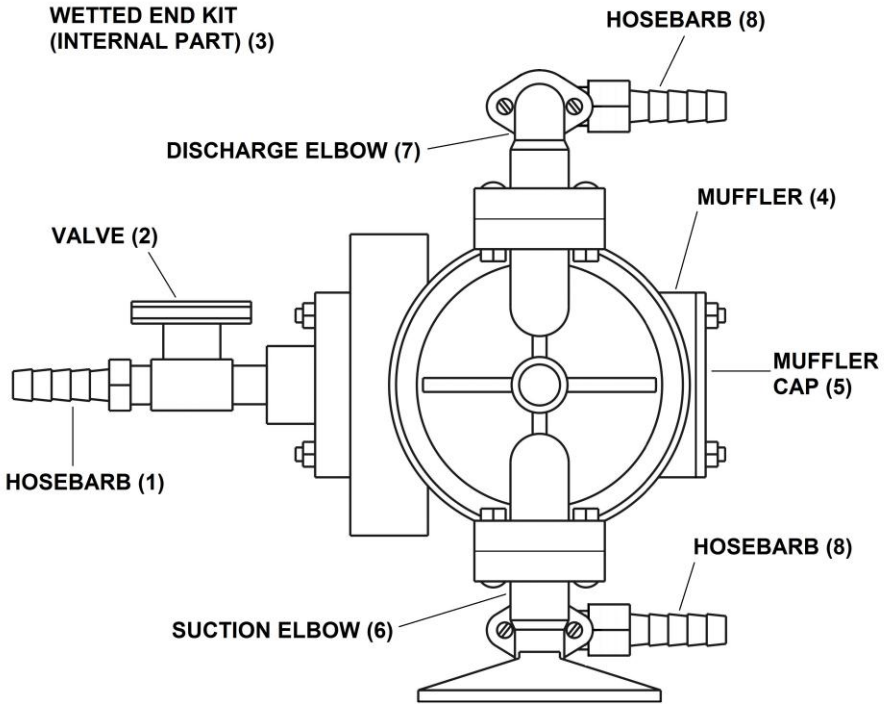


Figure 8-5 – Dual Diaphragm Pump Assembly

### Dual Diaphragm Pump Assembly (56600019)

Item #	Parts Description	Parts List
1	HOSEBARB,BRS,3/8"X1/4MPT	16650323
2	VALVE,1/4MPTX1/4FPT	16600060
3	KIT,WETTED END,PTFE,SANDPIPER PB1/4	16600252
4	MUFFLER,SANDPIPER,PB1/4	16600238
5	CAP,MUFFLER,SANDPIPER,PB1/4	16600239
6	ELBOW,SUCTION,SANDPIPER,PB1/4	16600251
7	ELBOW,DISCHRG,SANDPIPER,PB1/4	16600240
8	HOSEBARB,BRS,1/2FPTX3/8"	16600234

## Gas Guzzler System Accessories

Parts Description	Parts List
MANUAL,INSTRUCTION,GAS GUZZLER SRS	16600169
GAS GUZZLER,W/ 2" SKIMMER	86600014
GAS GUZZLER,W/ 4" OIL SKIMMER	86600012
GAS GUZZLER,W/ 4" SKIMMER	86600013
GAS GUZZLER,W/ 4" HTHO SKIMMER	86600097
ASSY,PUMP,DIAPHRAM,SRS/TFS	56600019
ASSY,FILTER/REGULATOR,SRS W/ SHUTOFF	56600018
VALVE,LEVEL CONTROL	16600045
VALVE,RESET,PNEUMATIC	16600171
VALVE,LVL CNTRL,W/ MAN RESET	16600172
TUBING,RBR,3/8x5/8,100FT RL PRODUCT DISHCARGE	16600072
TUBING,NYL,1/4ODx0.040W,BLK	16600039
CLAMP,SS,STEPLESS EAR,7MM	16600005
CLAMP,SS6,WORM,7/32-5/8"	16600063
MANUAL,TEST KIT,HYDROCARBON VISCOSITY	26030001
TEST KIT,HYDROCARBON VISCOSITY	86020001

## Tankfull Shut-off Sensors and Accessories

ASSY,TUBE,TANKFULL SENSOR,PVC W/ 50FT TUBING	56600061
TUBE,PVC,SENSOR,TANKFULL	26600077
ASSY,TUBE,TANKFULL SENSOR,SS CRS (SPOILER)	56600016
TUBE,SS,SENSOR,TANKFULL	16600074
NIPPLE,PVC80,2"NPTx6"L SENSOR TUBES	16600075
COUPLING,PVC,2"x1.5" PVC FLEXIBLE	16600078

# NOTES

# NOTES

## The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

## Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR  
SERVICE DEPARTMENT AT 1-800-833-7958.

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

## Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.



**Geotech Environmental Equipment, Inc.**

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