



Leaders in Environmental Compliance Products

# SOS-P SPG-P

## Passive Skimmers

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The equipment in this manual is protected under U.S. and foreign patents issued and pending:

U.S. Patents:

Selective Oil Skimmer (SOS)	4,497,370
Specific Gravity Skimmer (SPG)	4,663,037
AutoPump (AP)	5,004,405
Specific Gravity Skimmer (SPG) Product Sensing	5,474,685
Vacuum/Pressure Hydrocarbon Recovery System	4,761,225
SPG PSR technology	5,474,685
AP-2	5,641,272
Genie System	5,704,772

Canada Patent:

Specific Gravity Skimmer (SPG)	1,239,868
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# Introduction

Welcome to QED Environmental Systems' Passive Skimmer manual.

To ensure the best operator safety and system performance, it is strongly recommended that the operators read this entire manual before using the system.

This manual reflects our many years of experience and includes comments and suggestions from our sales and service personnel and most importantly from our customers. The chapters, their contents and sequence were designed with you, the user and installer, in mind. We wrote this manual so it can be easily understood by users who may not be familiar with systems of this type or are using a *QED* system for the first time.

## **Safety**

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Safety has been a cornerstone of our design which has been proven out in building and shipping systems throughout the world. Our high level of performance is achieved by using quality components, building in redundancies or backup systems, and not compromising our commitment to quality manufacturing. The net result is the highest quality and safest groundwater remediation equipment on the market. We feel so strongly about safety, based on years of working with the hydrocarbon industry, that it is the first section in all of our manuals.

## How to Contact *QED*

If for any reason you are unable to find what you need in this manual please feel free to contact the *QED* Service Department at any time. We encourage you to use following communication methods to reach us at any time:

**Service Department**  
**QED Environmental Systems**  
**[www.qedenv.com](http://www.qedenv.com)**

**Oakland Service Center**  
1133 Seventh Street  
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(510) 444-6789 – Fax

**Ann Arbor Service Center**  
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[info@qedenv.com](mailto:info@qedenv.com) — E-mail

***QED* can be reached 24 hours a day**

We welcome your comments and encourage your feedback regarding anything in this manual and the equipment you have on-site.

Thank you again for specifying *QED* remediation equipment.

# Chapter 1: Safety

Safety has been a prime consideration when designing the Passive Skimmer System. Safety guidelines are provided in this manual, and the Passive Skimmer System safety features are listed below. Please do not attempt to circumvent the safety features of this system.

We have also listed some possible hazards involved when applying this system to site remediation. Nothing will protect you as much as understanding the system, the site at which it is being used, and the careful handling of all the equipment and fluids. If you have any questions, please contact the *QED* Service Department for guidance.

As you read through this manual, you will encounter three kinds of warnings. The following examples indicate how they appear and lists their respective purposes.

- Note:** Highlights information of interest.  
**Caution:** Highlights ways to avoid damaging equipment.  
**WARNING:** Highlights personal safety issues.

## **A Partial List of Safety Procedures**

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These safety procedures should be followed at all times when operating QED equipment on or off site, and should be considered as warnings:

- Wear safety goggles when working with the Passive Skimmer System to protect eyes from any splashing.
- Wear chemically resistant rubber gloves, boots, and coveralls when handling the Passive Skimmer to avoid skin contact with the fluid being recovered..

- Point all hoses away from personnel and equipment when connecting or disconnecting.
- **Refer to Chapter # 3:** Equipment for a list of parts and hoses supplied with the Passive Skimmer System.

*The Passive Skimmer System minimizes the potential for accidents with the following safeguards:*

## **Fire and Explosion Protection**

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All QED underground fluid extraction systems are either passive or pneumatically driven. This offers many fire and explosion protection features.


- Also, all standard quick-connects are brass, which helps to eliminate sparking hazard.

## **Spill Protection**

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On-site spills cannot always be prevented. *QED* equipment is designed to take into consideration such unpredictable occurrences that may happen despite strict adherence to standardized safety practices.

- Down well quick-connects have locking features to prevent accidental disconnections.
- If using a system that pumps hydrocarbon (e.g. upgraded Passive Skimmer), it is recommended to use reinforced product hose to reduce the possibility of hose leakage or kinking.



## Chapter 2: Overview

Included with the Passive Skimmer Systems are the following:

- **Passive Skimmer** - SOS-P or SPG-P; 4” or 2” well size
- **Reservoir** - Capacity selected by customer
- **Well Cap** - 4” or 2” well size to match the skimmer size
- **Support Line** - 25 feet of 1/4” polypropylene support rope

### **Method of Operation**

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The Passive Skimmer System is designed to recover free-floating hydrocarbon from any depth. There are two types of Passive Skimmers: Selective Oil Skimmers (SOS) and Specific Gravity Skimmers (SPG). The floating intake head on the skimmer follows water table fluctuations.

Hydrocarbon first enters the skimmer through the floating intake head, and then travels down through a flexible, yellow tube, and into a see-through reservoir.

To empty the skimmer, pull it to the surface and drain the reservoir through the valve at its base.

All QED skimmers can be upgraded to fully automatic, active Product Only Recovery Systems.

### **Alteration of the System**

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Do not change or modify the system without the expressed written approval of QED. To meet the many different needs of users, additional sensors can only be added to the system by QED.

## Optional Systems/Accessories

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The following upgrade options are available from QED. Contact your regional office for more information.

- **Reservoir Canisters** - The storage capacity of Passive Skimmers can be increased or decreased to suit the site conditions. (See **Appendix A**)
- **Fully Automatic Product Recovery Upgrade** - Should site needs require, all QED Passive Skimmers have the unique ability to be upgraded to fully automatic product only recovery systems. Using a simple field-installed adapter, these skimmers can recover product at rates over 500 Gallons Per Day (GPD). (Rates vary, depending on pump selection and site specifications.) (See **Appendix A**).



## Chapter 3: Equipment

### Equipment List

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1. Passive Skimmer – SOS-P or SPG-P; 4-inch or 2-inch well size
2. Reservoir – Capacity selected by customer
3. Well Cap – 4-inch or 2-inch well size to match the skimmer size
4. Support Line – 25 feet of 1/4-inch polypropylene support rope

### Component Materials

Stainless Steel, UHMWPE, Aluminum, Acetal, PVC

Many other materials are available for aggressive applications. Please consult with QED for special applications.

Available materials for reservoirs – Opaque white PVC, Clear PVC, and 304 Stainless Steel.

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## Passive Skimmers with Reservoirs

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The skimmers can be operated at any depth, since their principle of operation is gravity fill and manual emptying. Minimum well inside diameters for the two sizes of skimmers presented in this manual are 2.0 and 4.0 inches respectively.

### Passive Selective Oil Skimmer (SOS-P)

The SOS-P recovers free-floating hydrocarbon down to a sheen ( $\leq 0.01$  inches). Hydrocarbon enters the skimmer through the floating intake's outer debris screen and then enters the inner oleophilic hydrophobic screen. (See **Figure 1**, **Figure 2**, **Figure 3**, and **Figure 4**)

The SOS-P uses a hydrophobic-oleophilic (selective) screen which repels water, but allows the passage of fuels. Product that enters through the selective screen is gravity-drawn and removed from the well.

The SOS-P can remove the product layer down to a "sheen" provided the product is not too thick or viscous. The product should be about SAE 20 weight or less for good performance with the SOS-P.

The SOS-P should not be used if the product contains many particulates, due to maintenance requirements. If the product contains a lot of suspended solids or if biological growth is known to be very aggressive, the skimmer will require more frequent service or cleaning of the selective screen itself.

The SOS-P is available in two sizes (2- and 4-inch diameter models). Because of its inner screen membrane, the skimmer allows fuel to enter but repels water. If the SOS-P is submerged, the hydrostatic water pressure will overcome the repulsion ability of the screen and water will enter the skimmer. If this happens, dry the screen or wash off the water in the recovered hydrocarbon and reinstall the green inner screen into the skimmer.

There are two screen sizes available, 55 and 110 mesh. The 110 mesh is standard and shipped with the SOS-P unless the 55 mesh is requested. The 55 mesh screen is used when more viscous oils (e.g., No. 2 fuel oil) must be recovered.

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#### Caution

Do not abrade or scrub the screen, this could destroy its selective properties. (See **Chapter 6: Maintenance, page 25**)

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## Passive Specific Gravity Skimmer (SPG-P)

The SPG-P recovers free-floating hydrocarbon while maintaining a thin product lens. Hydrocarbon enters the skimmer through the floating intake's product inlet. (See **Figure 5, Figure 6, Figure 7, and Figure 8**)

The SPG-P uses the principle of density to distinguish between water and product. The floating intake has a specific gravity of 0.94 which makes it float in water, but sink in most products.

Because product intake is on top of the float, it takes in only product. By definition, however, the SPG-P cannot remove all of the product, typically resulting in 1.5 to 2 inches of product being left in the well at all times.

The amount of fuel or oil left in the well depends mainly on the specific gravity of the product. As the specific gravity of the product increases or approaches the gravity of the skimmer float, more product is left in the well. Therefore, the SPG-P is generally not used for skimming product whose gravity is greater than 0.85\*.

The SPG-P can be factory-modified to remove heavier products and emulsions. The primary application of the SPG-P, compared to the SOS-P, is for higher volume recovery of product or for more viscous or dirty products. (See **Figure 5, Figure 6, Figure 7, and Figure 8**)

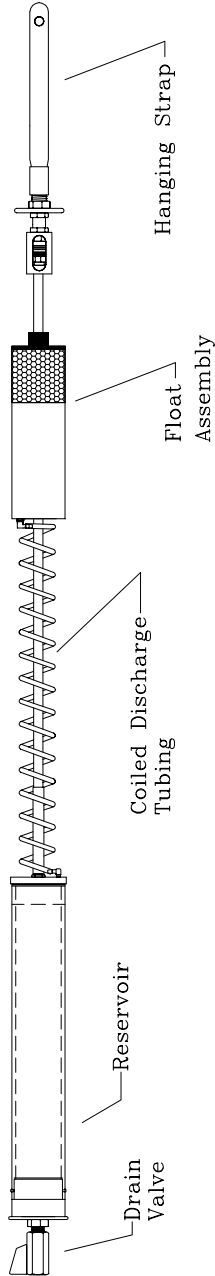
\* The SPG-P usually requires 1.5 to 2 inches of fuel in the well to begin recovering. The SPG-4P, though, has a variable inlet that may allow product recovery to a lower level. (See **Figure 7**)

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## Well Support System

To safely support the passive skimmer, a **well cap, eyebolt, polypropylene support rope** and a **quick link** on the skimmer's hanging strap are provided. See **page 19** for a description of how to connect the well support.

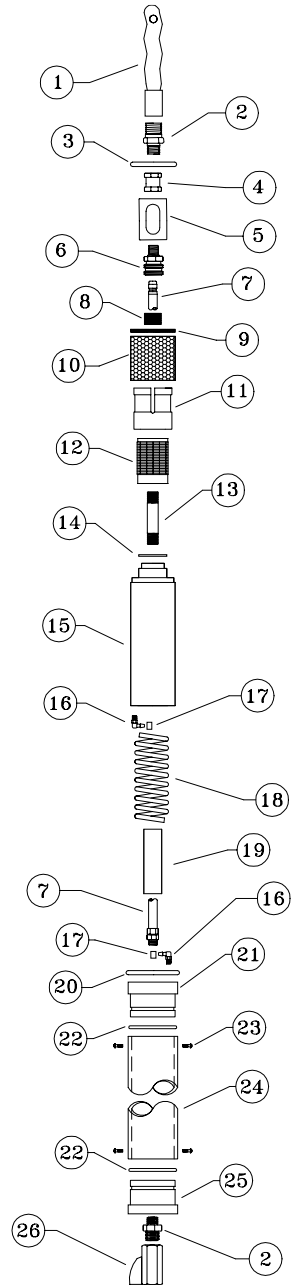
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PART #	301077	301078	301079	301080
SPECIFICATIONS	SOS-2P/300	SOS-2P/450	SOS-2P/600	SOS-2P/900
Minimum Fluid Depth Required	26.5" (67 cm)	32.5" (83 cm)	38.5" (98 cm)	50.5" (128 cm)
Effective Skimming Travel	13.5" (34 cm)	13.5" (34 cm)	13.5" (34 cm)	13.5" (34 cm)
Reservoir Capacity	300 cc (10 fl oz)	450 cc (15 fl oz)	600 cc (20 fl oz)	900 cc (30 fl oz)
Reservoir Length	14" (36 cm)	20" (51 cm)	26" (66 cm)	38" (97 cm)
Total Length	53" (135 cm)	59" (150 cm)	65" (165 cm)	76" (193 cm)
Outside Diameter	1.9" (5 cm)	1.9" (5 cm)	1.9" (5 cm)	1.9" (5 cm)
Weight	3 lb. (1.4 kg)	3 lb. (1.4 kg)	5 lb. (2.3 kg)	6 lb. (2.8 kg)

Figure 1 - Two-Inch Passive Selective Oil Skimmer (SOS-2P) Specifications

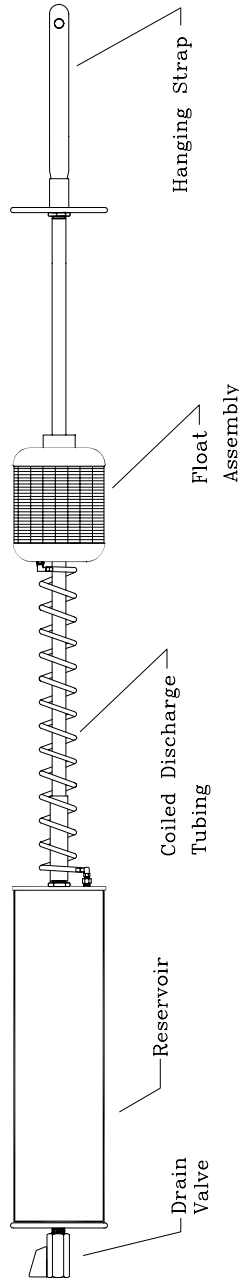
PARTS LIST			
NO.	PART NO.	DESCRIPTION	QTY.
1	300074	1/4" Hanging Strap Assy.	1
2	200865	1/4" x 1/8" Brass Nipple	2
3	200318	SOS-2/SPG-2 Upper Disk	1
4	200927	1/8" Brass Coupling	1
5	200097	SOS-2/SOS-4 QC Shield	1
6	200668	1-ST S.S. Socket	1
7	300160	SOS-2 STD Guide Rod Assy.	1
8	200484	SOS-2P Brass Cap Nut	1
9	201673	SOS-2 Float Cap	1
10	200115	SOS-2 Debris Screen	1
11	200116	SOS-2 Float Collar	1
12	204252	55 Mesh Screen	1
	204250	110 Mesh Screen	
13	200113	SOS-2 Post	1
14	201736	SOS-2 Gasket	1
15	300415	SOS-2 Float Base Assy	1
16	200867	1/8" x 10-32 HB elbow	2
17	200446	Hose Clamp Brass 1/4"	2
18	205537	SOS-2P/SPG-2P Coiled Tube	1
19	200120	SOS-2 Standoff	1
20	200124	SOS-2/SPG-2 Lower Disk	1
21	200192	Brass Reservoir Cap Model: SOS-2P/600 : SOS-2P/900	1
	200210	PVC Reservoir Cap Model: SOS-2P/300 : SOS-2P/450	
22	200868	2" Reservoir O-Ring	2
23	200869	Reservoir S.S. Screw	6
24	204121	Casing: SOS-2P/300	1
	204122	Casing: SOS-2P/450	
	204123	Casing: SOS-2P/600	
	204124	Casing: SOS-2P/900	
25	200193	2" Reservoir Bott. Cap	1
26	200214	Reservoir Drain Valve	1



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**Figure 2 - Two-Inch Passive Selective Oil Skimmer (SOS-2P) Part List**

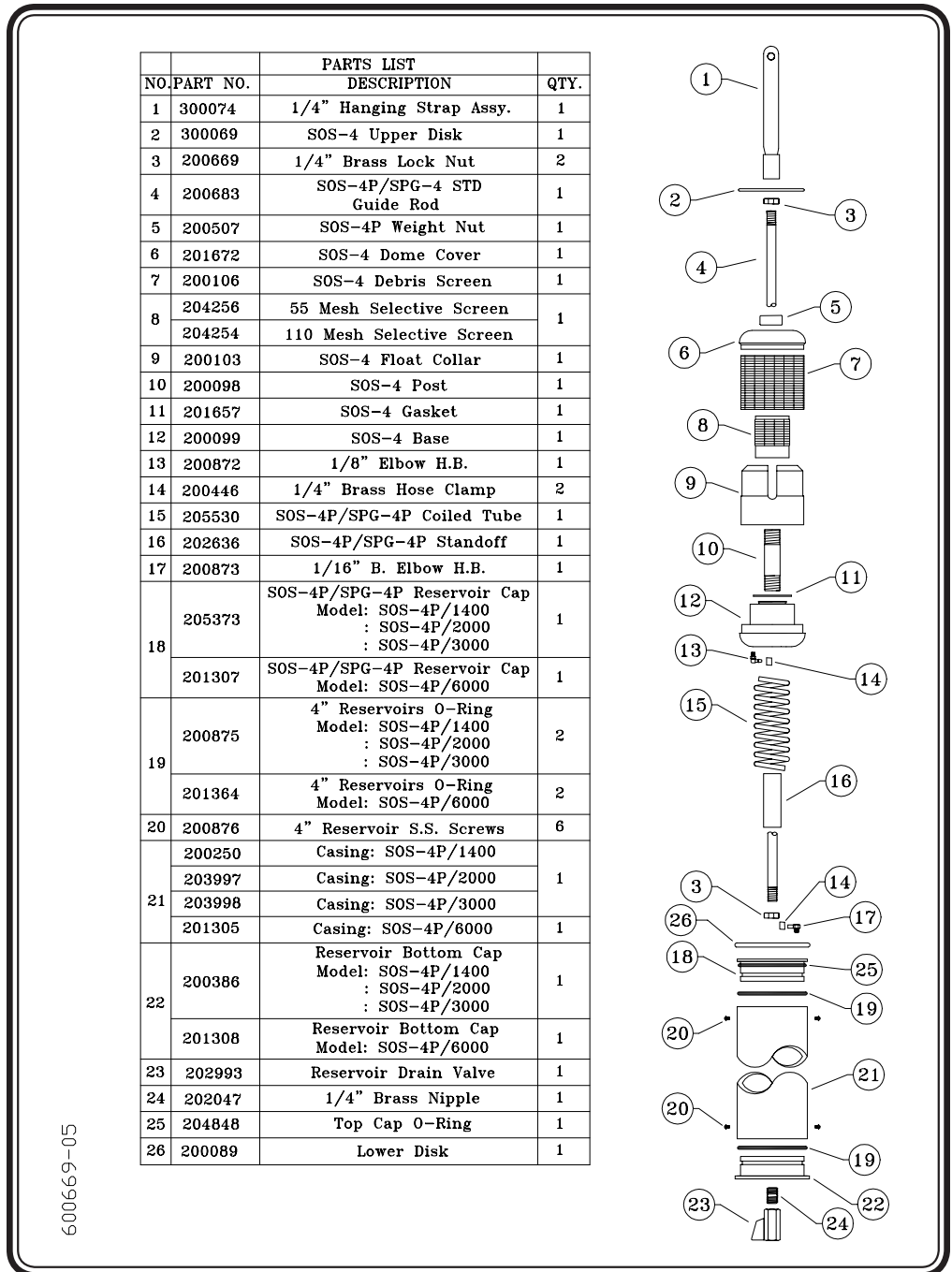
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PART #	301030	301031	301032	301033
SPECIFICATIONS	SOS-4P/1400	SOS-4P/2000	SOS-4P/3000	SOS-4P/6000 *
Minimum Fluid Depth Required	24" (61 cm)	27" (69 cm)	36" (91 cm)	53" (135 cm)
Effective Skimming Travel	19.5" (50 cm)	19.5" (50 cm)	19.5" (50 cm)	19.5" (50 cm)
Reservoir Capacity	1400 cc (47 fl oz)	2000 cc (65 fl oz)	3000 cc (100 fl oz)	6000 cc (200 fl oz)
Reservoir Length	15" (38 cm)	18" (46 cm)	27" (69 cm)	44" (112 cm)
Total Length	56" (142 cm)	69" (175 cm)	78" (198 cm)	95" (262 cm)
Outside Diameter	3.8" (10 cm)	3.8" (10 cm)	3.8" (10 cm)	3.8" (10 cm)
Weight	7 lb. (3.2 kg)	8 lb. (3.7 kg)	11 lb. (5 kg)	24 lb. (10.9 kg)

\* S.S. Reservoir Only

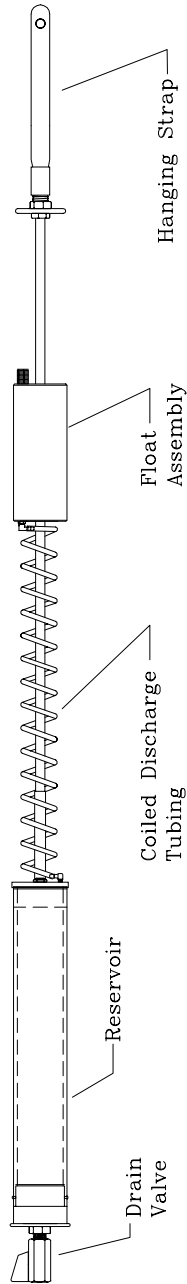
Figure 3 - Four-Inch Passive Selective Oil Skimmer (SOS-4P) Specifications



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**Figure 4 - Four-Inch Passive Selective Oil Skimmer (SOS-4P) Parts List**

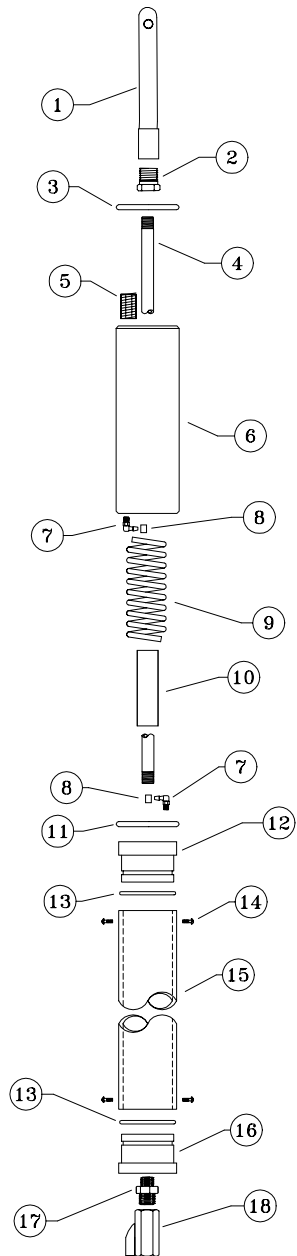
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PART #	301073	301074	301075	301076
SPECIFICATIONS	SPG-2P/300	SPG-2P/450	SPG-2P/600	SPG-2P/900
Minimum Fluid Depth Required	26" (66 cm)	32" (81 cm)	38" (97 cm)	50" (127 cm)
Effective Skimming Travel	15" (38 cm)	15" (38 cm)	15" (38 cm)	15" (38 cm)
Reservoir Capacity	300 cc (10 fl oz)	450 cc (15 fl oz)	600 cc (20 fl oz)	900 cc (30 fl oz)
Reservoir Length	14" (36 cm)	20" (51 cm)	26" (66 cm)	38" (97 cm)
Total Length	51" (130 cm)	57" (145 cm)	63" (160 cm)	74" (188 cm)
Outside Diameter	1.9" (5 cm)	1.9" (5 cm)	1.9" (5 cm)	1.9" (5 cm)
Weight	3 lb. (1.4 kg)	3 lb. (1.4 kg)	5 lb. (2.3 kg)	6 lb. (2.8 kg)

Figure 5 - Two-Inch Passive Specific Gravity Skimmer (SPG-2P) Specifications

PARTS LIST			
NO.	PART NO.	DESCRIPTION	QTY.
1	300074	1/4" Hanging Strap Assy.	1
2	204840	1/4" x 1/8" Brass Bushing	1
3	200318	SOS-2/SPG-2 Upper disk	1
4	200322	SPG-2SR Guide Rod	1
5	200687	SPG-2MR/SPG-2SR Screen	1
6	200320	SPG-2SR Float	1
7	200867	1/8" Elbow H.B.	2
8	200446	1/4" Brass Hose Clamp	2
9	205537	SOS-2P/SPG-2P Coiled Tube	1
10	200505	SPG-2SR Standoff	1
11	200124	SPG-2SR Lower Disk	1
12	200192	Brass Reservoir Cap Model: SPG-2P/600 : SPG-2P/900	1
	200210	PVC Reservoir Cap Model: SPG-2P/300 : SPG-2P/450	
13	200868	2" Reservoir O-Ring	2
14	200869	2" Reservoir S.S. Screws	6
15	204121	Casing, Model: 300 cc	1
	204122	Casing, Model: 450 cc	
	204123	Casing, Model: 600 cc	
	204124	Casing, Model: 900 cc	
16	200193	2" Reservoir Bott. Cap	1
17	200865	1/4" x 1/8" Brass Nipple	1
18	200214	Reservoir Drain Valve	1



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Figure 6 - Two-Inch Passive Specific Gravity Skimmer (SPG-2P) Parts List

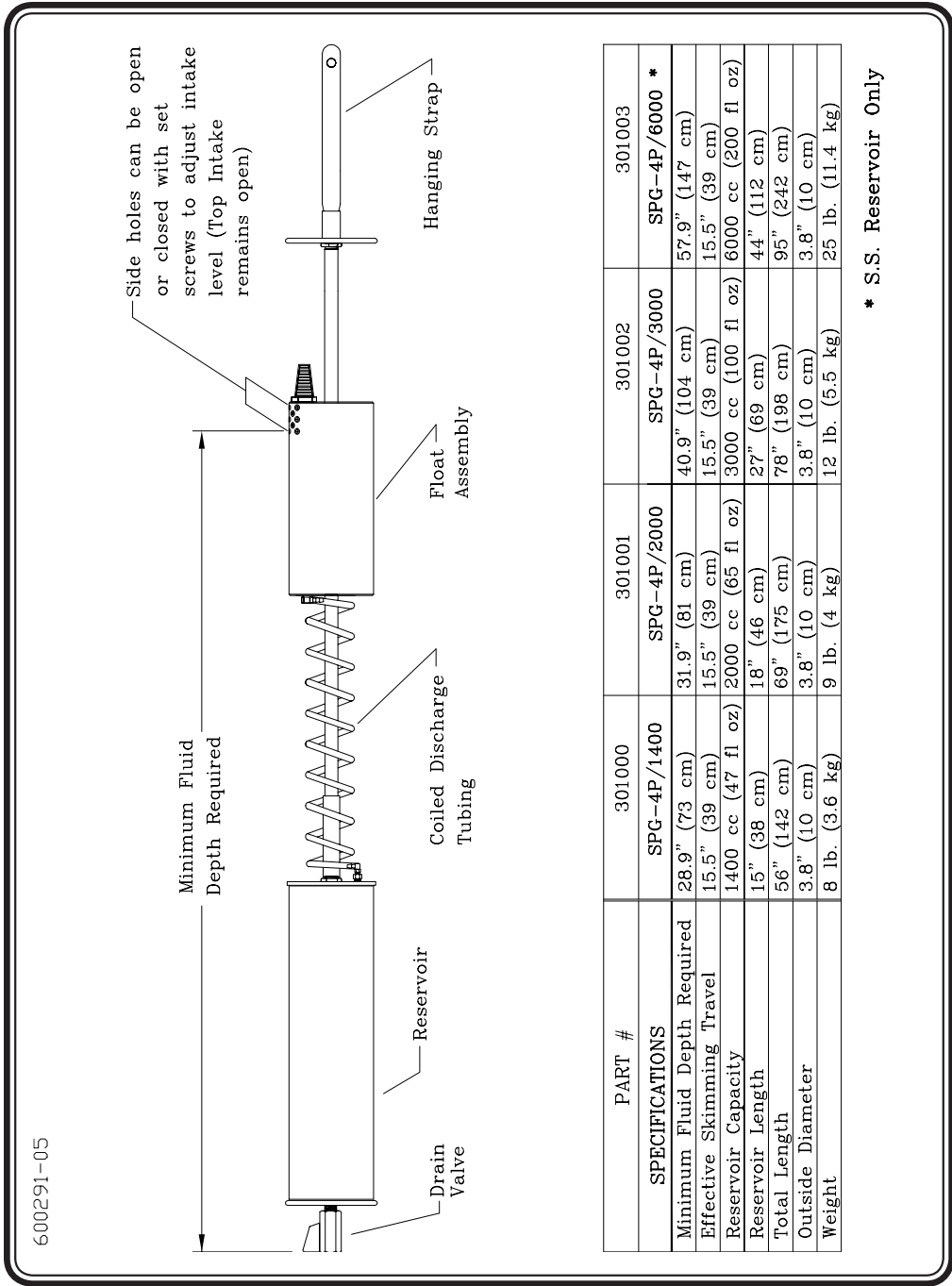


Figure 7 - Four-Inch Passive Specific Gravity Skimmer (SPG-4P) Specifications

PARTS LIST			
NO.	PART NO.	DESCRIPTION	QTY.
1	300074	1/4" Hanging Strap Assy.	1
2	200089	SOS-4/SPG-4 Disk	2
3	200669	1/4" Brass Lock Nut	2
4	200683	SOS-4P/SPG-4 STD Guide Rod	1
5	301391	SPG-4 V.I. Float Assy.	1
6	201433	1/8" x 1/4" Elbow H.B.	1
7	200446	Hose Clamp Brass 1/4"	2
8	205530	SOS-4P/SPG-4P Coiled Tube	1
9	205574	SOS-4P/SPG-4P Standoff	1
10	200873	1/16" B. Elbow H.B.	1
11	200385	SOS-4P/SPG-4P Reservoir Cap Model: SOS-4P/1400	1
	205373	SOS-4P/SPG-4P Reservoir Cap Model: SOS-4P/2000 Model: SOS-4P/3000	
	201307	SOS-4P/SPG-4P Reservoir Cap Model: SOS-4P/6000	
12	200875	4" Reservoirs O-Ring Model: SOS-4P/1400 : SOS-4P/2000 : SOS-4P/3000	2
	201364	4" Reservoirs O-Ring Model: SOS-4P/6000	
13	200876	4" Reservoir S.S. Screws	6
14	200250	Casing: SOS-4P/1400	1
	203997	Casing: SOS-4P/2000	
	203998	Casing: SOS-4P/3000	
	201305	Casing: SOS-4P/6000	
15	200386	Reservoir Bottom Cap Model: SOS-4P/1400 : SOS-4P/2000 : SOS-4P/3000	1
	201308	Reservoir Bottom Cap Model: SOS-4P/6000	
16	202047	1/4" Brass Nipple	1
17	202993	Reservoir Drain Valve	1
18	204848	Top Cap O-Ring	1

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**Figure 8 - Four-Inch Passive Specific Gravity Skimmer (SPG-4P) Part List**




## Chapter 4: Installation

### **Passive Skimmer and Well Support Installation**

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This section describes the installation of the passive skimmer and well support system.

- 
- STEP 1 -** Remove the cable tie below the float. The cable tie prevents the float from moving during shipping.
  - STEP 2 -** Attach the support rope to the hanging strap located on the top of the skimmer. **(See Figure 9)**
  - STEP 3 -** Measure the thickness of the free product in the well. **(See Figure 9 and Figure 10)**
  - STEP 4 -** Install the midpoint of the skimmer's float range 20 percent into the product lens. This can be approximated to plus or minus 3 inches. **(See Figure 10)**
  - STEP 5 -** Support the skimmer in the well by tying the support rope to the eyebolt of the well cap.

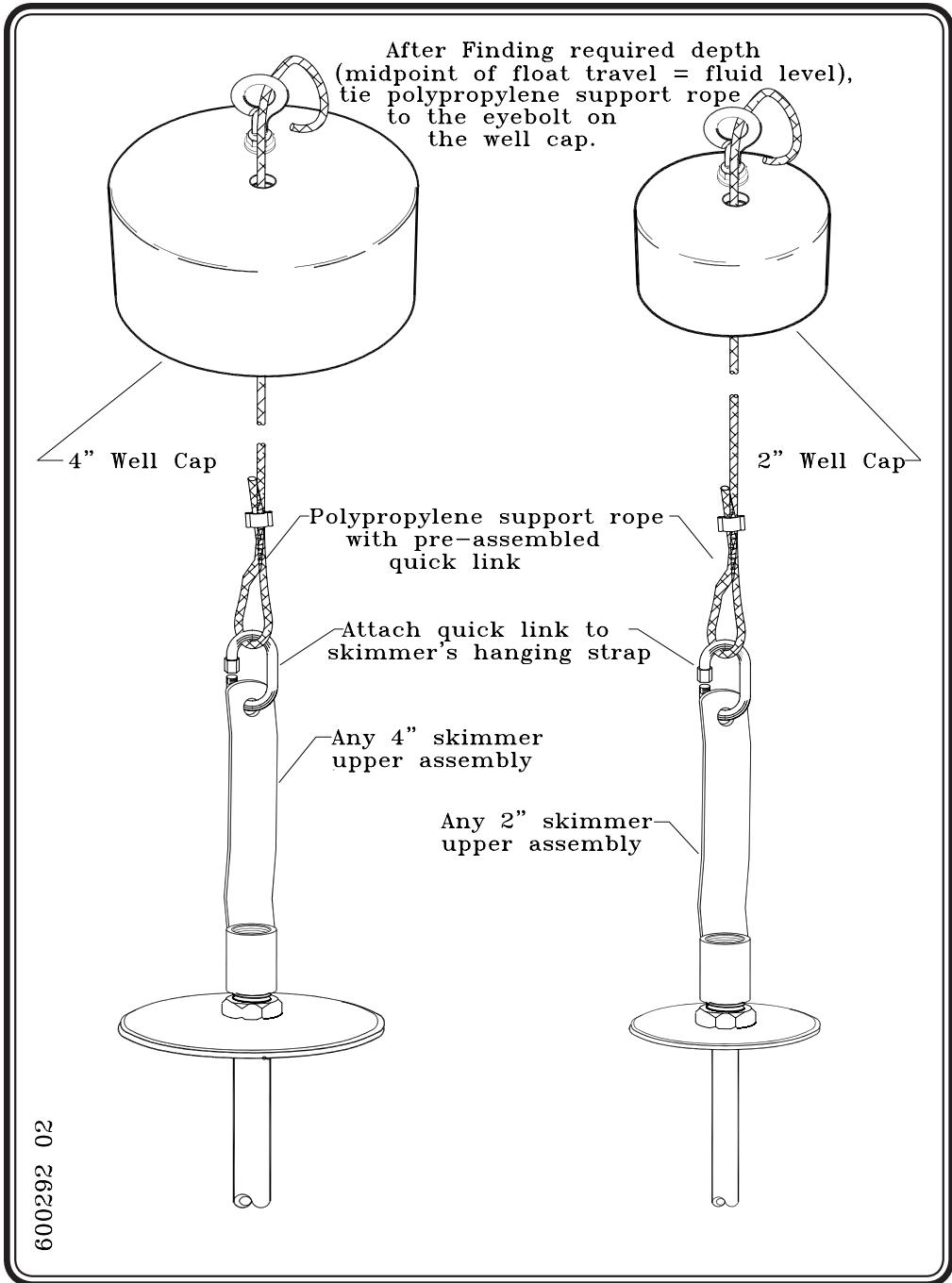
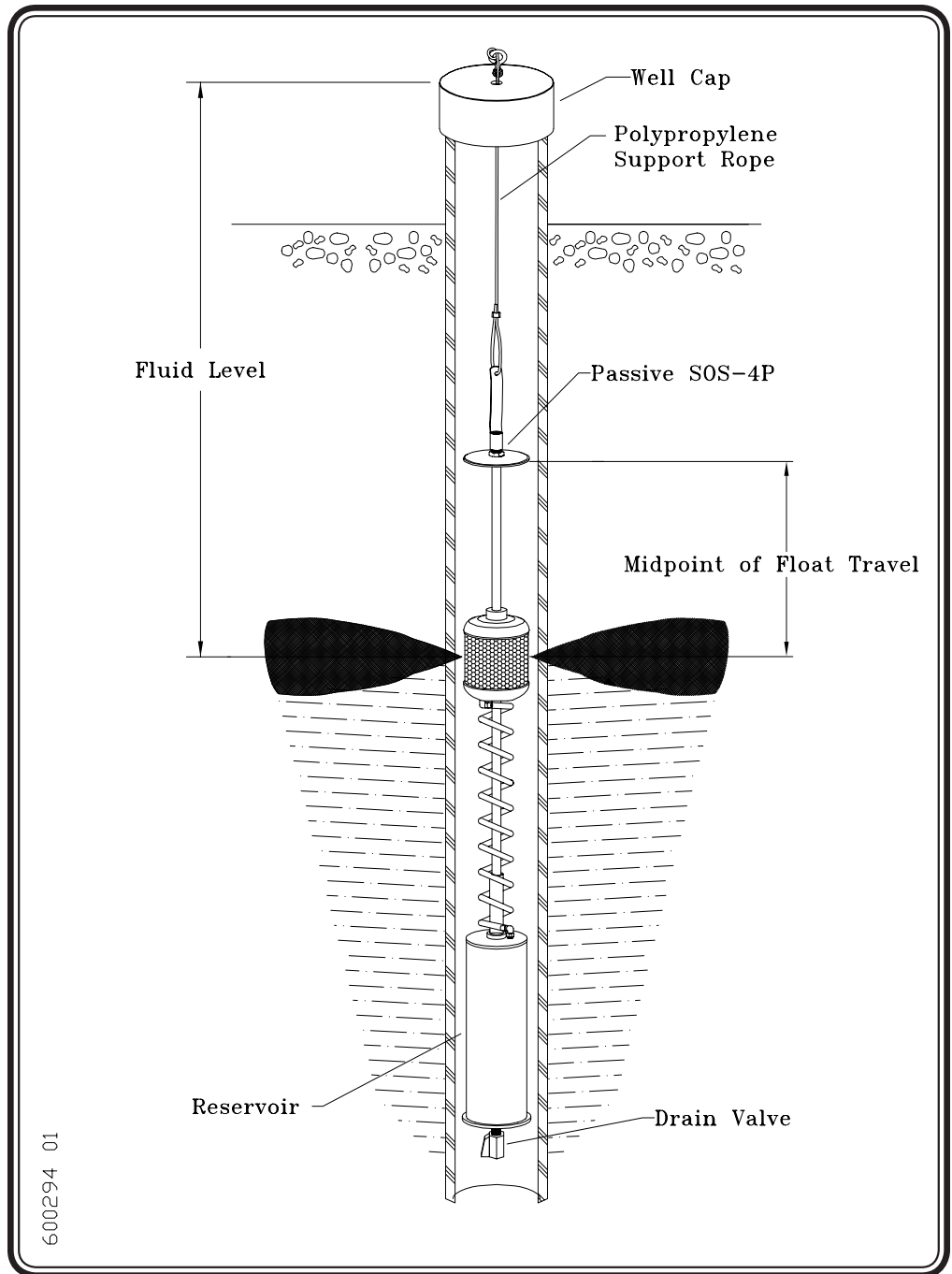


Figure 9 - Well Support System



**Figure 10 - Four-Inch Passive Selective Oil Skimmer (SOS-4P) Down Well**





## Chapter 5: Start Up and Operation

### **Start Up Checklist**

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In normal operation, the Passive Skimmer System requires little attention. Conduct a routine inspection of the product recovery tank to record the rate of product recovery and to ensure that water is not entering the skimmer.

Before regulating the air pressure to the desired operating pressure, ensure the following exist:

1. Safety equipment is being used by all personnel.
2. All hoses are connected.
4. All out-of-well air and fluid valves are in their correct positions.

### **Observation of System Operation**


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1. Check for water in the reservoir if High Water/Tidal conditions exist. Raise or lower the skimmer if needed.
2. If a Passive Skimmer is left in a well for a long period of time, submergence of the intake may result, requiring skimmer service. Water that enters the system can cause contamination, requiring the SOS-P skimmer's selective screen to be cleaned.

## Emptying the Passive Skimmer

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To empty the passive skimmer follow these steps:

- 
- STEP 1 -** Pull the unit to the surface and drain the reservoir using the drain valve at the base of the reservoir.
  - STEP 2 -** Lower the skimmer into the well until the midpoint of the float travel is located at the fluid level in the well.
  - STEP 3 -** Reassemble the well support to hang the skimmer in the well to collect floating hydrocarbons.
  - STEP 4 -** A well cap is included with the skimmer to cover the well and provide an attachment for the support rope.

## Special Operating Conditions

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Conditions may require adjustment or adaptations to the equipment. Below is a list of some of these conditions, their possible effects and possible solutions. (And as always, please contact *QED* for detailed assistance if needed.)

1. If a high water level condition persists for several days, indicating a change in the local water table, you may need to raise the skimmer so that product removal can again take place.
2. If the recovery well experiences a sudden influx of water, due to rain or snow melt for example, the skimmer head may be submerged in water rather than product, due to its limited travel.
3. If the skimmer is an SOS type, and it has been submerged, check the reservoir to confirm there is no water.

## Chapter 6: Maintenance

### Maintenance Table

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Checking on the skimmer is recommended at least once every two weeks. Some site environments may demand more frequent service. The following table shows the recommended minimum maintenance schedule for the Passive Skimmer System.

<b>Recovery Well Checks</b>	<b>Weekly</b>	<b>Biweekly</b>
-Passive SPG-P Skimmer		X
-Passive SOS-P Skimmer	X	

The following sections describe the maintenance activities in detail

### Cleaning Passive Skimmers

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#### Passive Specific Gravity Skimmer

The **Passive Specific Gravity Skimmer** can be hosed off, scrubbed or steam cleaned without damage. This passive skimmer usually can be left for weeks without servicing, depending on the water iron content. Normal service includes ensuring the skimmer travels freely, passes fluid easily through itself and its flexible tubing, and that no leaks exist.

## Passive Selective Oil Skimmer


The **Passive Selective Oil Skimmer** requires care in cleaning and should be checked about once per week. The selective screen should **not** be scrubbed because the water-repellant coating may be damaged. If the selective screen is passing water, the skimmer is easily taken apart. The recommended way to clean the screen avoids brushing, rubbing or abrasion.


Soft rubber gloves should be used to avoid accidental screen abrasion by finger nails. A brief low pressure air blast, from the inside of the screen out, is also recommended. Be careful to blow fluids away from you and others around you and do not breath the fumes.

**Caution:**

Do not use soap on the selective screen unless it is thoroughly rinsed and dried after doing so.

Follow these instructions to clean the Passive Selective Oil Skimmer.

- 
- STEP 1 -** Remove the upper disk assembly. (See **Figure 2 on page 11, and Figure 4 on page 13**)
  - STEP 2 -** Unscrew the cap nut from the top of the skimmer float.
  - STEP 3 -** Remove the cap from the top of the skimmer float.
  - STEP 4 -** Remove the float and outer debris screen from the skimmer.
  - STEP 5 -** Remove the selective (green) screen from the skimmer taking care not to scratch the green coating.
  - STEP 6 -** Remove the black gasket from the skimmer and inspect it for damage.
  - STEP 7 -** Put on fuel resistant gloves, then gently shake the selective screen in the recovered product. Leave the screen to soak if necessary.
  - STEP 8 -** Wash off any biological growth from the rest of the skimmer.

- 
- STEP 9 -** Replace the black gasket in the groove of the skimmer.
  - STEP 10 -** Replace the selective screen making sure it rests on the gasket and that the wide end of the screen faces up.
  - STEP 11 -** Replace the float and outer debris screen on the skimmer making sure the open end of the float's fluid slot faces up.
  - STEP 12 -** Replace the cap on the skimmer float.
  - STEP 13 -** Screw the cap nut on the skimmer float **only** finger tight.
  - STEP 14 -** Replace the upper disk assembly.
  - STEP 15 -** Wash off any biological growth from the skimmer.

On rare occasions, even using the cleaning procedure above, the screen may contain some difficult-to-remove debris. In these instances, use soft gloves, or some other gentle nonabrasive material to very gently rub both the inside and outside of the screen to remove the excess debris. Gently soak and shake the screen in the product.

It is imperative the doughnut shaped white or black gasket be positioned in the skimmer base prior to reassembling the skimmer. The selective screen is placed on the gasket prior to the reassembly. Also, the cap nut should be threaded hand tight, putting pressure on the selective screen below, but not to the point where the dome cap is being crushed or indented. (**See Figure 4 on page 13**)





## Chapter 7: Troubleshooting


Problems may occur and usually can be easily resolved by following these instructions.

If you need assistance, please do not hesitate to call *QED*'s Service Department at (800) 537-1767.

### **I. Problem: Skimmer Not Collecting Product**

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#### **Steps to take:**

- 
- STEP 1 -** Make sure that there is product in the well and that it is 2 inches thick if using a SPG-P skimmer. If a Selective Oil Skimmer (SOS-P) is being used, the oil can be reduced to a sheen.
  
  - STEP 2 -** Make sure all fittings are clear of obstructions, especially the guide tube. It serves as a vent and the reservoir will not fill if air cannot move out to make room for the product entering the reservoir.

- STEP 3 -** Clean off the inlet screen. The **Selective Oil Skimmer** requires care in cleaning and should be checked about once per week.
- a. The selective screen should **not** be scrubbed because the water-repellant coating may be damaged. If the selective screen is passing water, the skimmer is easily taken apart. The recommended way to clean the screen avoids brushing, rubbing or abrasion.
  - b. Soak and gently shake the screen in the hydrocarbon product being recovered. If the hydrocarbon is viscous and the screen is still not adequately clean, an additional soaking and shaking in a lighter hydrocarbon, such as gasoline, is recommended.
  - c. Soft rubber gloves should be used to avoid accidental screen abrasion by finger nails.
  - d. A brief low pressure air blast of around 15 psi, from the inside of the screen out is also recommended. Be careful to blow fluids away from you and others around you and to not breathe the fumes.
  - e. Wash off any biological growth from the skimmer.

---

**Caution:**

Do not use soap on the selective screen unless it is thoroughly rinsed and dried after doing so.

---

- f. On rare occasions, even using the cleaning procedure above, the screen may contain some difficult to remove debris. In these instances, use soft gloves, or some other gentle nonabrasive material to very gently rub both the inside and outside of the screen to remove the excess debris. Soak and gently shake the screen in the hydrocarbon product being recovered.

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Note:

Replace the selective screen making sure it rests on the gasket and that the wide end of the screen faces up. Replace the float and outer debris screen on the skimmer making sure the open end of the float's fluid slot faces up.

**(See Figure 2 on page 11, and Figure 4 on page 13)**

If you will be away from the site or if you do not need to visit the site often, put the wide solid end of the selective screen down on the gasket. The skimmer may leave a thin layer of hydrocarbon in the well, but it will not pass water even if biological growth and debris are in the well.

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- g.** It is imperative the doughnut shaped white or black gasket be positioned in the skimmer base prior to reassembling the skimmer. The selective screen is placed on the gasket prior to the reassembly. Also, the cap nut should be threaded hand tight, putting pressure on the selective screen below, but not to the point where the dome cap is being crushed or indented.

**END OF SECTION I.**

## II. Problem: Water in the Reservoir

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### Check That:

1. The drain valve is closed.
2. Fittings and tubing are sealed and tight.
3. The selective screen is sitting on the gasket and the gasket is flat and pliable.
4. The nut on top of the selective screen is hand tight so the selective screen is being pushed firmly onto the gasket on the base.
5. The skimmer float and tubing are free to travel and there is no point of sticking anywhere.
6. The selective screen is clean. “Re-prime” the screen by rinsing it in product, if necessary.
7. The midpoint of guide rod is at product/water interface.
8. Reverse the selective screen so the wider, solid end is down on the gasket.

**END OF SECTION II.**

## Returning Equipment for Service

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If the equipment needs to be returned to *QED* for servicing, please follow these steps:

- STEP 1 -** Call the *QED* Service Department and obtain a Return Material Authorization (RMA) number. Please have available the customers contact person's name, company name and address, phone number, fax number, reason for the return, and the names of the chemicals to which the equipment has been exposed.
- STEP 2 -** Clean all equipment before shipping. See **Equipment Cleaning Requirements** at the end of this section.  

If the equipment must be cleaned after it arrives at *QED*, the customer will be charged for the cleaning and disposal of material, if necessary. (Cost can be \$200.00 per piece of equipment cleaned.) Drain and dry all equipment after cleaning.
- STEP 3 -** Package the equipment so that it will not be damaged in shipment. Use bubble pack rather than styrofoam flakes as packing material.
- STEP 4 -** Ship the equipment via a carrier and service level (i.e., one-day, two-day shipping) in consideration of probable service time and return shipment time.
- STEP 5 -** It is recommended that such shipments be insured so if the shipment is badly damaged or lost, the customer can replace the equipment at little or no cost.
- STEP 6 -** Include the contact's name, company, phone number and RMA number given by *QED*.
- STEP 7 -** Write the RMA number on the outside of the packaging so it will be directed immediately to the *QED* Service Department.

## Equipment Cleaning Requirements

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If the equipment is to be shipped to another site or to the factory for service, it needs to be thoroughly cleaned before leaving the site. Cleaning the equipment protects the user (sender), the shipper, and the receiver from dirt and/or contaminants. If the equipment is not cleaned prior to shipping for servicing, it may be severely delayed, refused or the shipper may be charged a cleaning fee. Before packing and shipping, ensure that the equipment is dry inside and out.

The following is a list of equipment and how it should be cleaned prior to shipment.


### Skimmers

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**Note:**

With a Selective Oil Skimmer (SOS), remove the selective screen from the skimmer before using soap on the skimmer.

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- 
- STEP 1** - Pump clean water or water with a gentle soap solution through the skimmers to remove free product and particles.
- STEP 2** - Rinse all soap off of the equipment.
- STEP 3** - Soak and rinse the outside of the unit with water to remove loose debris and dirt.
- STEP 4** - Steam clean inside and out to remove difficult dirt and contaminants.


---

**Caution:**

Use low pressure (less than 40 psi) when steam cleaning.

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## Hoses and Fittings

- 
- STEP 1** - Pump clean water or water with a gentle soap solution through the pump to remove free product and particles.
- STEP 2** - Rinse all soap off of the equipment.
- STEP 3** - Soak and rinse the outside of the unit with water to remove loose debris and dirt.
- STEP 4** - Steam clean inside and out to remove difficult dirt and contaminants.

---

**Caution:**

Use low pressure (less than 40 psi) when steam cleaning.

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## Appendix A: Upgrade Options

There are three upgrade options for the passive skimmer.

### **Reservoir Capacity**

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*QED* Passive Skimmers come in stock reservoir lengths ranging from 14 inches to 27 inches, with ranging capacities from 10 oz. (300 cc) to 100 oz. (3,000 cc).

A 44-inch, 200 oz., 6,000 cc is available in SS only. Specific sizes are available depending on site needs. Reservoirs can be removed and replaced as capacity demands, and if a site requires it.

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## Fully Automatic Product Recovery Upgrade

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*QED* Passive Skimmers can be upgraded to active, fully automatic product only recovery systems as site needs change. As active systems, product can be recovered at rates over 2,000 gallons per day (GPD). Two safety and protective features are available: Tank-Full Shut-Off (TFSO), which turns off the system when product tank levels are too high, and the High-Water Shut-Off (HWSO) which turns off the system when water levels rise above the skimmer.

The automatic product recovery upgrade conversion kit includes a conversion adapter (Part No. 300031) consisting of the following:

- 1/4-inch locking quick-connect socket
- 1/4 x 2-inch brass pipe nipple

### Tools/Materials Required

1. 3/4-inch open-end wrench
2. Channel lock pliers
3. Teflon tape

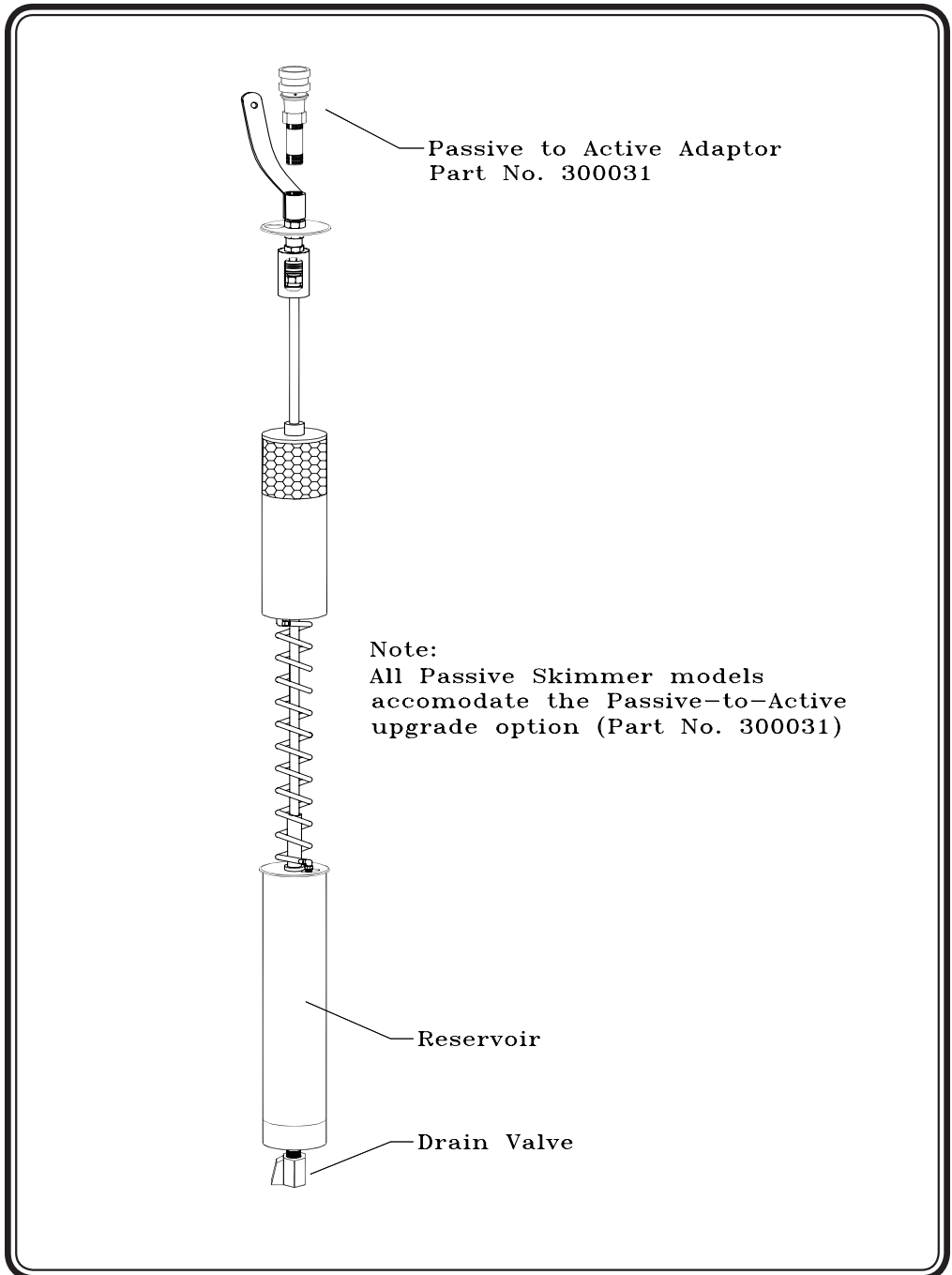
**STEP 1 -** Apply teflon tape to the 1/4-inch by 2-inch nipple of the conversion adapter. (See Figure 14)

**STEP 2 -** Thread the nipple into the coupling at the base of the hanging strap.

**STEP 3 -** Thread the 1/4-inch locking quick-connect socket into the nipple.

**STEP 4 -** Attach the suction hose to the skimmer by connecting the male mate of the locking quick-connect. The reservoir can remain beneath the skimmer and will remain full of product when the product is being pulled from the skimmer.

Other variations of the passive skimmer are available to meet unique applications. A full line of passive tidal skimmers are available for sites where high and low tide fluctuations require a longer than standard stroke, and an assortment of materials options are available depending on site specifications.



**Figure 11 - Fully Automatic Product Recovery Upgrade Assembly Kit**

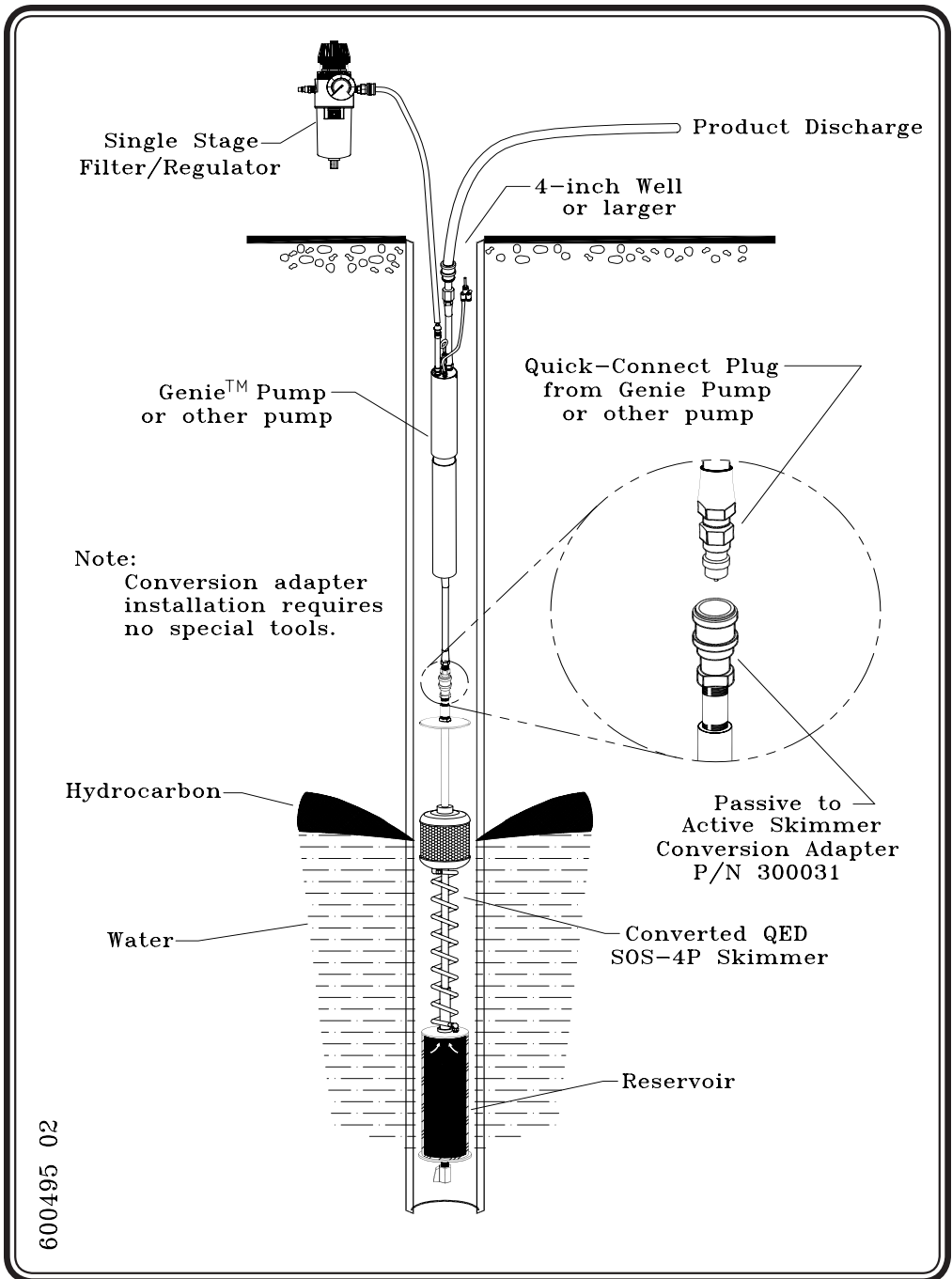


Figure 12 - Fully Automatic Product Recovery Upgrade with Genie Pump

## Terms, Conditions, and Warranty

This limited warranty is in lieu of and excludes all other representations made by advertisements, distributors, agents, or manufacturers sales representatives, and all other warranties, both express and implied. There are no implied warranties of merchantability or of fitness for a particular purpose for goods covered hereunder.

QED Environmental Systems warrants to the purchaser of its products that, subject to the limitations and conditions provided within the Terms & Conditions of Sale, products, materials and/or workmanship shall reasonably conform to descriptions of the products and shall be free of defects in material and workmanship.

All warranty durations are calculated from the original date of purchase-determined as beginning the date of shipment from QED facilities and the date QED is notified of a warranty claim. This warranty shall be limited to the duration and conditions set forth below.

- 1. Pumps (other than AutoPumps), Skimmers, hose, tubing, fittings, heater, condensers and air filtration housings** - warranted for one (1) year: 100% material and 100% workmanship. There will be no warranty for application or material compatibility. The materials used vary depending upon application, and the customer is responsible for knowing the environment in which the equipment will be operating and informing QED of this.
- 2. Pneumatic Data Modules / Logic Control Panels** - warranted for one (1) year: 100% material and 100% workmanship.
- 3. Parts and Repairs** - warranted for ninety (90) days: 100% material and 100% workmanship; when repairs are performed by QED or its appointed agent; from date of repair or for the full term of the original warranty, whichever is longer. Separately sold parts are warranted for ninety (90) days: 100% materials and 100% workmanship.

This warranty will be void in the event of unauthorized disassembly of component assemblies, other than maintenance and conversion procedures detailed in the operations and maintenance manual. Defects in any equipment that result from abuse, operation in any manner outside the recommended procedures, or use and applications other than for intended use will also void the warranty.

Chemical attack by liquids and/or abrasive substances contacting equipment and accessories shall not be covered by this warranty. A range of materials of construction is available from QED and it is the Buyer's responsibility to inform QED of the contaminants and their concentrations, including the presence of abrasives. QED will recommend materials of construction. QED will only warrant that the component materials will conform to published QED specifications and generally accepted standards for that particular material.

QED Environmental Systems shall be released from all obligations under all warranties if any product covered hereby is repaired or modified by persons other than QED service personnel (unless such repair by others is made with the written consent of QED, or as stated in QED manuals or directions); resold to other parties; and/or moved to or used on a remediation site other than originally specified.

It is understood and agreed that QED Environmental Systems shall in no event be liable for incidental or consequential damages resulting from its breach of any of the terms of this agreement, nor for special damages, nor for improper selection of any product described or referred to for a particular application. Liability under this warranty is limited to repair or replacement F.O.B. QED's factory, or its appointed agent's shop, of any parts which prove to be defective within the duration and conditions set forth herein, or repayment of the purchase price at the option of QED, provided the products have been returned in accordance with the duration and conditions set forth herein.

### **Subassemblies and Other Equipment Manufactured by Others**

The foregoing warranty does not apply to major subassemblies, other equipment, accessories, or parts manufactured by others, and such other parts, accessories, and equipment are subject only to the warranties, if any, supplied by their respective manufacturers. QED makes no warranty concerning products or accessories not manufactured by QED. In the event of failure of any such product or accessory, QED will give reasonable assistance to Buyer in obtaining from the respective manufacturer whatever adjustment is reasonable in light of the manufacturer's own warranty.

## **Illustrations and Drawings**

Reasonable Effort has been made to have all illustrations and drawings accurately represent the product(s) as it actually was at the time the illustrations and drawings were created.

However, products may change to meet user requirements and therefore may not be reflected in the literature. In addition, literature may be updated to reflect the most recent equipment revision(s). Changes to either or both equipment and/or literature can be made without notice.

## **Buyer's Remedies**

The buyer's exclusive and sole remedy on account of or in respect to the furnishing of defective material or workmanship shall be to secure replacement thereof as aforesaid. QED shall not in any event be liable for the cost of any labor expended on any such product or material or for any special, direct, indirect or consequential damages to any one by reason of the fact that it shall have been deemed defective or a breach of said warranty.

## **Changes without Notice**

Prices and Specifications are subject to change without notice.

## **Shipping Dates**

Shipping dates are approximate and are subject to delays beyond our control.

## **F.O.B. Point and Title**

All material is sold F.O.B. factory, unless otherwise agreed on writing. Title to all merchandise sold shall pass to Buyer upon delivery by Seller to carrier at factory. All freight insurance is the responsibility of the Buyer and shall be charged to the Buyer on the invoice unless directed otherwise in writing. All Freight claims are the Buyer's responsibility.

## **Terms**

Payment terms are net 30 days; 1.5% per month past due.

## **State and Local Taxes**

Any taxes, duties or fees which the seller may be required to pay or collect upon or with respect to the sale, purchase, delivery, use or consumption of any of the material covered hereby shall be for the account of the Buyer and shall be added to the purchase price.

## Acceptance

All orders shall be subject to the terms and conditions contained or referred to in the Seller's quotation, acknowledgments, and to those listed here and to no others whatsoever. No waiver, alteration or modification of these terms and conditions shall be binding unless in writing and signed by an executive officer of the Seller. All orders subject to written acceptance by QED Environmental Systems, Ann Arbor, MI, U.S.A.

## Warranty Claims Procedure (Responsibility of purchaser)

The original purchaser's sole responsibility in the instance of a warranty claim shall be to notify QED or its appointed agent, of the defect, malfunction, or other manner in which the terms of this warranty are believed to be violated. The purchaser may secure performance of obligations hereunder by contacting the Customer Service Department of QED or its appointed agent, and:

1. Identifying the product involved by model or serial number, or other sufficient description, that will allow QED, or its appointed agent, to determine which product is defective.
2. Specifying where, when, and from whom the product was purchased.
3. Describing the nature of the defect or malfunction covered by this warranty.
4. After obtaining authorization from QED, sending the malfunctioning component via a RMA# (Return Material Authorization number) to the address below or to its appointed agent:

QED Environmental Systems  
1133 Seventh Street  
Oakland, CA 94607 USA

(800) 537-1767    Toll-Free in North America  
(510) 891-0880    International  
(510) 444-6789    FAX

e-mail: [info@qedenv.com](mailto:info@qedenv.com)  
website: [www.qedenv.com](http://www.qedenv.com)

5. Equipment must be cleaned before shipment or it will be cleaned by QED before any work is performed. The customer will be charged for such cleaning.

If any product covered hereby is actually defective within the terms of this warranty, purchaser must contact QED, or its appointed agent, for determination of warranty coverage. If the return of a component is determined to be necessary, QED, or its appointed agent, will authorize the return of the component at Purchasers expense. If the product proves not to be defective within the terms of this warranty, then all costs and expenses in connection with the processing of the Purchaser's claim and all costs for repair, parts, labor, and shipping and handling, as authorized by owner hereunder, shall be borne by the Purchaser. In no event shall such allegedly defective products be returned to QED, or its appointed agent, without its consent, and QED's, or its appointed agent's, obligations of repair, replacement or refund are conditional upon the buyer's return of the defective product to QED, or its appointed agent.





