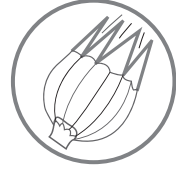
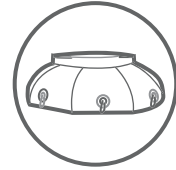


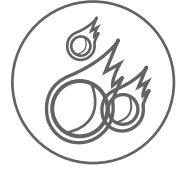
RAINDRAIN OPERATIONS MANUAL



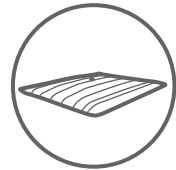
Bambi Bucket



Fireflex



Dragon



Remote Site



Environmental



Emergency Response

RAINDRAIN OPERATIONS MANUAL - Version D

Issue Date: June 2011

PLEASE READ BEFORE USING.

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We Engineer Solutions

RainDrain Operations Manual (Version D)

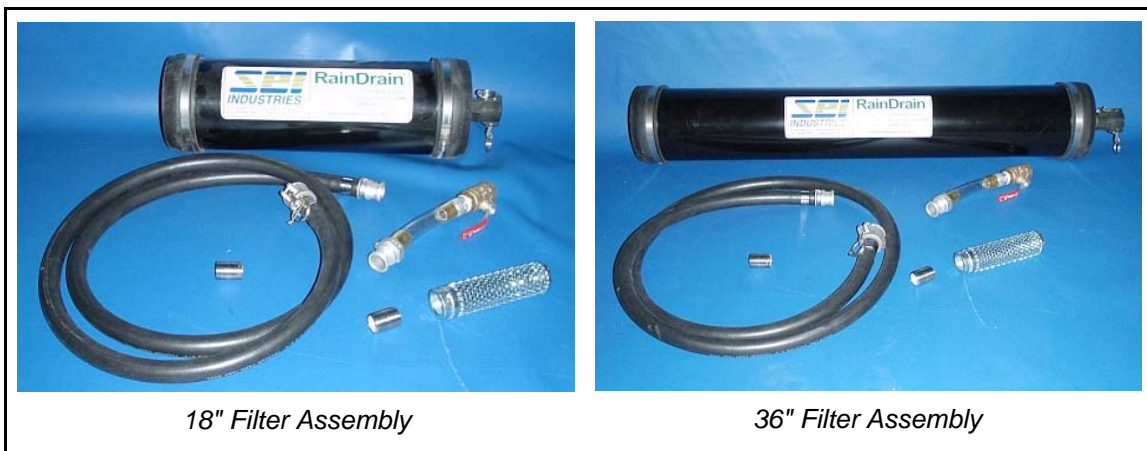
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Section 1: Introduction to the RainDrain System

Overview

The RainDrain system allows operators to continuously gravity-drain rain water from secondary containment berms without having to monitor the discharge. The RainDrain is designed as a go-no-go filtration system that will automatically stop the flow of discharge water when it is full or when there is a large amount of hydrocarbons present in the water being discharged.



Performance

The RainDrain system allows rainfall and water from other sources to be discharged from the berm. The filtration unit stops all target contaminants, acting as a hydrocarbon selection unit and reducing the discharged water below 10 ppm hydrocarbon content.

When the filtration unit reaches containment capacity, it will automatically cease to discharge all fluids. When this occurs the filter cartridge will have to be replaced. Once that is completed, the system is ready for normal operation.

Important Note

The amount of hydrocarbons present in the secondary containment system will determine the frequency in which to replace the filter cartridge.

Warning

In the event of a catastrophic failure of a primary containment tank (that is secured within a secondary containment berm and protected by the RainDrain), the subsequent spill of a significant amount of fuel will cause the filter to shut down automatically. It is still possible that a small amount of fuel will escape through the RainDrain because of the higher fuel to water discharge ratio. This discharge can be trapped in a small discharge pit filled with hydrocarbon absorbent pads.

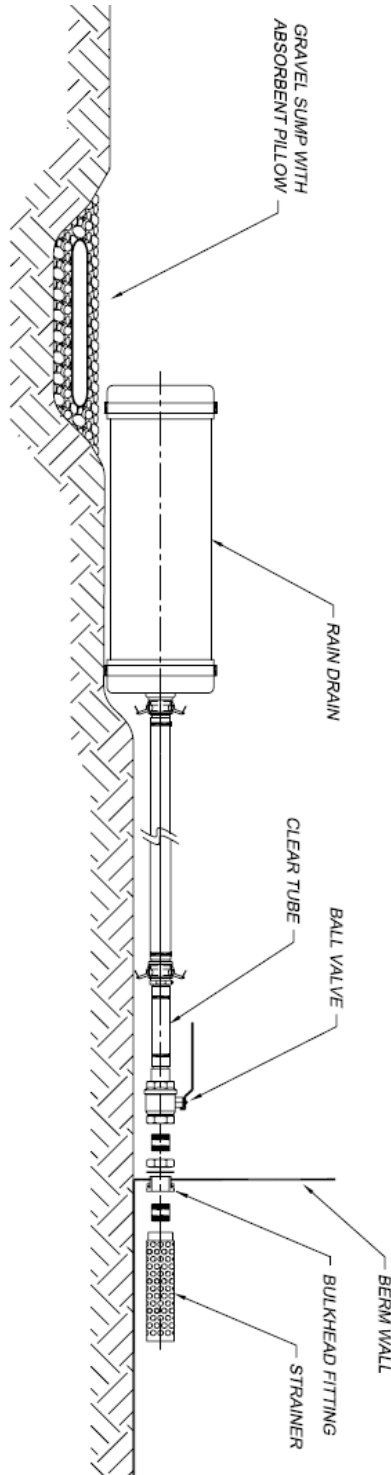
Important Note

The RainDrain is designed to limit discharge contamination to below 10 mg/L total extractable hydrocarbons at an inlet contamination level of 1% or less fuel in water.

For fuel levels above 1% solution, the RainDrain will seal but some contaminants will be discharged above 15 parts per million free oil.

Section 2: Installation

Overview



Drain Installation

To install a RainDrain, the existing berm must be equipped with a drain. If your berm already has a drain, please see the information on *Filtration Unit Installation*. If no drain is present, or if the drain is not at a low point, a bulkhead fitting can be installed. To install a bulkhead fitting, please follow this procedure:

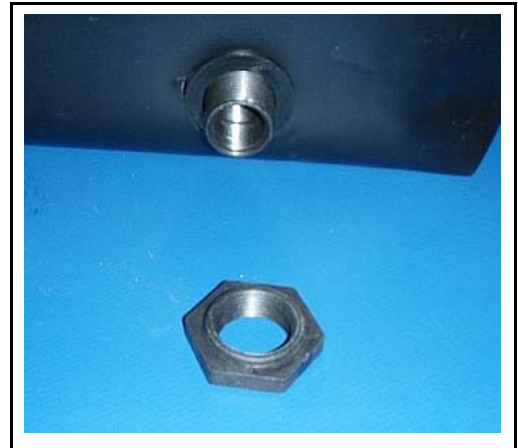
1. Cut a 1¼" (3.25 cm) hole in the berm wall.



2. With the rubber washer on the body, insert the fittings body through the hole from the inside of the berm.



3. Attach locking nut and tighten firmly.



4. The installed fitting should now look like this.

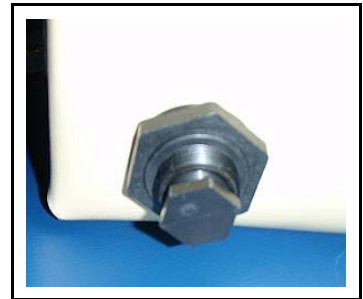


Filtration System

Filtration Unit Installation

The filtration unit must be assembled in the following order, beginning at the berm's bulkhead fitting:

1. Remove the $\frac{3}{4}$ " (19 mm) plug and install the $\frac{3}{4}$ " (19 mm) close nipple into the bulkhead.



2. Attach the valve and sight glass assembly to the $\frac{3}{4}$ " nipple in the bulkhead.



3. Attach the black hose and filtration canister to the sight glass assembly.



4. Install the leaf guard on the inside of the berm.



Leaf guard installed inside the berm.

Section 3: Operations

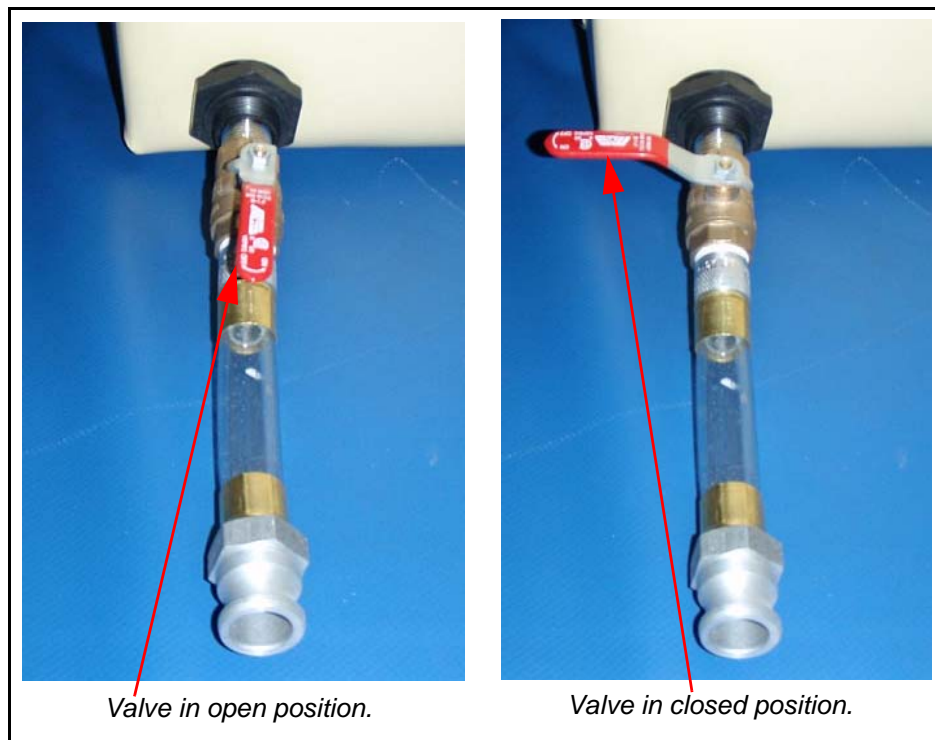
Operational Procedures

Before operating the system, ensure that the connections from the bulkhead fitting to the filter casing are correct.

To begin operation, simply turn the valve into the open position, thus allowing the fluid to travel through the hose/fittings assembly to the filter element.

Important Note

Always place the filter casing at a lower level than the bottom of the berm liner. This allows all the water to drain and ensures all absorption materials are utilized. If the filter inlet is higher than the base of the berm, the discharge flow will be reduced.



Section 4: Maintenance and Troubleshooting

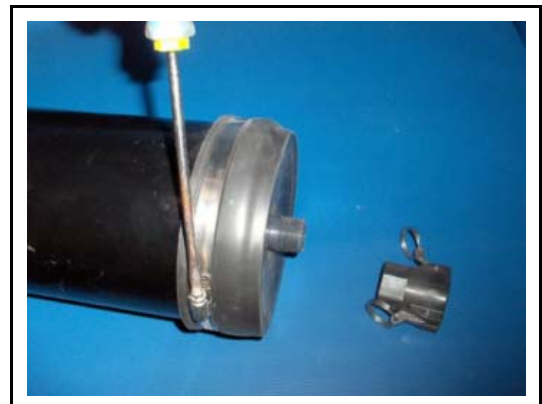
Maintenance

Filter Cartridge Replacement

1. Close the valve.



2. Remove the camlock fitting using a slot screwdriver to loosen the clamp and then remove the cap.



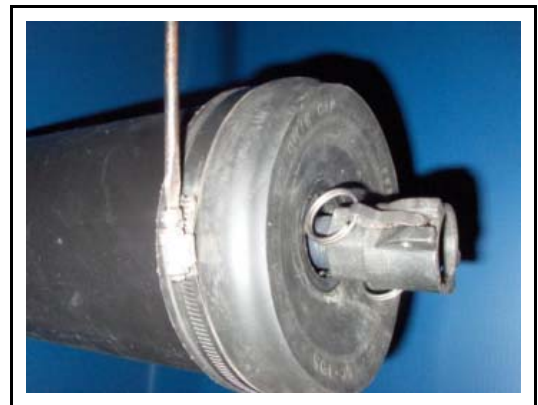
3. Remove the filter from the canister.



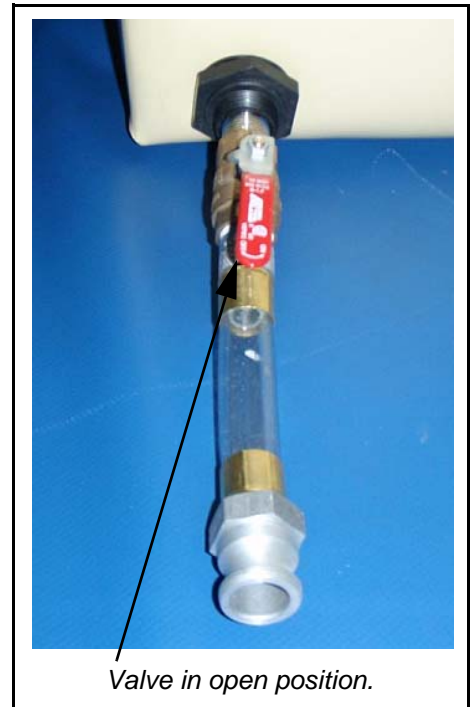
4. Place the cap over the inlet end of the new cartridge. Then, attach the female camlock and slide the cartridge into the canister. Push the cap into place.



5. Replace the cap and tighten the hose clamp.



6. Turn the valve to the ON position. The system is now ready to operate.



Troubleshooting

If the RainDrain system does not work and/or if no water is being discharged:

- Check for kinks in the hose or in the sight glass.
- Check that the filter is not clogged; if so, replace the filter cartridge.
- Check that the leaf strainer is not plugged.

If leaks are present at either side of the filter casing (caps):

- Check if the caps are locked into place and tighten hose clamps, if necessary.
- Replace caps, if damaged.
- Ensure that the sight glass area is visible at all times.
- Make sure all connections are water tight.
- Do not place objects on the sight glass.
- Ensure that the hoses are not kinked in any manner that would impede the proper flow of the fluid.

Section 5: Converting the RainDrain System

Upgrading to the New Canister Model

1. Loosen the hose clamp and remove the cap.



2. Pour the contents into a liquid tight container.



3. Remove the bulkhead fitting from the cap.



4. Place the tube and the bulkhead fitting into the container.



5. Slide the new filter cartridge into the canister.



6. Tighten the hose clamp and attach the female cam-lock.



Section 6: Specifications and Parts

Specifications

Models

Model #	Oil Capacity	Water Flow Rate	Dimensions	Weight
IBMKF0618	.5 USG 1.9 Liters	.32 USGPM 1.2 L/Min	6" Dia. X 18" L (15 cm x 45 cm)	13 lbs. (5.89 Kg)
IBMKF0636	2 USG 7.6 Liters	.32 USGPM 1.2 L/Min	6" Dia. X 36" L (15 cm x 91 cm)	26 lbs. (11.79 Kg)

The RainDrain meets or exceeds the design requirements as well as free oil and grease water *discharge* levels for the following regulations:

- Environmental Protection Agency (EPA) 40 CFR Part 112.7
- Canadian Council of Ministers of the Environment (CCME) Code of Practice for above ground and underground storage tank systems containing petroleum and allied petroleum products. Section 3.10.3(1)(b)(i)
- British Columbia Waste Management Act, BC Regulation 168/94
- Alaska State AAC-75.075

The RainDrain is designed to produce a *discharge* of water that does not contain more than 10mg/L of free oil and grease as measured by the partition-gravimetric method. Independent testing has proven the RainDrain exceeds this performance requirement and those results are available upon request.

Based upon data available to SEI Industries Ltd. components in this product are not hazardous under the OSHA Hazard Communication (29 CFR 1910.1200).

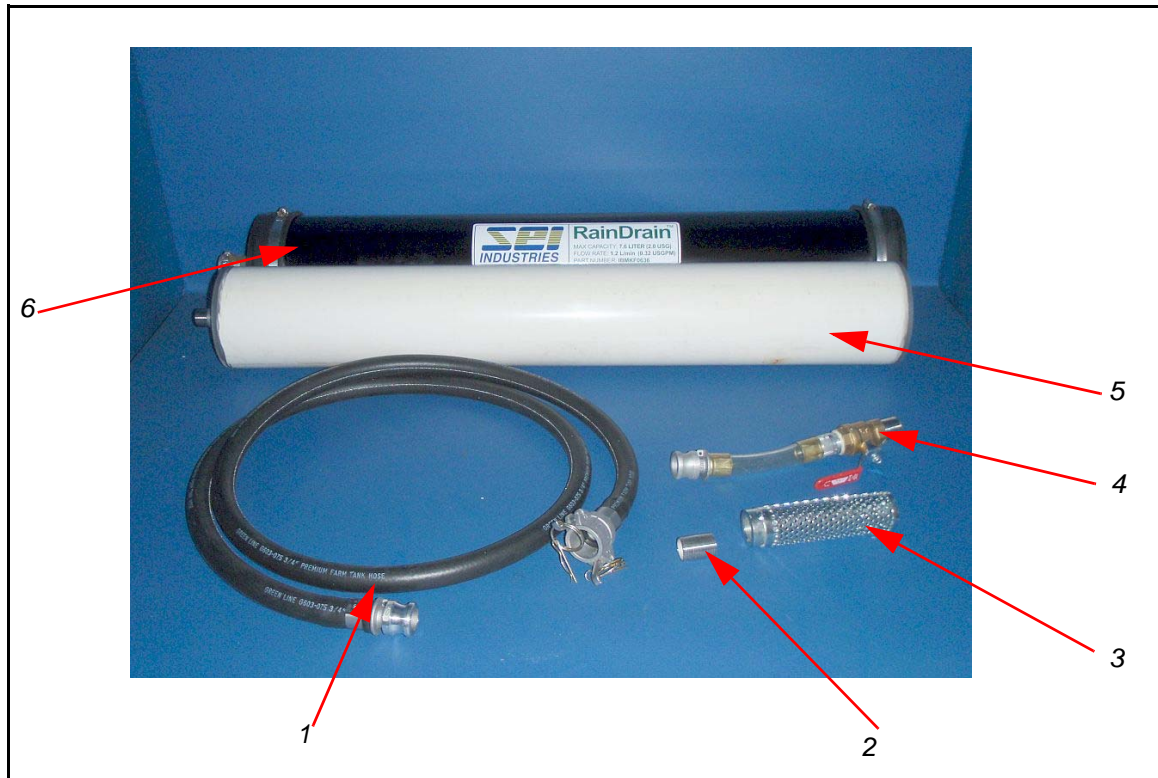
Important Note

The RainDrain is designed to limit discharge contamination to below 10 mg/L total extractable hydrocarbons at an inlet contamination level of 1% or less fuel in water.

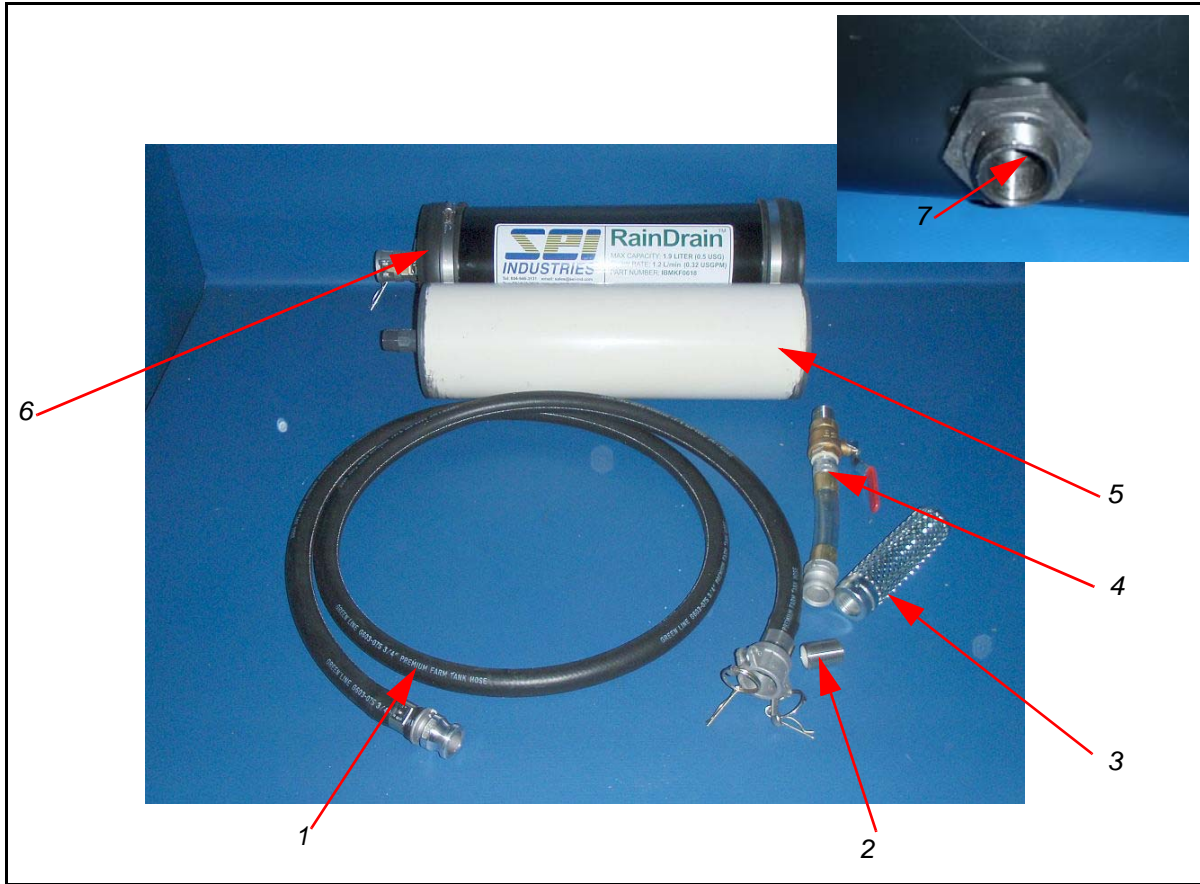
For fuel levels above 1% solution, the RainDrain will seal but some contaminants will be discharged above 15 parts per million free oil.

Parts List

36" RainDrain Parts



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	IBMPH0758	HOSE, OIL DRAIN 3/4" X 8'	1
2	PLA075C	NIPPLE 3/4" CLOSE ALUMINUM	1
3	IBMPS075	STRAINER LEAF 3/4" C/W 3/4" CLOSE NIPPLE	1
4	IBMPH075S	SIGHT GLASS ASSEMBLY C/W VALVE	1
5	IBRDC36	CARTRIDGE FILTER RAIN DRAIN 36"	1
6	IBMKF0636	RAIN DRAIN FILTER ASSEMBLY 36" COMPLETE	1

18" RainDrain Parts

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	IBMPH0758	HOSE, OIL DRAIN 3/4" X 8'	1
2	PLA075C	NIPPLE 3/4" CLOSE ALUMINUM	1
3	IBMPS075	STRAINER LEAF 3/4" C/W 3/4" CLOSE NIPPLE	1
4	IBMPH075S	SIGHT GLASS ASSEMBLY C/W VALVE	1
5	IBRDC18	CARTRIDGE FILTER RAIN DRAIN 18"	1
6	IBMKF0618	RAIN DRAIN FILTER ASSEMBLY 18" COMPLETE	1
7	PLP067	BULKHEAD FITTING 3/4" NPT	1

Section 7: Warranty

- a) Warranty is limited to repairing or replacing, at the company's sole discretion, any product approved to be defective.
- b) The company's products are not guaranteed for any specific length of time or measure of service, but are warranted only to be free from defects in workmanship and material for a period of one year to the original purchaser.
- c) To the extent allowable under applicable law, the company's liability for consequential, incidental and environmental damages is expressly disclaimed. **The company's liability in all events is limited to and shall not exceed, the purchase price paid.**
- d) This warranty is granted to the original purchaser and does not extend to a subsequent purchaser or assignee.
- e) The company must receive notification in writing of any claims of warranty from the original purchaser which must give details of the claimed defect in the product.
- f) Where the original purchaser is claiming under warranty, the product must be returned to the company for inspection with all transportation and duty charges prepaid.
- g) The warranty does not extend to any product that has been accidentally damaged, abraded, altered, punctured, abused, misused or used for a purpose which has not been approved by the company.
- h) This warranty does not apply to any accessories used with the product such as pumps, filters, hoses, etc., that are not supplied by the company, and any warranty on such accessories must be requested from the manufacturer or dealer of the accessories.
- i) In the event the original purchaser does not give notice of a warranty claim within one year of the original purchase of the product, it is understood that the purchaser has waived the claim for warranty and the purchaser and/or any subsequent purchaser must accept the condition of the product as it may be, without warranty.
- j) Any technical information supplied by the company regarding the product is not a condition of warranty but rather is information provided by the company to the best of its knowledge.
- k) There are no implied warranties nor is there any warranty that can be assumed from any representation of any person, except the company itself.

Exclusions

This warranty is void if the product is not assembled, used and/or maintained in accordance with the operator's manual supplied by SEI.