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Air-Met Scientific
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Geotech 1.66 Reclaimer

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 Reclaimer System is a positive air displacement pump designed for hydrocarbon recovery, leachate, condensate and total fluids applications. The pumps are designed to withstand aggressive down-well environments, and highly corrosive fluids without material breakdown or failure. The Geotech 1.66 Reclaimer can be configured as a Top Fill, Bottom Fill, or Top and Bottom Fill fixed intake.

A PFAS-Free 1.66 Reclaimer model is also available. The PFAS-Free 1.66 Reclaimer is made with PFAS-Free materials such as 316 Stainless Steel, high-density polyethylene (HDPE) and Buna-Nitrile.



The Geotech 1.66 Reclaimer will recover fluids from depths up to 500' (152m). Refer to *Section 3: System Operation*.

Flow rates of up to 3 GPM (11.4 LPM) are possible. Refer to *Section 6: System Specifications*.

The Geotech 1.66 Reclaimer will operate in wells 2" (5 cm) inside diameter or larger vertical wells.

Section 2: System Installation

Attach product discharge and air supply hoses to the proper barbed fittings on the pump. Refer to Figure 1-1 and 1-2 below for fitting configurations.

If pump configuration was not sent as a complete system, use the following steps for assembly:

1. Attach air supply hose to Geotech Pneumatic Controller air supply fitting.
2. Ensure all hoses are installed properly and securely to the fittings.
3. Attach the safety cable to the support look using proper crimps or cable clamps.

The 1.66 Reclaimer can now be lowered into the recovery well. For optimum efficiency, the 1.66 Reclaimer must be positioned in the well with intake adequately submerged.

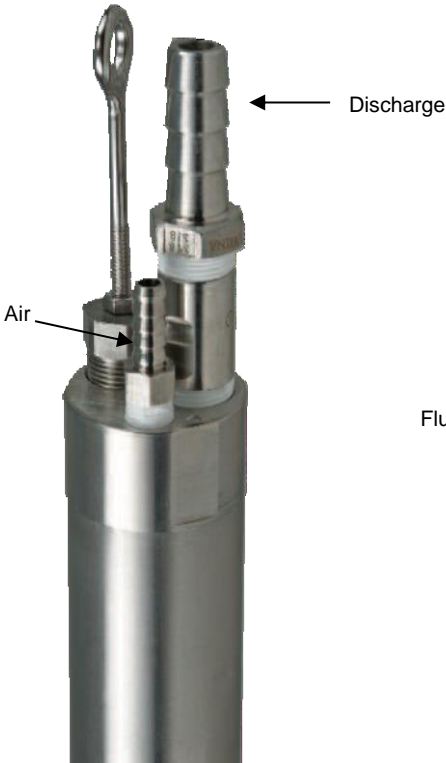


Figure 1-1: 1.66" Reclaimer
Bottom Fill

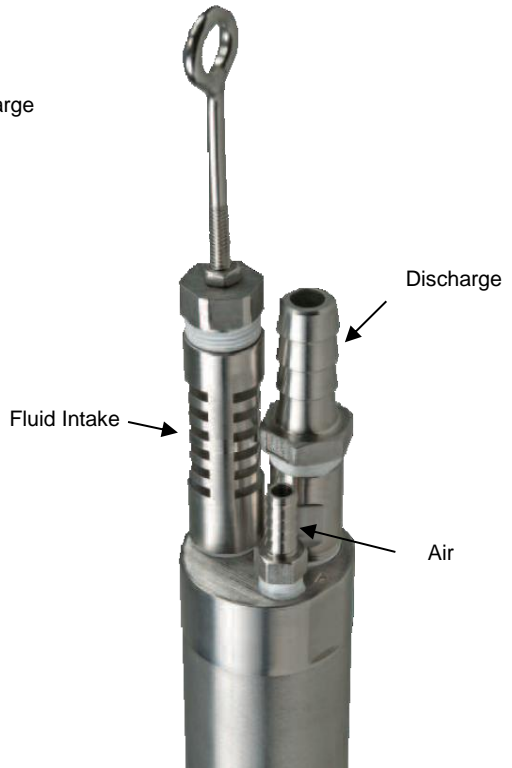


Figure 1-2: 1.66" Reclaimer
Top Fill

Section 3: System Operation

Top Fill Configuration



Compressed air is utilized in this system. For pressure requirements, use 0.5 PSI per foot (.05 bar per 30.5 cm) of lift plus ten. For example, 30' (9 m) of head would need a minimum of 25 PSI (1.7 bar).



Volume of air consumption at ACFM is 1:1 to volume of discharged fluid. The conversion from GPM to CFM is approximately 7.5 GPM per CFM. For example, a fluid flow rate of 2 GPM would use approximately 2 GPM or 0.26 ACFM of air.

The volume is ACFM and will likely need to be converted to SCFM or other units based on your location and compressor settings.

The Top Fill configuration for the 1.66 Reclaimer is placed in a recovery well with the top inlet submerged below static groundwater. Combined with the Geotech's BP 300 Controller, the 1.66 Reclaimer cyclically fills and empties.

Bottom Fill Configuration



Well recharge rate and time sequence settings on the Geotech's BP 300 Controller will affect the maintainable fluid level.

The Bottom Fill configuration for the 1.66 Reclaimer is placed in a recover well with the bottom intake submerged below static groundwater. Combined Geotech's BP 300 Controller, the 1.66 Reclaimer cyclically fills and empties.



Well recharge rate and time sequence settings on the Geotech Pneumatic Controller will affect the maintainable fluid level. See Figure 3-1.

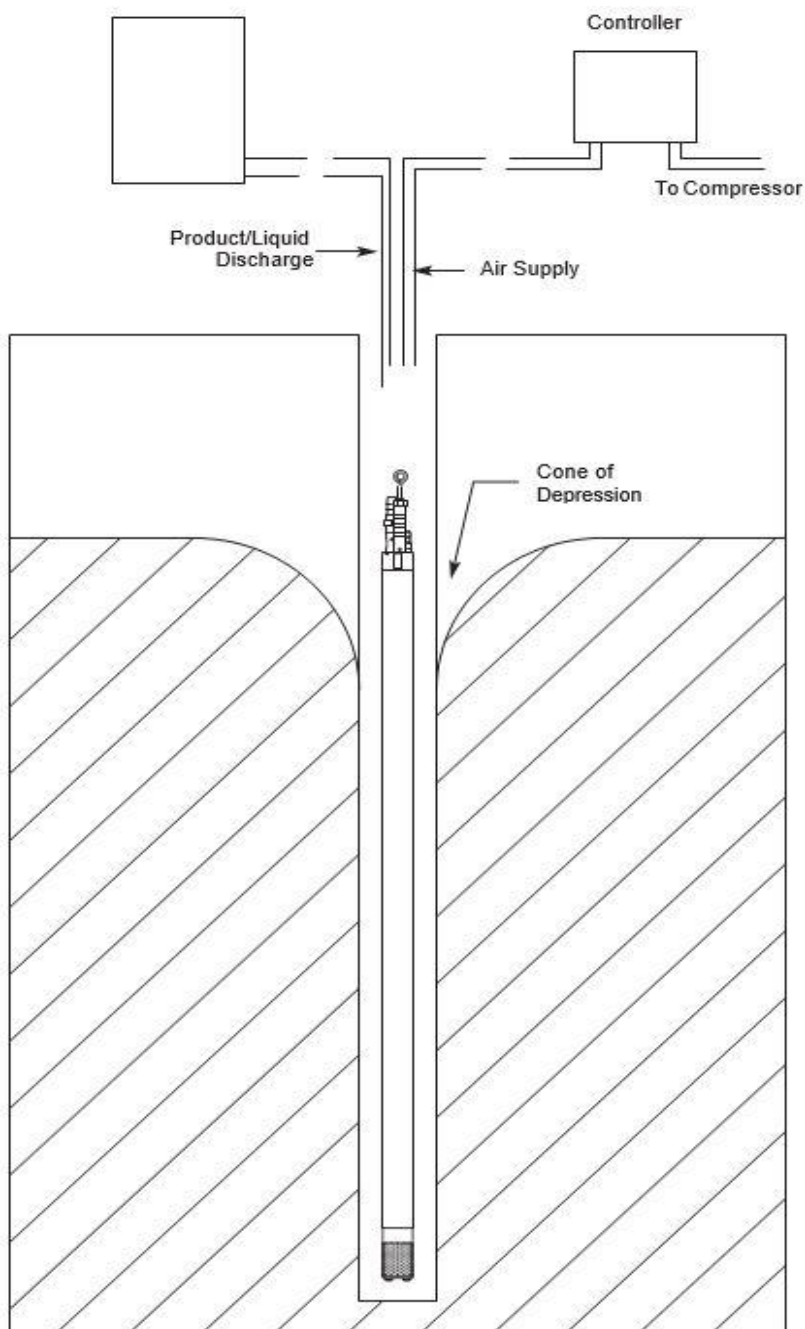


Figure 3-1: 1.66" Reclaimer

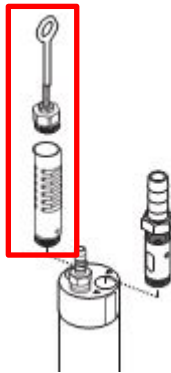
Section 4: System Maintenance

The Geotech 1.66 Reclaimer has been designed to be virtually maintenance free. In the event clogging occurs in the pump or trapped particulate in the check ball seats, disassemble the 1.66 Reclaimer pump and rinse with clean water to dislodge any matter. The 1.66 Reclaimer is constructed of 300 series Stainless Steel and Polytetrafluoroethylene* (PTFE) to provide many years of continued service with minimal maintenance. See Figure 4-1.

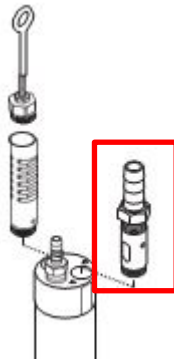
*Except in the case of the PFAS-Free models.

See below for disassembly instructions:

- 1) Remove the intake assembly.

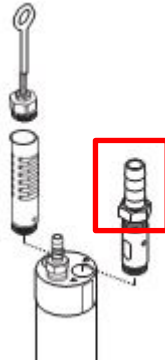


- 2) Inspect the check ball.
 - Check ball is inside the intake assembly and cannot be easily removed.
- 3) Dislodge any debris and clean as necessary.
- 4) Remove the discharge assembly.

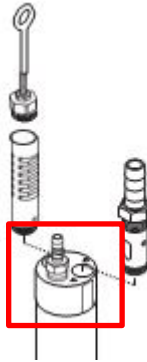


- 5) Inspect the check ball and clean as necessary.
 - Check ball is inside the discharge assembly and cannot easily be removed.

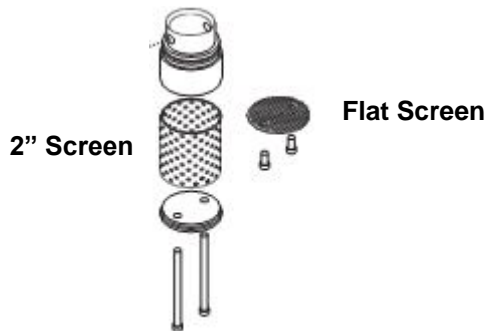
- 6) Remove hosebarb and clean if necessary.



- 7) Remove the upper cap.



- 8) Inspect O-rings and lubricate if needed.
- Clean as necessary.
 - If site conditions allow anti-seize, lubricate female threads using anti-seize.
- 9) If using a bottom fill reclaimer, remove the screen using a 9/64 Allen Wrench.
- A 9/64 Allen wrench will work for both flat and 2" screen sizes.



- 10) Remove the bottom cap of the reclaimer.

- 11) Inspect O-rings and lubricate if needed.
 - Clean as necessary.
 - If site conditions allow anti-seize, lubricate female threads using anti-seize.
- 12) Remove check ball and clean as necessary
- 13) Reassemble reclaimer.

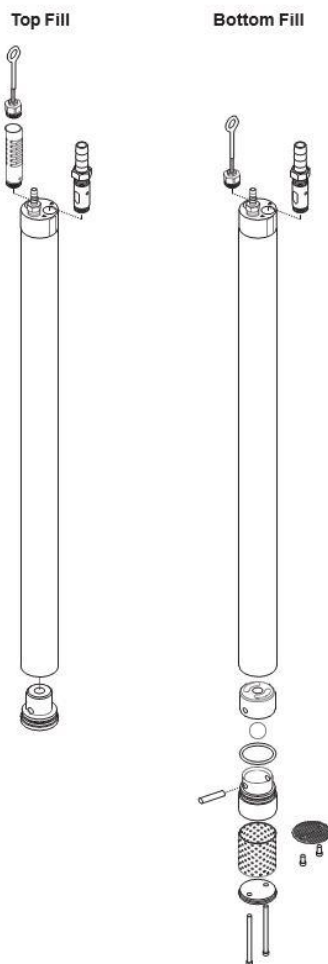


Figure 4-1: 1.66 Reclaimer Maintenance

Section 5: System Troubleshooting

Problem: Pump does not discharge fluid to the surface.

Solutions:

1. Check controller to ensure it is functioning. Consult controller manual.
2. Ensure that the air pressure is adequate enough to overcome the total dynamic head pressure the pump is working against.
 - Consult the controller manual for air pressure requirements needed.
3. Inlet screen is clogged
 - Remove pump from well, disassemble, clean screen.
4. Discharge line is clogged
 - Remove pump from well, disassemble, clear, clean discharge line
5. Air line is clogged
 - Remove pump from well, disassemble, clear air line
6. Hoses are kinked or cut – Replace damaged hoses

Section 6: System Specifications

1.66 Reclaimer

Outside Diameter	1.66" (4.22 cm)
Max. Operating Depth	500' (152 m)
Min. Well Inner Diameter	2" (5 cm)
Operating Pressure Range	10-300 PSI (.7 - 20.7 bar)
Fittings	Stainless Steel
Fluid Discharge	3/8" NPT X 1/2" Hose barb
Air Supply	1/8" NPT X 1/4" Hose barb

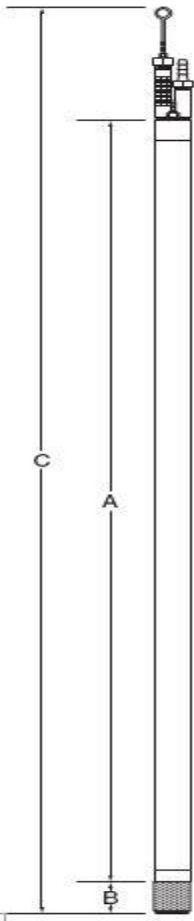
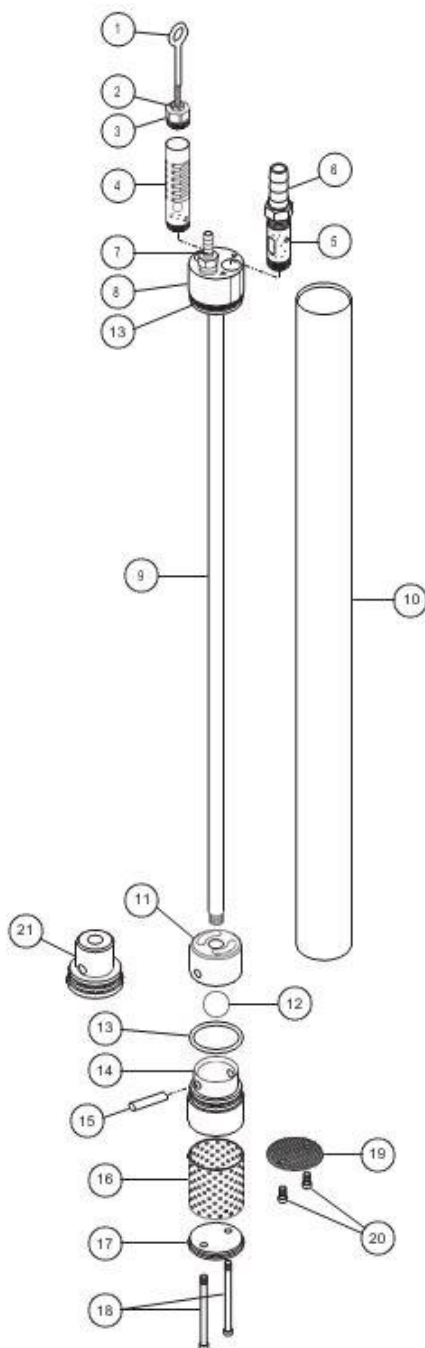


Figure 6-1: 1.66 Reclaimer Specification Diagram
**Refer to Table 6-1: 1.66 Reclaimer Specifications*

Table 6-1: 1.66 Reclaimer Specifications

1.66 Reclaimer Configuration	Dimensions - in. (cm)			Weight lbs. (kg)	Volume/Cycle gallons (L)	Max. Flow Rate GPM (LPM)
	A	B	C			
24" Top Fill	24 (61)	0	30.25 (76.8)	4.0 (1.8)	0.1 (.4)	2 (7.6)
24" Bottom Fill (No Screen)	24 (61)	0	27.25 (69.2)	4.0 (1.8)	0.1 (.4)	2 (7.6)
24" Bottom Fill (Flat Screen)	24 (61)	0.25 (.6)	27.5 (69.8)	4.5 (2)	0.1 (.4)	2 (7.6)
24" Bottom Fill (2" Screen)	24 (61)	2 (5)	29.25 (74.3)	5.0 (2.3)	0.1 (.4)	2 (7.6)
24" Top & Bottom Fill (No Screen)	24 (61)	0	30.25 (76.8)	4.0 (1.8)	0.1 (.4)	2 (7.6)
24" Top & Bottom Fill (Flat Screen)	24 (61)	0.25 (.6)	30.5 (77.5)	4.5 (2)	0.1 (.4)	2 (7.6)
24" Top & Bottom Fill (2" Screen)	24 (61)	2 (5)	32.25 (81.9)	5.0 (2.3)	0.1 (.4)	2 (7.6)
36" Top Fill	36 (91)	0	42.25 (107.3)	5.4 (2.4)	0.2 (.8)	2.4 (9)
36" Bottom Fill (No Screen)	36 (91)	0	39.25 (99.7)	5.4 (2.4)	0.2 (.8)	2.4 (9)
36" Bottom Fill (Flat Screen)	36 (91)	0.25 (.6)	39.5 (100.3)	5.9 (2.7)	0.2 (.8)	2.4 (9)
36" Bottom Fill (2" Screen)	36 (91)	2 (5)	41.25 (104.8)	6.4 (2.9)	0.2 (.8)	2.4 (9)
36" Top & Bottom Fill (No Screen)	36 (91)	0	42.25 (107.3)	5.4 (2.4)	0.2 (.8)	2.4 (9)
36" Top & Bottom Fill (Flat Screen)	36 (91)	0.25 (.6)	42.5 (107.9)	5.9 (2.7)	0.2 (.8)	2.4 (9)
36" Top & Bottom Fill (2" Screen)	36 (91)	2 (5)	44.25 (112.4)	6.4 (2.9)	0.2 (.8)	2.4 (9)
48" Top Fill	48 (122)	0	54.25 (137.8)	7.8 (3.5)	0.4 (1.5)	3 (11.4)
48" Bottom Fill (No Screen)	48 (122)	0	51.25 (130.2)	7.8 (3.5)	0.4 (1.5)	3 (11.4)
48" Bottom Fill (Flat Screen)	48 (122)	0.25 (.6)	51.5 (130.8)	8.3 (3.8)	0.4 (1.5)	3 (11.4)
48" Bottom Fill (2" Screen)	48 (122)	2 (5)	53.25 (135.2)	8.8 (4.0)	0.4 (1.5)	3 (11.4)
48" Top & Bottom Fill (No Screen)	48 (122)	0	54.25 (137.8)	7.8 (3.5)	0.4 (1.5)	3 (11.4)
48" Top & Bottom Fill (Flat Screen)	48 (122)	0.25 (.6)	54.5 (138.4)	8.3 (3.8)	0.4 (1.5)	3 (11.4)
48" Top & Bottom Fill (2" Screen)	48 (122)	2 (5)	56.25 (142.9)	8.8 (4.0)	0.4 (1.5)	3 (11.4)

Section 7: Replacement Parts List



Item	Qty	Description	Part No.
1	1	BOLT, SS6, 10-24 x 3", EYE W/NUT	16600133
2	1	NUT, SS8, 10-24	11200650
3	1	PLUG, HANGER, SS4, 1.66	26600178
4	1	INTAKE ASSY, UPPER, 1.66	56600056
5	1	ASSY, DISCHARGE, 1.66	56600068
6	1	HOSEBARB, SS6, 1/2 x 3/8 MPT	16600217
7	1	HOSEBARB, SS6, 1/4 x 1/8 MPT	17200072
8	1	HEAD, RECLAIMER, 1.66, CAP, UPPER	26600217
9	1	PIPE, CENTER, SS4, 1/4 x 24, 1.66 RECLAIMER	26600213
	1	PIPE, CENTER, SS4, 1/4 x 36, 1.66 RECLAIMER	26600214
	1	PIPE CENTER, SS4, 1/4 x 48" 1.66 RECLAIMER	26600215
10	1	HOUSING, RECLAIMER, 1.66, SS4, 24"	56600063
	1	HOUSING, RECLAIMER, 1.66, SS4, 36"	56600064
	1	HOUSING, RECLAIMER, 1.66, SS4, 48"	56600065
11	1	CAP, BOTTOM INLET, 1.66	26600070
12	1	BALL, TFE, 3/4"	17500085
	1*	*BALL, HDPE, 3/4"	16600402
13	2	O-RING, VITON, #126	17500104
	2*	*O-RING, #126, BUNA-N	16600401
14	1	BOTTOM INLET, SS, 1.66	26600071
15	1	PIN, DOWEL, SS8, 1/4 x 1.5"	16600124
16	1	SCREEN, INLET, SS, 1.66 x 2	26600083
17	1	CAP, BOTTOM INLET, SCREEN, 1.66	26600072
18	2	SCREW, SS8, 8-32 x 2.25", SHCS	16600132
19	1	SCREEN, INLET, SS, 1.66, FLAT	26600134
20	2	SCREW, SS6, 8-32 x 3/8" SHCS	16600130
21	1	CAP, BOTTOM BLANK, 1.66	26600069
		MANUAL, RECLAIMER, 1.66	26600222

Accessories

BP CONTROLLER, 0-300 PSI, CE, 0-690FT, ACCESSORY KIT	81150042
TUBING, 1/4 X 3/8 PE – 3/8 X 1/2 PE, SKIP BONDED, FT	87050523
THREAD TAPE, PFAS FREE, .5"x600'	21150153

*Bottom check ball and o-rings for PFAS-Free Reclaimer models. LDPE tape is used on MPT threads on hose barbs so that PTFE tape can be avoided.

Project #	Description	Date
	Previous Release	6/10/2012
EDCF #2042	Changed part numbers and descriptions (parts 9, 17, 20) changed manual into 5 ½ X 8 ½ format, minor editing. StellarR	2/14/2017
1675	Added PFAS Free model – StellarR/TA	7/12/18
1758	Clarified troubleshooting, added disassembly instructions, added accessories to parts list - StellarR	5/13/2019
1854	Added PN 21150153 – StellarR	10/18/2019

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.

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