

Infiltrator IM™ - and TW™ - Series

Septic Tank General Installation Instructions



Before You Begin

Infiltrator Systems' septic tanks must be installed according to state and/or local regulations, which supersede the manufacturer's installation instructions. If unsure of the installation requirements for a specific site, contact the health department or permitting authority.

WARNING: IMPLOSIONS MAY CAUSE SERIOUS INJURY
Follow Infiltrator Systems Inc. vacuum test instructions

Materials and Equipment Needed

<input type="checkbox"/> Infiltrator IM or TW tank	<input type="checkbox"/> Shovel
<input type="checkbox"/> Access port lids (included)	<input type="checkbox"/> Level
<input type="checkbox"/> 10 screws per lid (included)	<input type="checkbox"/> 5-inch-diameter (125 mm) hole saw (IM tanks)
<input type="checkbox"/> Inlet/outlet gaskets (included)	<input type="checkbox"/> 5 1/4-inch-diameter (133 mm) hole saw (TW-Series only)
<input type="checkbox"/> Inlet/outlet tees*	<input type="checkbox"/> Utility knife
<input type="checkbox"/> Tape measure	<input type="checkbox"/> PVC pipe glue with primer
<input type="checkbox"/> Pipe, risers, etc.	
<input type="checkbox"/> Socket wrench	
<input type="checkbox"/> Excavator	

*tee inclusion varies by state/province

Installation Site Selection

1. Avoid installation of the tank in vehicular traffic areas. The tank is designed for non-traffic applications.
2. The maximum vehicle load is a 4,500-pound (20 kN) axle load at a soil cover depth of 6 to 48* inches (150 to 1,200 mm).

*18-inch (450 mm) max. in Florida for Cat. 3 TW and IM-1060 tanks; 48-inch (1,200 mm) max. in Florida for Cat. 4 IM-1060; 36-inch (900 mm) max. in Massachusetts, New Hampshire, North Carolina, and Oregon.

3. The tank shall not be installed where the subsurface water level outside the tank exceeds the height of the outlet pipe saddle. Follow Table 4 guidelines.

Excavating and Preparing the Site

1. Unless buoyancy control measures are required, the excavation width and length should be 12 to 36 inches (300 to 900 mm) larger than the tank on each side. See Infiltrator IM- and TW-Series Septic Tank Buoyancy Control Guidance document, available online at www.infiltratorsystems.com, for specific excavation requirements.

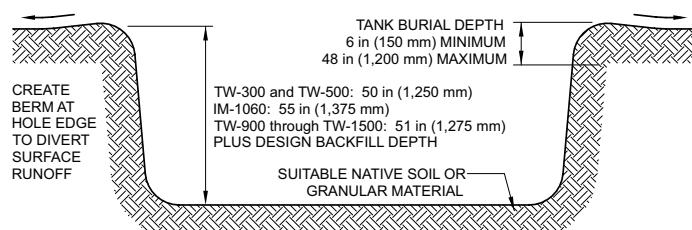
2. Excavate to account for the height of tank. 55 inches (1,375 mm) for the IM-1060, 51 inches (1,275 mm) for the TW-900 through TW-1500, and 50 inches (1,250 mm) for the TW-300 and TW-500. Also account for 4 inches (100 mm) of bedding (if required), and backfill thickness (permissible cover depth is 0.5 to 4 feet (150 to 1,200 mm) of soil).

Note: If the water level outside the tank exceeds the height of the outlet pipe saddle, tank structural integrity may be compromised. Follow Table 4 guidelines.

3. Inspect bottom of excavation to verify suitability of native soil for tank installation. Soils with large, protruding, or sharp stones or other similar objects that may damage the tank are not suitable.

4. The tank may be bed either in suitable native soil (see Backfilling the Tank section) or a minimum 4-inch (100 mm) layer of pea stone, sand, gravel, or other similar material having particles less than 3 inches (75 mm) in diameter.

5. Create a uniform, level bedding surface to ensure that the bottom of the tank is evenly supported at the base of the excavation. Verify that the base of excavation is flat.



Installing the Tank

1. Inspect the tank for damage before installation.
2. If the tank inlet and outlet penetrations are not drilled, drill holes using

the drill points provided at each of the inlet and outlet ports according to the Inlet and Outlet Hole Locations section of this document. The inlet and outlet may be drilled on either the sides or ends of the tank, as required based on applicable codes and site conditions.

Florida, Indiana, Kentucky, Oregon, West Virginia and certain Texas tank inlet/outlet holes are factory drilled.

3. The gaskets supplied with the tank are compatible with Schedule 40 and SDR 35 pipe using a 5-inch-diameter (125 mm) hole saw with IM tanks, and a 5 1/4-inch-diameter (133 mm) hole saw with TW-Series tanks.

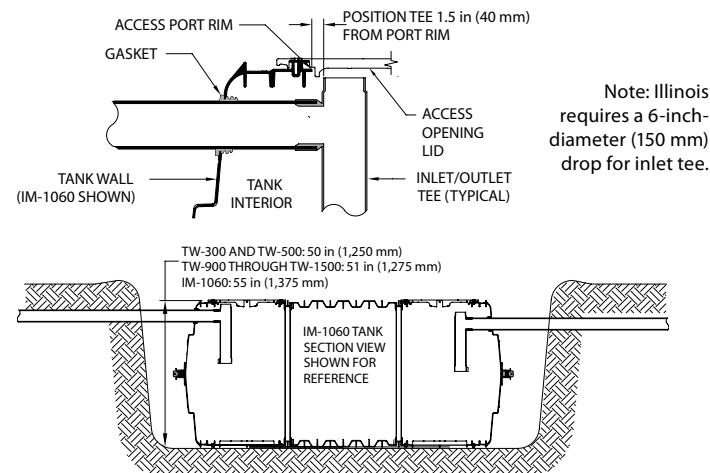
4. Install the rubber gaskets at the inlet and outlet.

5. Using the tank's integral lifting lugs, lower tank into excavation.

6. Slide the inlet and outlet pipes* through the gaskets.

*For North Carolina, the inlet pipe shall be a straight pipe with no tee.

7. Horizontally position the tee 1 1/2 inches (40 mm) from the access port rim as shown in the detail below. This allows the tee to fit into the access port lid.



8. Install lids and risers (see Installing Risers section) as necessary.

Backfilling the Tank

Note: Infiltrator tanks do not require filling with water prior to backfill placement. Water filling is advisable if tank is left in an open excavation that may fill with water.

1. Backfill with suitable native soil. If native soil is unsuitable, replace unsuitable fraction with suitable soil.

2. Suitable soil shall include soil textural classes defined in the United States Department of Agriculture soil triangle. Suitable soil textural classes are based on the tank installation depth, as measured from finished grade to the top of tank.

a) For a tank installation depth of 0.5 to 2.0 feet (150 to 600 mm), suitable soil textures include:

- i. Sand
- ii. Loamy sand
- iii. Sandy loam
- iv. Loam
- v. Sandy clay loam
- vi. Sandy clay

vii. The following, assuming that the sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487) is greater than 30%: silt loam, clay loam, and clay

viii. The following, assuming that the sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487) is less than 30% and the soil is shown to be dilatant (refer to Step 5 below for simple dilatancy test to be conducted in the field): silt loam, silt, clay loam, silt clay loam, silty clay, and clay

b) For a tank installation depth that is greater than 2.0 feet and up to 4.0 feet (600 to 1,200 mm), suitable soil textures include:

- i. Sand
- ii. Loamy sand
- iii. Sandy loam
- iv. Loam
- v. Sandy clay loam
- vi. Sandy clay
- vii. Silt loam, clay loam, and clay having at least a 30% sand particle fraction by weight (i.e. % that would be retained on No. 200 sieve, as per ASTM D2487).

3. Backfill should not have stones greater than 3 inches (75 mm) in diameter or excessive clods that do not break apart during placement and compaction. Backfill must be capable of occupying the spaces between the tank ribs.

4. Standard field soil classification methods shall be used to determine the soil textural class.

5. Under most circumstances, the determination of soil dilatancy will not be required. Dilatancy shall be determined in the field using a test that does not require specialized equipment, per ASTM D2488, Section 14.3, and as described below.

a). Mold a ½-inch-diameter (13 mm) soil test specimen in the palm of the hand. The test specimen shall be representative of the prospective tank backfill soil.

b). Mold the test specimen, adding water if necessary, until it has a soft, but not sticky consistency.

c). Smooth the soil ball in the palm of one hand with a spatula or equal.

d). Shake the soil sample by striking the hand vigorously against the other hand approximately 5 times. Do not strike hand in a manner that results in an injury.

e). Immediately following shaking, gently squeeze the soil in the palm of the hand.

f). Repeat shaking test if necessary to evaluate soil.

g). Note whether water appears on the surface of the soil specimen during shaking and squeezing.

i. If water appears on and disappears from the surface of the soil specimen, the soil is dilatant, and is suitable.

ii. If no visible change or only a slight visible change in the soil specimen occurs due to shaking or squeezing, the soil is not dilatant, and is unsuitable.

6. Do not backfill top of tank before sidewalls are completely backfilled.

7. Place backfill around the four sidewalls in a progressive, alternating manner, so that the backfill height along the four sidewalls is maintained within a 12-inch (300 mm) tolerance.

8. Continue to place backfill along the sidewalls in 12-inch (300 mm) lifts. Place backfill between the ribs on the sidewalls such that the space between the ribs is completely filled with soil.

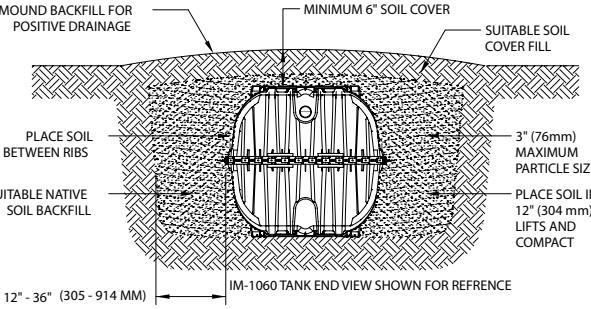
9. Compact backfill material either by hand tamping or mechanical compaction (includes backhoe bucket). Compact each lift prior to placement of next lift. Compact backfill from tank walls to excavation sidewalls.

10. Complete backfilling and grade the area.

11. A minimum 6-inch-thick (150 mm) layer of suitable soil must be placed over the top of the tank. The balance of backfill placed to finish grade above the tank may be either suitable or unsuitable soil.

12. Establish a strong stand of erosion-resistant vegetation.

Note: Grade to prevent the backfilled excavation from filling with surface runoff. If the water level in the backfilled excavation exceeds the height of the outlet pipe saddle, tank structural integrity may be compromised. Follow Table 4 guidelines.



Short and Long-Term Groundwater Control

It may be necessary to implement groundwater control measures during tank installation. Maintain dry conditions by expanding the excavation to create a short-term groundwater collection sump for temporary placement of a dewatering pump if needed. Long-term groundwater control measures such as underdrains and interceptor trenches may be sensible if the site is amenable to construction of a control system and such systems are not prohibited by regulation or law, and the tank location is not subject to flooding. Properly installed underdrains and groundwater interceptor trenches may prevent the need for tank buoyancy control measures.

Installing Under Shallow Groundwater Conditions

Buoyancy control measures may be required if the Infiltrator tank is to be installed with less than 18 inches (450 mm) of soil backfill cover, and where the water level outside the tank has the potential to rise 24 inches (600 mm) or more above the elevation of the tank bottom. Otherwise, no control measures are required (see Table 1). The need for buoyancy control measures must be determined based on backfill cover depth and height of water outside of tank above the tank bottom according to the following table. Refer to Infiltrator IM- and TW-Series Septic Tank Buoyancy Control Guidance document for more information.

Table 1: Tank models ¹ and conditions requiring buoyancy control ²			
Water height above tank bottom	Soil cover depth above tank ³		
	6" (min) (150 mm)	12" (300 mm)	18" (450 mm)
Above outlet pipe saddle	Do not install	Do not install	Do not install
36" (900 mm) to outlet pipe saddle ⁴	All models	TW-300/500	None
30" (750 mm) to 36" (900 mm)	All models except IM-1060	TW-300/500	None
24" (600 mm) to 30" (750 mm)	TW-300/500	None	None
Less than 24" (600 mm)	None	None	None

¹ TW-300, TW-500, TW-900, TW-1050, IM-1060, TW-1250, TW-1500.

² See Infiltrator IM- and TW-Series Septic Tank Buoyancy Control Guidance for more information.

³ No controls are required for soil cover depths exceeding 12" (300 mm).

⁴ The tank shall not be installed where the water level outside the tank exceeds the height of the outlet pipe saddle. Follow Table 4 guidelines.

Installing Risers

1. Compatible risers include 24-inch (600 mm) diameter products such as the Infiltrator TW-Riser, EZset by Infiltrator, PolyLok[®], Inc., and Tuff-Tite[®] Corporation, in addition to 24-inch (600 mm) diameter corrugated HDPE and IPEX Ultra Rib[®] PVC pipe. Follow Infiltrator's IM- and TW-Series Septic Tank Riser Connection Guidance.

2. Oregon watertightness testing shall include filling with water at least 2 inches above riser connection, with no more than 1 gallon leakage per 24 hours, per OAR 340-073-0025(3).

Installing Pumps and Related Equipment

Pumps may be supported on a stable, level 16 x 16 inch (400 x 400 mm) platform positioned on the bottom of the tank. Precast concrete block is acceptable pump support material. One 16 x 16 inch block or two 8 x 16 inch (200 mm x 400 mm) side-by-side blocks may be used. The support block(s) should be placed below an access opening and level upon the tank bottom. If two blocks are used, they should be oriented perpendicular to ribs on the tank bottom, if present, for stability.

Installation of products such as electrical conduit and wiring, pumps, water level control equipment, valves, siphon equipment, etc. shall be in accordance with the product manufacturer's instructions and compliant with applicable state or local rules and regulations. Appurtenances shall be fastened to the tank riser system and not the tank body or access opening rim. Where possible, appurtenances shall be installed to facilitate maintenance and repair access via the tank access openings.

General Specifications

- Failure to comply with installation instructions may void warranty.
- Prior to ground disturbance, check for subsurface obstructions and utilities in conformance with applicable requirements.
- Operating water temperature shall be less than 100° F (40° C).
- Tanks are not fire resistant. Store away from ignition sources.
- Removal of structural bulkheads is prohibited; removal of locking clips on the IM-1060 mid seam connection is also prohibited.
- Suitable for potable applications only if the tank bearing an NSF/ANSI 61 certification mark, otherwise tank is recommended for use in septic, rainwater/stormwater storage, and pump applications only.
- Infiltrator tanks are designed for installation underground. Contact Infiltrator Systems for above-ground use requirements.

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Table 2: Infiltrator Tank Nominal Volume Chart

Height1 in cm	TOTAL LIQUID VOLUME IN TANK AT INDICATED HEIGHT												
	TW-300		TW-500		TW-900		TW-1050		TW-1250		TW-1500		IM-1060
	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 3	1	2	2	8	10	37	11	43	14	53	17	64	3 11
2 5	2	9	5	19	22	82	25	95	30	115	37	140	13 49
3 8	5	19	8	30	41	156	48	181	58	218	71	267	28 106
4 10	9	34	13	49	62	236	72	273	87	330	107	404	46 174
5 13	15	57	20	76	84	317	97	368	117	444	143	543	65 246
6 15	21	79	28	106	106	400	122	463	148	558	180	683	86 326
7 18	28	106	37	140	128	483	148	560	178	674	218	825	107 405
8 20	36	136	48	182	150	567	174	657	209	791	256	968	129 488
9 23	43	163	59	223	172	653	200	756	240	910	294	1,112	152 575
10 25	50	189	71	269	195	739	226	855	272	1,029	332	1,257	176 666
11 28	57	216	83	314	218	826	252	956	304	1,149	371	1,404	200 757
12 30	65	246	95	360	242	915	279	1,057	336	1,270	410	1,551	225 852
13 33	72	273	105	397	265	1,004	306	1,160	368	1,393	449	1,700	251 950
14 36	80	303	118	447	289	1,093	334	1,263	400	1,516	489	1,849	277 1,049
15 38	87	329	130	492	313	1,184	361	1,367	433	1,640	528	2,000	303 1,147
16 40	95	360	142	537	337	1,276	389	1,472	466	1,765	569	2,152	330 1,249
17 43	102	386	154	583	361	1,368	417	1,578	500	1,892	609	2,305	357 1,351
18 46	110	416	166	628	386	1,461	445	1,685	533	2,019	650	2,459	384 1,454
19 48	118	447	179	678	411	1,555	474	1,792	567	2,146	690	2,614	411 1,556
20 50	126	477	191	723	436	1,650	502	1,901	601	2,275	732	2,769	438 1,658
21 53	134	507	204	772	462	1,747	532	2,012	636	2,407	774	2,928	465 1,760
22 56	141	534	216	818	488	1,847	562	2,126	671	2,541	816	3,091	493 1,866
23 58	149	564	228	863	515	1,948	592	2,241	708	2,678	860	3,256	521 1,972
24 61	156	590	241	912	542	2,053	624	2,361					

TW-Series Inlet and Outlet Hole Locations

Drill height markings are provided on the Infiltrator TW-900, TW-1050, TW-1250, and TW-1500 to serve as a guide for inlet and outlet hole locations. Markings "A" (lower) and "B" (upper) are located at the inlet end. Markings "C" (lower), "D" (middle), and "E" (upper) (TW-900 only) are located at the outlet end. Note: holes may be drilled at the end or side inlet and outlet locations. The circular centering symbol next to the marking letter indicates the centerpoint location for the hole saw. The pilot drill bit on the hole saw should be positioned on the centering symbol to properly align the hole saw.

The drill height markings below are provided to set the inlet and outlet invert heights based on state and/or local regulations. The chart below provides the proper inlet and outlet drill points. Note that state, provincial and local regulatory requirements take precedence over the information provided in the table below.

Table 3: Inlet and Outlet Hole Locations

State or Province	Inlet Drill Location	Outlet Drill Location	Invert Drop (in) [mm]	Inlet Invert Height ² (in) [mm]	Outlet Invert Height ² and Liquid Level (in) [mm]
DE, FL, IA, MA, ON	A	D	2 [51]	42 [1,067]	40 [1,016]
AR, CA, CO, CT, ID, IN ¹ , KS, KY ¹ , MO, MT, ND, PA, SD, VT, WV ¹	B	C	3 [76]	42.75 [1,086]	39.75 [1,010]
TX	B	D	2.75 [70]	42.75 [1,086]	40 [1,016]
All Others	A	C	2.25 [57]	42 [1,067]	39.75 [1,010]

Notes:

1. Florida, Indiana, Kentucky, Oregon, West Virginia, and certain Texas tanks are factory drilled.

2. Invert heights are measured from the lowest interior surface at the bottom of the tank.

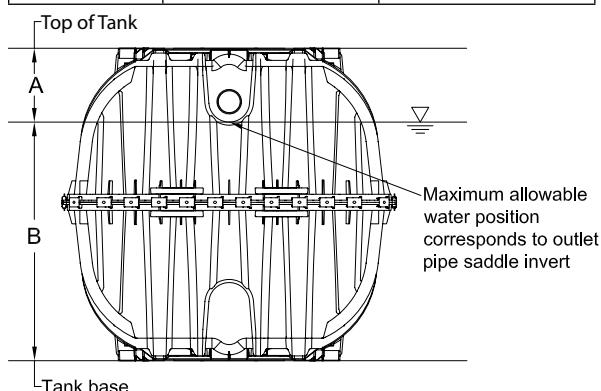
3. Invert heights based on 4-inch-diameter (100 mm) inlet/outlet pipes.

IM-1060 Inlet and Outlet Hole Locations

Drill height markings are provided on the Infiltrator IM-1060 to serve as a guide for inlet and outlet hole locations. The IM-1060 is manufactured to have an end inlet invert height of 47 inches (1,194 mm) above the interior surface of the tank bottom when using the drill height guide markings and 4-inch-diameter (100 mm) pipes. The end outlet invert height is 44 inches (1,118 mm), corresponding to a 3-inch (76 mm) drop from end inlet to end outlet. The side inlets have invert heights of 47.5 inches (1,207 mm), and side outlets have invert heights of 44.5 inches (1,130 mm). This corresponds to a side inlet to side outlet invert drop of 3 inches (76 mm); a side inlet to end outlet invert drop of 3.5 inches (89 mm); and an end inlet to side outlet invert drop of 2.5 inches (64 mm).

Table 4: Maximum Allowable Subsurface Water Elevation

Tank Model	Vertical Distance to Maximum Allowable Water Elevation Outside of Tank	
	A - From Top of Tank	B - From Tank Base
TW-300	13" (330 mm)	36" (900 mm)
TW-500	13" (330 mm)	38" (975 mm)
TW-900	11" (280 mm)	39" (975 mm)
TW-1050	11" (280 mm)	39" (975 mm)
IM-1060	13" (330 mm)	43" (1,075 mm)
TW-1250	11" (280 mm)	39" (975 mm)
TW-1500	11" (280 mm)	39" (975 mm)



INFILTRATOR SYSTEMS, INC. ("Infiltrator")

INFILTRATOR® SEPTIC TANK LIMITED WARRANTY

FIVE (5) YEAR MATERIALS AND WORKMANSHIP LIMITED WARRANTY

(a) This limited warranty is extended to the end user of an Infiltrator Septic Tank. A Septic Tank manufactured by Infiltrator, when installed and operated in accordance with Infiltrator's installation instructions and local regulation by a licensed installer, is warranted to you: (i) against defective materials and workmanship for five (5) years after installation. Infiltrator will, at its option, (i) repair the defective product or (ii) replace the defective materials. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Septic Tank.

(b) In order to exercise its warranty rights, you must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect.

(c) YOUR EXCLUSIVE REMEDY WITH RESPECT TO ANY AND ALL LOSSES OR DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER SHALL BE SPECIFIED IN SUBPARAGRAPH (a) ABOVE. INFILTRATOR SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND, HOWEVER OCCASIONED, WHETHER BY NEGLIGENCE OR OTHERWISE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

(d) THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY GIVEN BY INFILTRATOR AND SUPERSEDES ANY PRIOR, CONTRARY, ADDITIONAL, OR SUBSEQUENT REPRESENTATIONS, WHETHER ORAL OR WRITTEN. INFILTRATOR DISCLAIMS AND EXCLUDES TO THE GREATEST EXTENT ALLOWED BY LAW ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FINESSE FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. NO PERSON (INCLUDING ANY EMPLOYEE, AGENT, DEALER, OR REPRESENTATIVE) IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY CONCERNING THIS PRODUCT, EXCEPT TO REFER YOU TO THIS LIMITED WARRANTY. EXCEPT AS EXPRESSLY SET FORTH HEREIN, THIS WARRANTY IS NOT A WARRANTY OF FUTURE PERFORMANCE, BUT ONLY A WARRANTY TO REPAIR OR REPLACE.

(e) YOU MAY ASSIGN THIS LIMITED WARRANTY TO A SUBSEQUENT PURCHASER OF YOUR HOME.

(f) NO REPRESENTATIVE OF INFILTRATOR HAS THE AUTHORITY TO CHANGE THIS LIMITED WARRANTY IN ANY MANNER WHATSOEVER, OR TO EXTEND THIS LIMITED WARRANTY.

CONDITIONS AND EXCLUSIONS

There are certain conditions or applications over which Infiltrator has no control. Defects or problems as a result of such conditions or applications are not the responsibility of Infiltrator and are NOT covered under this warranty. They include failure to install the Septic Tank in accordance with instructions or applicable regulatory requirements or guidance, altering the Septic Tank contrary to the installation instructions and disposing of chemicals or other materials contrary to normal septic tank usage.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of a Septic Tank should contact Infiltrator's corporate headquarters in Old Saybrook, Connecticut, prior to such purchase to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of a Septic Tank.

Distributed By:



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