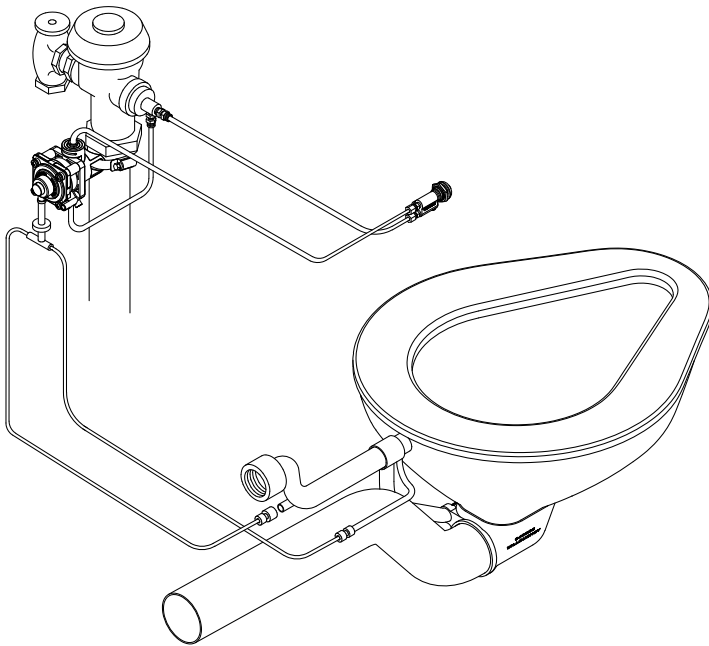


# Installation & Operation Manual

## T4 Toilet Overflow Preventer w/ Manual Reset



**T4  
(Manual-Reset)**

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**WILLOUGHBY**

Rev. 2/2021

MADE IN THE U.S.A.



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## Pre-Installation Information

# Installation notice!

Check Rough-In location **PRIOR** to installation

Flush lines thoroughly **PRIOR** to hook-up

When installing the **Willoughby Industries' Top-4 Overflow Preventer w/ Manual Reset:**

Before step 1 of the installation instructions, ensure that rough-ins are in the correct location.

The valve assembly, including the spray head, **MUST NOT BE** connected until *after* all lines have been flushed to remove the small particles of debris that are inherent with new construction projects and all chemicals that are used in flushing are purged from the system.

Chemicals used in flushing plumbing systems can attack the internal components of the valve and spray head and severely damage them, so any flushing of the system must be followed by a full flushing with pure water to clear any harsh chemicals remaining in the system. Debris in the system if allowed to enter the valve assembly and spray head can cause poor performance or outright failure.

Again **DO NOT** attempt to connect the valve assembly and spray head until *after* all flushing is complete and pure water is the only media that will be passing through the system. Damage to the valve assembly or spray head caused by harsh chemicals or debris will not be covered by the manufacturer's warranty.

# Installation notice!

Check Rough-In location **PRIOR** to installation

Flush lines thoroughly **PRIOR** to hook-up

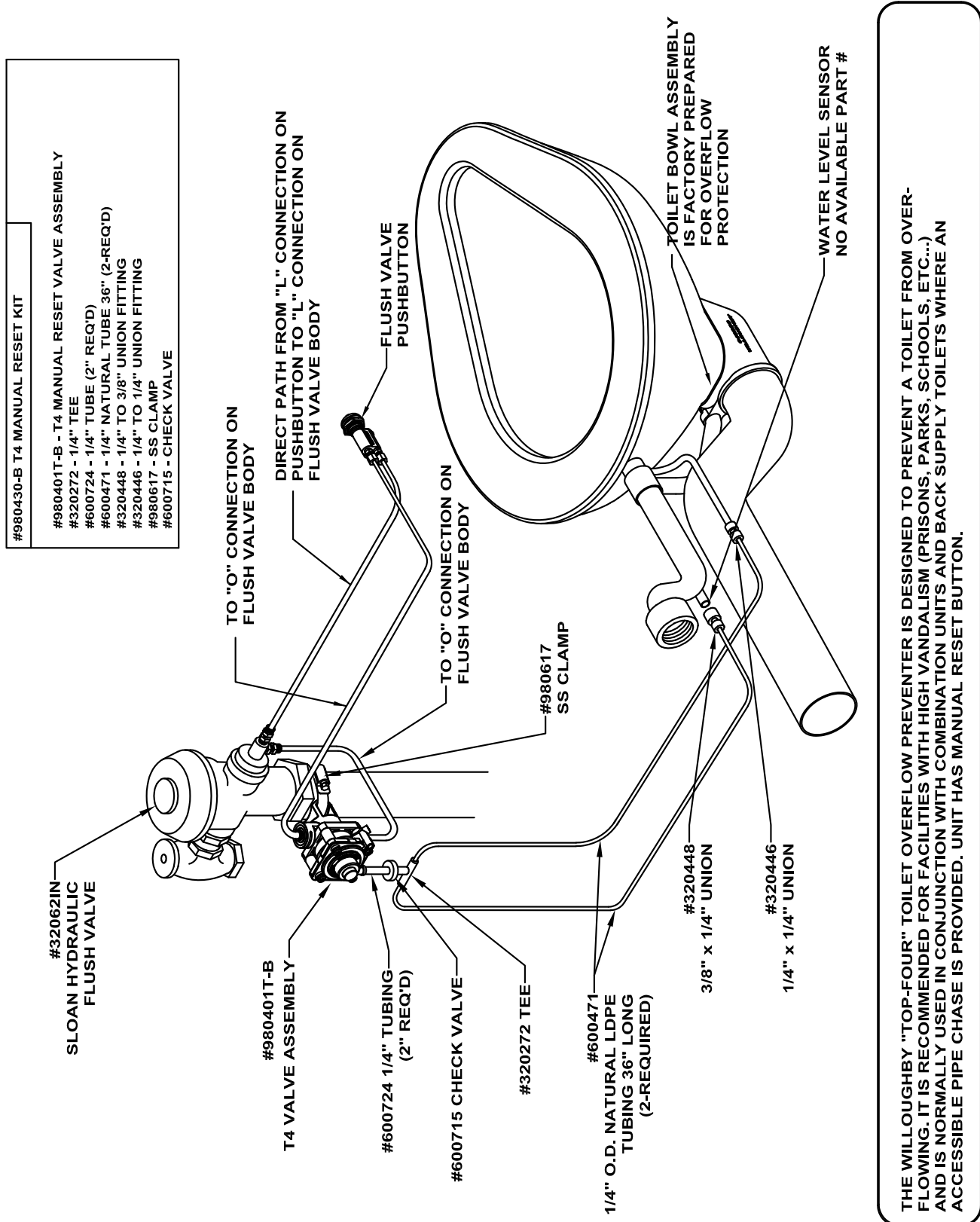
## General Description

*In normal operation, when the toilet is flushed, the vacuum generator on the toilet pulls air from the overflow port that is positioned at a particular height inside the bowl. The overflow port is designed in a manner such that water will not flow into it unless the height of water inside the bowl reaches the overflow port. Since the vacuum generator is only pulling air through the system, vacuum does not build to a sufficient level that is required to actuate the TOP-4 valve.*

*If the water level inside the toilet bowl reaches the overflow port, water will be pulled through the system by the vacuum generator. When water begins to be pulled through the system, the vacuum in the system increases to a sufficient level and actuates the TOP-4 valve. At this point, the TOP-4 valve has disabled the flush valve from operating and no more flushes can be made. A check valve in the system holds the vacuum on the TOP-4 valve.*

*To enable the flush valve to operate again, the TOP-4 valve reset button must be pressed. The reset button is integral to the TOP-4 valve and is identified by a label on the TOP-4 valve top cover. Press and hold the reset button for 10 seconds. While holding the reset button, flush the fixture multiple times. This will reset the TOP-4 valve by releasing the vacuum held by the valve. This will also rid the TOP-4 tubing of excess water and the vacuum generator will return to pulling air through the system. The flush valve will now function when the flush push button is pressed.*

# Physical Dimensions- Top-4 w/ Manual Reset



# Exploded-view w/BOM- Valve Assembly

ITEM #	SUB-ASSY#	PART #	DESCRIPTION	QTY.
1	N/A	980001A	#8-32 x 1 1/4" SCREW	4
2		380842	FITTING-HOSE BARB T4, 1/4" I.D. TUBE	1
3		980205	AIR SIDE TOP COVER	1
4	980320	980203	TOP 4 RESET BUTTON	1
5		600129	O-RING, #013, BUNA N-70	1
6		980202	TOP 4 RESET SPRING	1
7		980204	TOP 4 RESET RING	1
8	N/A	980616	T4 VACUUM SPRING	1
9	980315	980160	MAGNET CUP & DIAPHRAGM ASSEMBLY	1
10		980132	MAGNET, PNEUMATIC METERING VALVE	1
11	N/A	380802M	BODY, MOLDED WI PNEU. MTRG.	1
12	N/A	980127	O-RING M1.5x32 BUNA-70	1
13	N/A	980126	BARRIER CUP	1
14	N/A	980136	SPRING, WATER SIDE DIAPHRAGM	1
15	980310	980161	BUMPER, WATER SIDE ACTUATOR DISC	1
16		980125	DISK, WATER SIDE ACTUATING	1
17	980305	980128	3-PRONG VALVE SEAT ADAPTOR	1
18		980129	DIAPHRAGM - WATER SIDE - PMEL	1
19	N/A	980426B	TOP 4 BASE, SUB-ASSEMBLY	1

**NOTE:** REPAIR KIT ORDERING #'S ARE LISTED IN THE EXPLODED VIEW.

**NOTE:** PARTS LISTED IN THE PVK REPAIR KITS ARE NOT SOLD INDIVIDUALLY.

**NOTE:** ITEMS IN PVK-2, PVK-3, & 980320 ARE AVAILABLE IN KIT FORM ONLY. ITEMS CANNOT BE PURCHASED INDIVIDUALLY.

**PVK-2 DIAPHRAGM KIT (PART: 14-18)**

**PVK-3 DIAPHRAGM KIT (PARTS: 17,18)**

**PVK-5 TOP4 REBUILD KIT (PARTS: 2-18)**

**980320 TOP4 COVER ASSEMBLY KIT (PARTS: (2-7))**

**ASSEMBLED VALVE**

**OUTLET**

**INLET**

**PLACE LABEL TO SHOW FLOW DIRECTION**

**P/N: 980426B**

<b>Willoughby Industries, Inc.</b> Indianapolis, Indiana		TITLE / DESC: VALVE ASSEMBLY, T4-MANUAL RESET		PART #: 980401T-B	
TOLERANCES UNLESS NOTED	3 PLUS 40 1/2	SIZE A	MATL: SEE BOM	REVISION ORG: TRB	10/12/12 STANDARD
EXCEPT AS NOTED	FRACTIONS 1/32"	SCALE 1:2	REF:	REV: MAL	1/9/18 SHEET 1 OF 1

## Check Contents

- Separate all parts from packaging and make sure all parts are accounted for before discarding any packaging material. If any parts are missing, do not attempt to install T4 Overflow Preventer w/ Manual Reset until you obtain the missing parts.

**NOTE: Before beginning installation, all supply, drain and waste piping for the T4 Overflow Preventer w/ Manual Reset must be completed according to specified rough-ins. If you have not received rough-in details, please contact Willoughby Industries, Inc. (800) 428-4065**

**IMPORTANT: Flush all the water supply lines before making connections.**

# Installation Instructions

- 1.) Mount TOP-4 valve with reset button #980401T to the flush valve's vacuum breaker tube using the included clamp. Tighten securely, but not to the point of deforming the vacuum breaker tube. Ensure the bracket is mounted on the vacuum breaker tube such that the rubber tee fitting is facing downward (see drawing on reverse side).
- 2.) Connect the two (2) pieces of the tubing to the rubber tee fitting.
- 3.) The natural color LDPE tubing #600471 (2 pieces at 36" long) should be connected to the s/s vacuum generator and bowl sensor. This connection is made with a push-type union connector #320446 & #320448 (see drawing on reverse side).  
**Do not shorten this piece of tubing.**
- 4.) The TOP-4 valve is installed in the hydraulic flush valve's low pressure line. This line is identified with a letter "L" on a Sloan® flush valve and pushbutton for the flush valve. After this line has been connected between the flush valve and the pushbutton, cut it at a location that will allow both of the cut ends to reach the TOP-4 valve. The tube that connects the high pressure (letter "O" on a Sloan® valve) fittings on the flush valve and pushbutton will remain unchanged.
- 5.) The line from the flush valve (letter "L" on a Sloan® valve) connects to the elbow tube fitting on the top of the TOP-4 valve and the line from the flush valve pushbutton (letter "L" on a Sloan® valve) connects to the straight fitting on the bottom of the TOP-4 valve (see drawing on reverse side).
- 6.) Ensure all connections are tight to complete the installation.

**Note:** if the plastic fittings are taken apart for any reason, use **ONLY** thread tape on the plastic threads to reseal them. **DO NOT USE ANY OTHER THREAD SEALERS OR THREAD LOCKERS ON THE PLASTIC THREADS.** Thread sealers and thread lockers will attack the black plastic parts. If you have any questions, contact Willoughby Industries at: (317) 638-2381.

## **Care and Maintenance**

*There is no regularly scheduled maintenance required for the “Manual-Reset” system. The system should be visually checked for cracks in the flexible vacuum lines during normal maintenance inspections of other plumbing systems. If any cracking or damage is found, it is recommended that all flexible vacuum lines and connectors be replaced at that time.*

# Troubleshooting Guide

## Issues

1. Toilet Won't Flush
2. Toilet Will Only Flush Once
3. TOP-4 Valve Prevents Flushing in Overflow, but Quickly Resets Itself
4. Toilet Will Still Flush When in an Overflow Condition

## Solutions

1. Toilet Won't Flush
  - a. If nothing happens when the flush push button is pressed
    1. Ensure that the water is being supplied to the flush valve.
    2. Press the white reset button located on the TOP-4 valve to ensure that the valve is open.
  - b. If water enters the toilet when the flush button is pressed
    1. It is likely that the blowjet in the toilet has become blocked debris.
2. Toilet Will Only Flush Once (then nothing happens when the flush button is pressed)
  - a. If this is the first flush after an overflow condition, press the white reset button on the TOP-4 valve again. Some times the TOP-4 valve can close on the first flush after an overflow condition.
  - b. If there has been no previous overflow condition, a piece of tubing is either blocked or kinked.
    1. Check the piece of tubing that is connected to the overflow sensor port and make sure it is not kinked and does not have an obstruction.
    2. Inside the toilet bowl, check the underneath side of the overflow sensor port and make sure there is nothing blocking this port (the use of a mirror may be required to check the port for blockage).
3. TOP-4 Valve Prevents Flushing in Overflow, but Quickly Resets Itself
  - a. The o-ring on the reset button has likely become dirty, and is not sealing properly.
    1. A new reset assembly may be ordered (see drawings in this document).
      1. If a new reset assembly is being ordered, skip the subsequent steps.
    2. Review the drawings in this manual.
    3. Remove the two pieces of tubing from the rubber tee fitting that are going to the overflow port and vacuum generator port on the toilet.
    4. Remove the TOP-4 mounting bracket from the flush valve.
    5. Remove the check valve from the rubber tee fitting.
    6. Remove all four screws in the valve and pull off the valve cover with integral reset button.

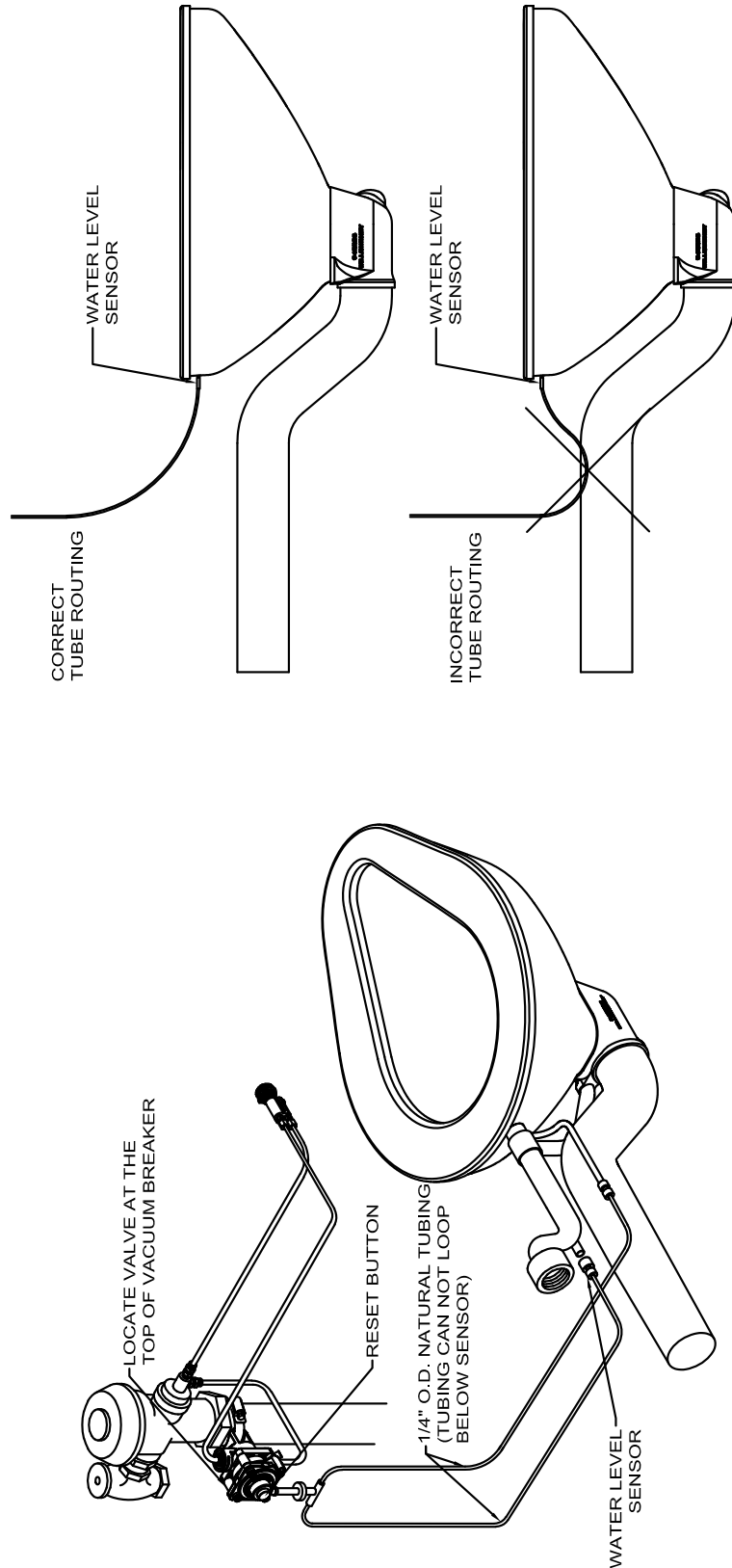
## Troubleshooting Guide (cont.)

7. A plastic plate will need to be removed from inside the valve cover.  
To do this, simply press the plate inward and turn the plate counter-clockwise a partial turn and it will fall out.
  8. Remove the reset spring, reset button o-ring and reset button by pulling on the reset spring.
  9. Check all components, including the valve cap, for dirt and debris.
    1. Clean all components, if necessary, and allow them to dry before reassembling.
    2. The o-ring may need to be replaced in severe instances.  
The o-ring is a standard #013 o-ring.
      - a. **DO NOT, UNDER ANY CIRCUMSTANCES, LUBE THIS O-RING!**
  10. Reassemble and test for functionality.
- b. The check valve may not be operating properly.
    1. Replace the check valve with a new one from Willoughby.
  - c. Contact Willoughby Industries for further assistance if you have tried all of the steps listed above and problem persists.
4. Toilet Will Still Flush When in an Overflow Condition
- a. The TOP-4 valve may be connected improperly. Check documentation to verify that the TOP-4 valve is properly connected to the flush valve and flush button.
  - b. Tubing may be kinked, blocked, connected improperly or have a hole in it.
    1. Ensure that the tubing to the overflow port and vacuum generator are securely hooked up.
      - a. Also ensure the same tubing is secure in the rubber tee fitting.
      - b. Ensure that both pieces of tubing are 3 feet in length.
    2. Ensure that no tubing is kinked, blocked or has a hole in it.
  - c. Check and see if the vacuum generator is pulling a vacuum.
    1. Locate the tubing that is connected to the vacuum generator. Pull that tubing out of the rubber tee fitting. While someone flushes the toilet, hold a finger over the piece of tubing that is connected to the vacuum generator-you should be able to feel the vacuum with your finger.
  - d. Make sure the tubing to the vacuum generator and overflow sensor port is three feet long each. Cutting the tubing short can hamper valve operation.
  - e. Make sure the correct tubing is running to the vacuum generator and overflow sensor port (you may need to review the documentation that came with the TOP-4 valve).
  - f. The check valve may not be functioning properly.
    1. Replace check valve with a new one from Willoughby.
  - g. Contact Willoughby Industries for further assistance if you have tried all of the steps listed above and problem persists.

# Troubleshooting Guide Diagram

If toilet will not flush, but there is no overflow condition present...

Make sure no portion of 1/4" O.D. natural LDPE tubing is below the water level sensor. If tubing is found to be installed below water level sensor, and flush valve will not activate hold reset button and push the flush valve pushbutton 2-3 flush cycles to allow any excess water to drain back from the flush valve through the back of the toilet bowl. If water remains in tubing then disconnect tubing from the back of the fixture at water level sensor and manually drain. Reinstall tubing ensuring no loops so that no portion of the tubing is below water level sensor. Unit will then function as designed.



# Warranty

Willoughby Industries, Inc. warrants to commercial and institutional purchasers only that each unit will be free from defects in workmanship and materials under normal use and service upon the following terms and conditions. The period during which components are warranted is as follows:

1. All other components warranted for 1 year from date of shipment.

This warranty does not cover installation or any other labor charges and does not apply to any components damaged by accident, abuse, improper installation or improper maintenance. This warranty does not cover any installation that did not comply with national, state and local building, plumbing or electrical codes. The warranty is limited to replacing or repairing at manufacturer's option, transportation charges prepaid by the purchaser, any component or part which upon our inspection shall be deemed as defective within the limitations of this warranty. The replacement or repair of defective units as stated in this warranty shall constitute the sole remedy of the purchaser and the sole liability of Willoughby Industries, Inc. Willoughby Industries, Inc. shall not otherwise be liable under any indirect damages caused by defects in the repair or replacement thereof.

This warranty only extends to commercial and industrial purchasers and does not extend to any others, including consumer customers of commercial institutional purchasers. This warranty is in lieu of all other warranties, expressed or implied, including implied warranty of merchantability or fitness for a particular purpose or otherwise.