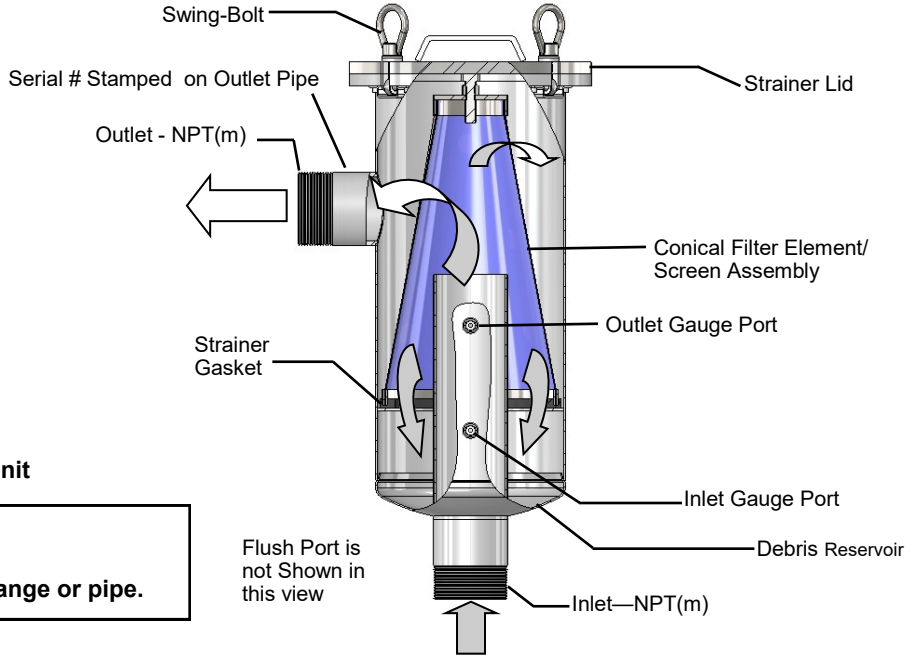




**MILLER-LEAMAN, INC.**  
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**OWNER'S MANUAL**  
**OPERATION AND INSTRUCTION GUIDE**

**Swing Bolt Lid - 2" and 3"**



Record in the space below the Serial # of your unit

**Serial #** \_\_\_\_\_  
 The Serial # is located on the top of the outlet flange or pipe.

**IMPORTANT**

Please make certain that persons who are to use this filter thoroughly read and understand these instructions prior to operation. Should you have any questions regarding the operation of this filter, please call (386) 248-0500 and ask to speak with one of our customer service representatives.

**I. SAFETY CONSIDERATIONS**

Safety precautions are essential when any filtration equipment is involved. These precautions are necessary when using, storing, and servicing your Strainer. If safety precautions are overlooked or ignored, personal injury or product damage can occur.

Your Strainer was designed for specific applications. It **should not** be modified and/or used for any application other than originally specified. If there are any questions regarding its application or installation, contact Miller-Leaman, Inc.

**Always adhere to the following precautions, as they are essential when using your Thompson Strainer.**

1. Read this manual carefully. Consider the applications, limitations, and the potential hazards specific to your Strainer.
2. The Strainer must be firmly supported. The Strainer **should not** be suspended by the inlet and outlet connections. Vertical Inlet piping must be plumbed into properly supporting piping.
3. **Absolutely under no conditions should the Strainer lid or pressure gauges be removed while the Strainer is pressurized.** Pressure should never exceed 150 PSI.
4. Units with damaged or missing parts should **never** be operated. Contact customer service representatives for replacement parts.
5. Back-flow prevention devices should be installed upstream of the inlet, and downstream of the outlet of the Strainer as to prevent back flow or vacuum effects that can be damaging to the Strainer element.
6. Pressure relief valves of a sufficient size and volume should be installed upstream of the inlet, and downstream of the outlet of the Strainer. They should be set to relieve pressure at 1.2 times the maximum operating pressure (not to exceed the max. rated pressure). This helps prevent damage to the Strainer and element if severe stoppage or water hammer occurs.

**AT NO TIME SHOULD THE INTERNAL PRESSURE EXCEED THE MAXIMUM RATED PRESSURE OF THE STRAINER**

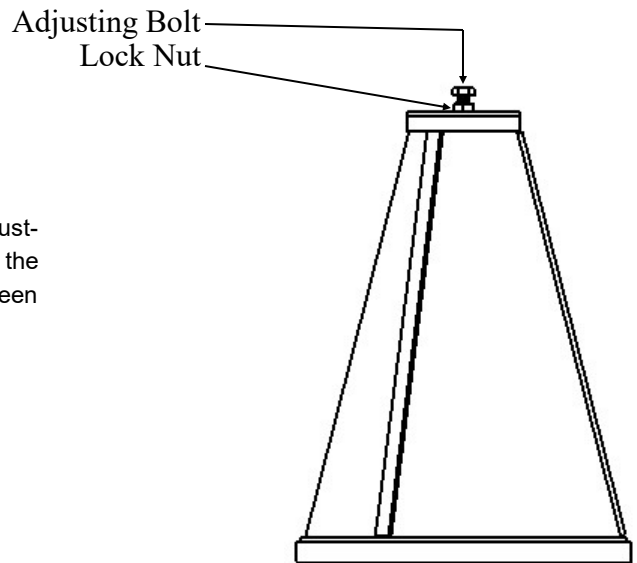
## II. BEFORE STRAINER OPERATION

There are a few tasks that must be completed before your *Thompson Strainer* is ready for operation. Please review the following checklist. When all tasks are complete the Strainer is ready for use.

1. Are the inlet / outlet connections securely fastened to the in-line pipe? The arrows clearly depict flow direction (see above).
2. Have you installed a check valve/back flow prevention device upstream of the inlet and downstream of the outlet of the Strainer so as to prevent back flow or vacuum effects which can be damaging to the Strainer element?
3. Have you installed a quick-pressure relief valve upstream of the inlet and downstream of the outlet of the Strainer set to relieve pressure at 1.2 times the maximum operating pressure (not exceeding the maximum rated pressure of your Strainer)? This is to prevent damage to the Strainer element when and if severe clogging or water hammer occurs. Pressure-relief valves are available in various sizes, consult your local dealer or valve manufacturer to obtain the proper valve for your application.
4. Have you installed a Isolation valve on the Inlet port located at the bottom of the Strainer body (see front cover diagram)? This valve, when closed, will allow for a safe clean out of the screen and the debris accumulated in the Strainer body.
5. Install a Flush Valve on the Flush Port located near the bottom of the Strainer Body Debris Reservoir. The Valve must be plumbed to atmosphere and the flush line should not have any elevation or be piped to a pressurized line.
6. Make sure back-mount pressure gauges are installed in the gauge ports located on the front of the Strainer body (see front cover diagram). These gauges will allow you to monitor the pressure differential on each side of the screen so as to know when and if the Strainer element is clogging.
7. Is the *Thompson Strainer* lid securely fastened? See the Lid Tightening Specifications below to ensure safety and an adequate seal.

## III. SCREEN ADJUSTMENT PROCEDURE (INCLUDING REPLACEMENT SCREENS)

Before securing the Head Assembly with Eye Nuts, position the adjusting bolt on screen assembly so that there is a 1/16" space between the head and the housing flange all around after the locknut on the screen assembly is tightened.

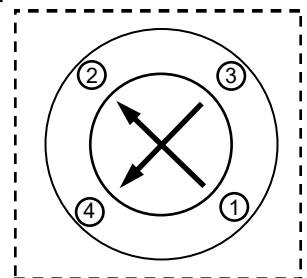


## IV. LID TIGHTENING SPECIFICATIONS

The Swing Bolted lid *Thompson Strainers* require that the Lid attachment bolts be tightened sufficiently to make a complete seal without damaging the bolts, the O-ring seal, or the Strainer head. The Eye Nut assemblies allow for quick disassembly and reassembly. Fastening torque on Eye Nuts to be 15 Ft-Lbs.

The recommended procedure when tightening the swing bolted lid is to follow a star wheel tightening pattern (see below). This is similar to the tightening of an automobile wheel in that the next bolt to be tightened is located opposite to the bolt just tightened. The best approach is to use a few series of tightening sequences, rather than a single series of tightening. Each series should evenly compress the O-ring by an additional small amount, until each Eye Nut torque is 15 Ft-Lbs, and the Lid seal does not leak.

Recommended  
Tightening  
Sequence



## **IV. STRAINER OPERATION**

At this point the *Thompson Strainer* is ready for operation. Periodically (depending on liquid quality) the debris that settles out at the bottom of the Strainer will need to be cleaned out. Upon receiving your Strainer, you must install a valve on the Inlet port. It is the user's discretion how often the valve should be closed for Strainer clean-out. It strictly depends on how much debris is being captured by the screen and falling into the Strainer debris reservoir. Over time, one should be able to accurately determine how often clean-outs are required. **It is important that you never allow debris to accumulate beyond the capacity of the reservoir.**

***(Note: After seasonal operation, drain the water contained in the Strainer body. If there is corrosive chemical content in the water, it may corrode the Strainer element. Also, in winter months, the water may freeze and expand putting unnecessary stress on the Strainer body).***

## **V. STRAINER ELEMENT CLEANING**

The optional pressure gauges can be used to monitor the pressure differential between the inlet and outlet sides of the Strainer. When there is a pressure loss of 5-10 PSI between the inlet and outlet side of the Thompson Strainer, the Strainer element may require cleaning. Please note that you must maintain an Inlet Pressure that is higher than the pressure differential to maintain flow.

**CAUTION: Make sure that the system is completely shut down when the Strainer element is to be taken out and cleaned. NO pressure should remain in the system.**

Follow these steps when cleaning the Thompson Strainer element:

- Step 1:** Shut off system flow at the Inlet port and manually relieve any system pressure within the Strainer.
- Step 2:** Remove the top of the Thompson Strainer by loosening the Eye Nuts and swing the bolt assemblies away from the lid.
- Step 3:** Lift the Strainer element (conical screen) out of the Strainer body.
- Step 4:** Carefully scrub down the Strainer element with a rigid nylon brush until all matter is loosened.  
***Do not use a steel brush.***
- Step 5:** Wash the Strainer element off with clean water. It is preferable to use a hose with a significant amount of water pressure. ***Do not use a pressure washer.***
- Step 6:** Remove any accumulated debris in the Debris Reservoir that has not been flushed out.
- Step 7:** Wash all matter from the Strainer gaskets and clean the inner-ring where the bottom of the Strainer element rests.
- Step 8:** Make sure the U-shaped gasket is fitted securely to the bottom of the Strainer element. Reposition the Strainer element into the body of the Strainer.
- Step 9:** Make sure the Strainer head gasket is clean and secure in the top of the Strainer body. The O-ring should be seated completely in the body flange. Follow the Lid Tightening Specification listed in section 3 (III) above. Reposition the Strainer lid back on the Strainer body with the Bolt Axle Ribs aligned with the swing bolts.

## **VI. INFORMATION CONCERNING WATER HAMMER**

### **WHAT IS WATER HAMMER?**

Water hammer is a phenomenon that can occur in fluid systems with long pipes between the fluid source and the outlet. The term itself refers to the sound made when water hammer occurs which resembles banging a hammer on a long pipe. Water hammer is a rapid change of pressure caused by a rapid change in velocity. When the velocity is changed a pressure wave that travels at the speed of sound is initiated and travels in the upstream direction until it reaches some stationary energy level, like a reservoir. A rarefaction wave (at the pressure of the water source) then travels downstream at the same speed. If the flow has been shut off downstream the pressure wave impacts the blockage and the pressure in the entire system is raised very quickly.

### **WHAT CAUSES WATER HAMMER?**

Any action that can cause a rapid change in the velocity of the flow can set off a water hammer - closing a downstream valve, pipe fracture, pump stoppage, etc. The critical time for which a valve may be closed depends on the length of piping between the valve and the source reservoir. The longer the distance the slower the valve may be shut to not cause a water hammer. Typically for short lengths of pipe (below 500 ft) the critical time is less than 1/10 second.

**WHAT CAN WATER HAMMER DO?**

Pressure spikes from water hammer can raise fluid pressures to very high values (in excess of 1000 PSI depending on the situation). Such pressure spikes can result in mechanical failures such as broken valves, pipes, Strainers, joints, etc. Water hammer does not have to occur fully to raise the pressure. A partial hammer can occur that raises the pressure to a certain percentage of the theoretical maximum. The Thompson Strainer is rated to an absolute maximum pressure of 150 PSI for Swing Bolt models. A water hammer pressure spike that raises the pressure higher than the maximum rated pressure may result in Strainer damage.

**WHAT CAN I DO TO PREVENT WATER HAMMER?**

There are precautions that can be taken to prevent or decrease the effect of water hammer. A pressure relief valve that leads to a surge tank or accumulator may protect other key components from water hammer. A close adherence to operational policies will also help prevent valves or pumps from being accidentally shut off thereby causing a water hammer. A close examination of a system will inform you of potential hazards.

**VII. WARRANTY**

Miller-Leaman warrants its products against defects in material and workmanship under normal use and service for which such products were designed as per the product schedule listed below. Our sole obligation under this warranty is to repair or replace, at our option, any product or any part or parts thereof we find to be defective.

<u>Product</u>	<u>Warranty Period</u>
Thompson Strainer Housing	12 months from factory ship date
Thompson Strainer Screen	3 months from factory ship date

**MILLER-LEAMAN MAKES NO OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

The warranty set forth above is the only warranty applicable to Miller-Leaman products. Our maximum liability shall not in any event exceed the contract price for the product.

**IN NO EVENT SHALL MILLER-LEAMAN BE LIABLE FOR ANY DELAY, WORK STOPPAGE, CARTAGE, SHIPPING, LOSS OF USE OF EQUIPMENT, LOSS OF TIME, INCONVENIENCE, LOSS OF PROFITS OF ANY DIRECT OR INDIRECT INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGES RESULTING FROM OR ATTRIBUTABLE TO THE USE OF THE PRODUCT.**

This warranty is governed by the Laws of the State of Florida. Venue and jurisdiction of any case or controversy related to the use of the product or this warranty shall lie exclusively in the State Courts of Volusia County, Florida.



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