replacement parts industries, inc.

AN INTRODUCTION TO TUTTNAUER MANUAL STERILIZERS

July 2016

Presented by
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Product Engineer
Replacement Parts Industries, Inc.

Overview of Today's Presentation

- Manual Models and Manual vs. Electronic Models
- Cycles and Phases
- Troubleshooting
- Service Tips
- PM and Cleaning
- RPI Technical Assistance Center

Manual Models

1730, 2340, 2540 & 3870 ending in M & MK

*Manually operated models: M = Manual and MK = Manual Kwiklave**

**The Kwiklave units have a faster sterilization time than standard units but still maintain the standard drying time.*

Manual vs. Electronic Models

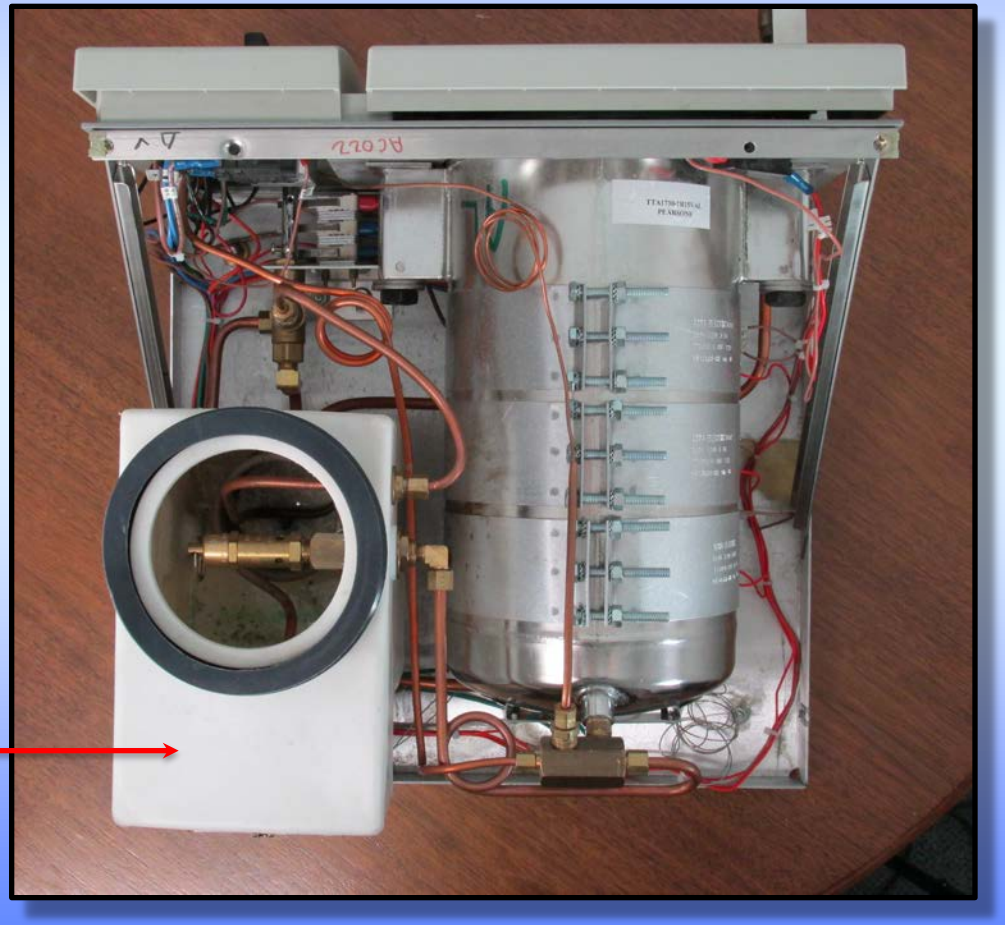
- Self-diagnostic software.
- Display codes to assist you with troubleshooting the unit when it will not operate properly.
- Heater circuit is microprocessor controlled and automatically changes from FILL to STERILIZER to DRYING cycle and powers down at the end of the drying cycle.
- Timing circuits that actuate solenoid valves to allow a premeasured volume of water for each cycle, thus eliminating operator errors in filling the chamber.
- Additional electronic surface temperature monitoring to prevent damage to the chamber because of low water conditions.

Fill Cycle: How To

1) Ensure drain is closed.

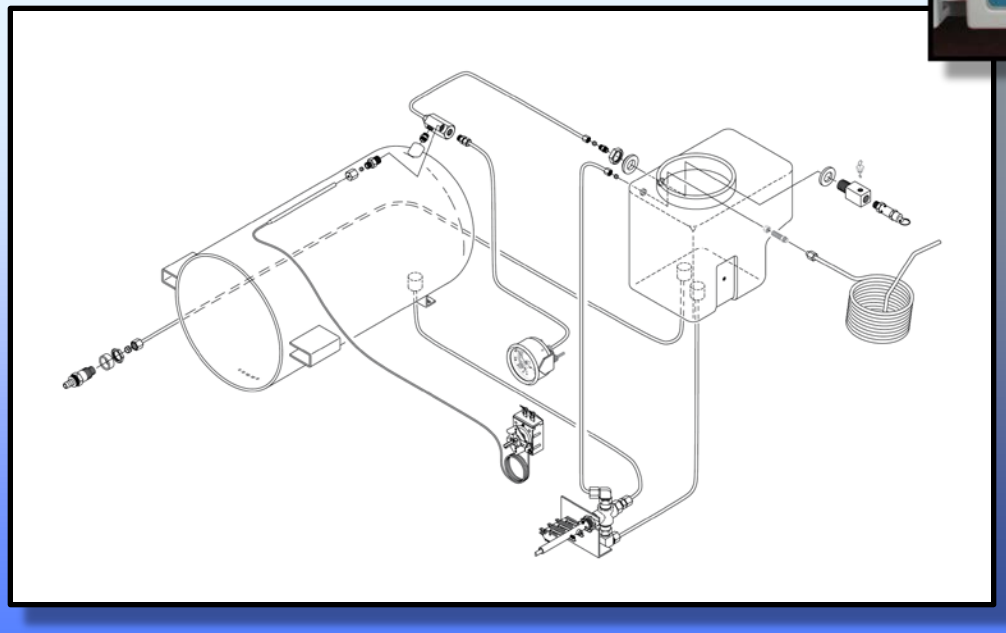
2) Check water level in reservoir, add as needed.

3) Turn on power switch – it should be illuminated.



Fill Cycle: How To

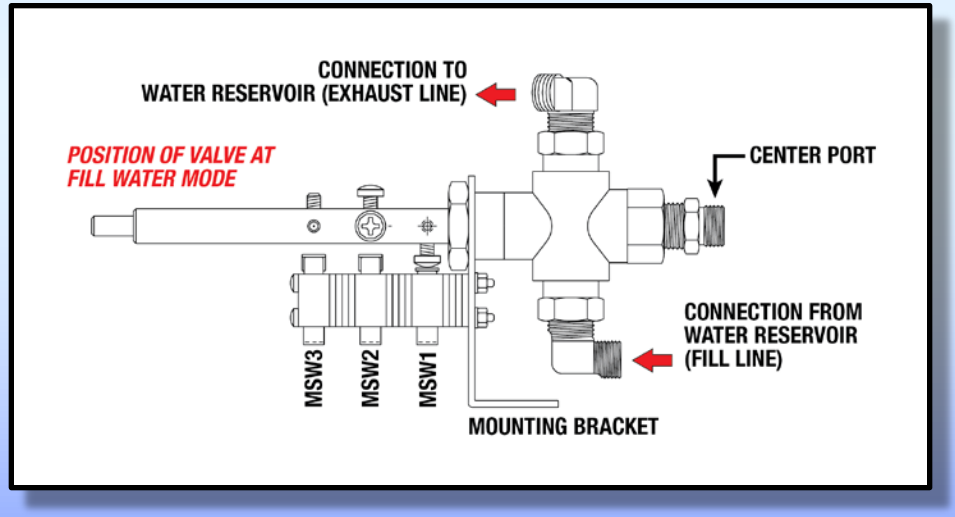
4) With door open, rotate the knob on the Multi-Purpose Valve (MPV) clockwise to fill position. Water should flow into chamber.



Fill Cycle: Micro-Switches

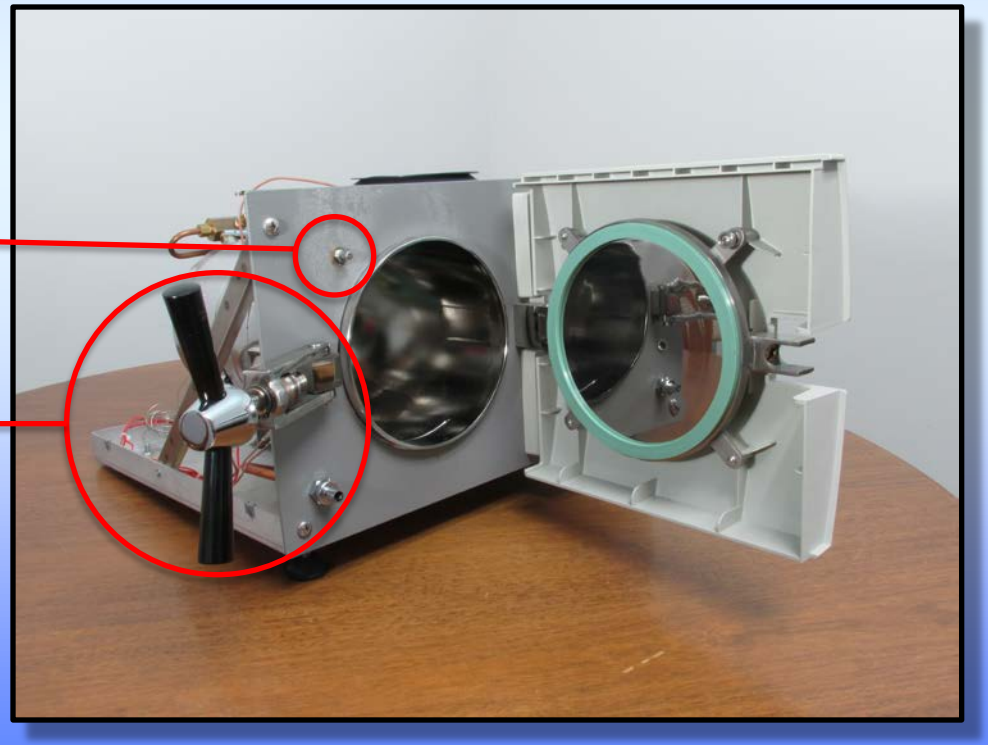
The micro-switches on the MPV should be
In the following positions:
– MSW-1 is depressed; Switch is closed.
– MSW-2 is not depressed; Switch is open.
– MSW-3 is not depressed; Switch is open.

Important! If these are not in the positions as described above, simply adjust the activation screw for the switch in question.



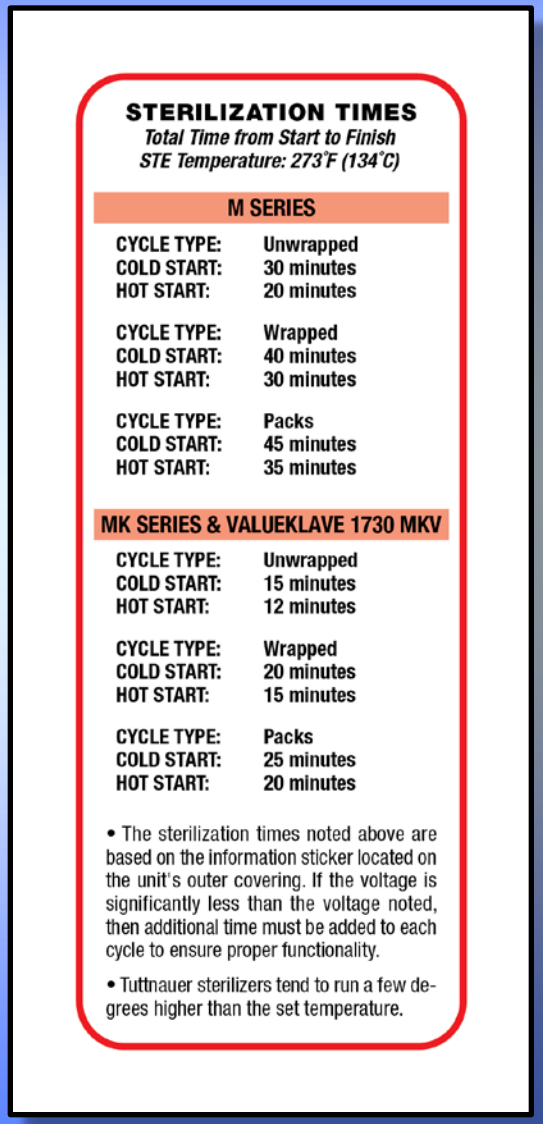
Fill Cycle: Door Closed

Load the unit, close and lock the door. *When the door is closed*, the door Switch *should be depressed and ready for the Sterilizer cycle.*



Heat Up and Sterilization

Sterilization Timetable chart



STERILIZATION TIMES

Total Time from Start to Finish
STE Temperature: 273˚F (134˚C)

M SERIES

CYCLE TYPE:	Unwrapped
COLD START:	30 minutes
HOT START:	20 minutes
CYCLE TYPE:	Wrapped
COLD START:	40 minutes
HOT START:	30 minutes
CYCLE TYPE:	Packs
COLD START:	45 minutes
HOT START:	35 minutes

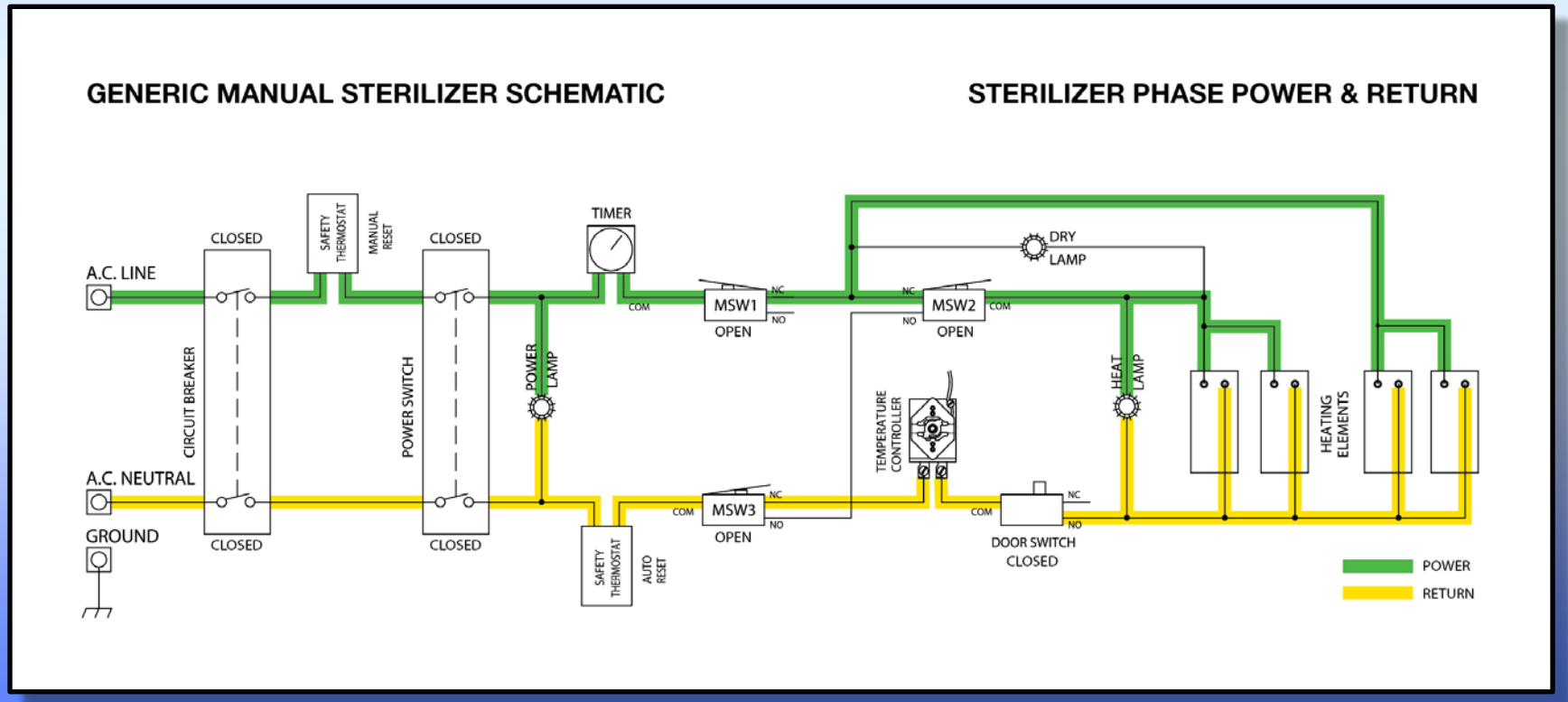
MK SERIES & VALUEKLAVE 1730 MKV

CYCLE TYPE:	Unwrapped
COLD START:	15 minutes
HOT START:	12 minutes
CYCLE TYPE:	Wrapped
COLD START:	20 minutes
HOT START:	15 minutes
CYCLE TYPE:	Packs
COLD START:	25 minutes
HOT START:	20 minutes

- The sterilization times noted above are based on the information sticker located on the unit's outer covering. If the voltage is significantly less than the voltage noted, then additional time must be added to each cycle to ensure proper functionality.
- Tuttnauer sterilizers tend to run a few degrees higher than the set temperature.

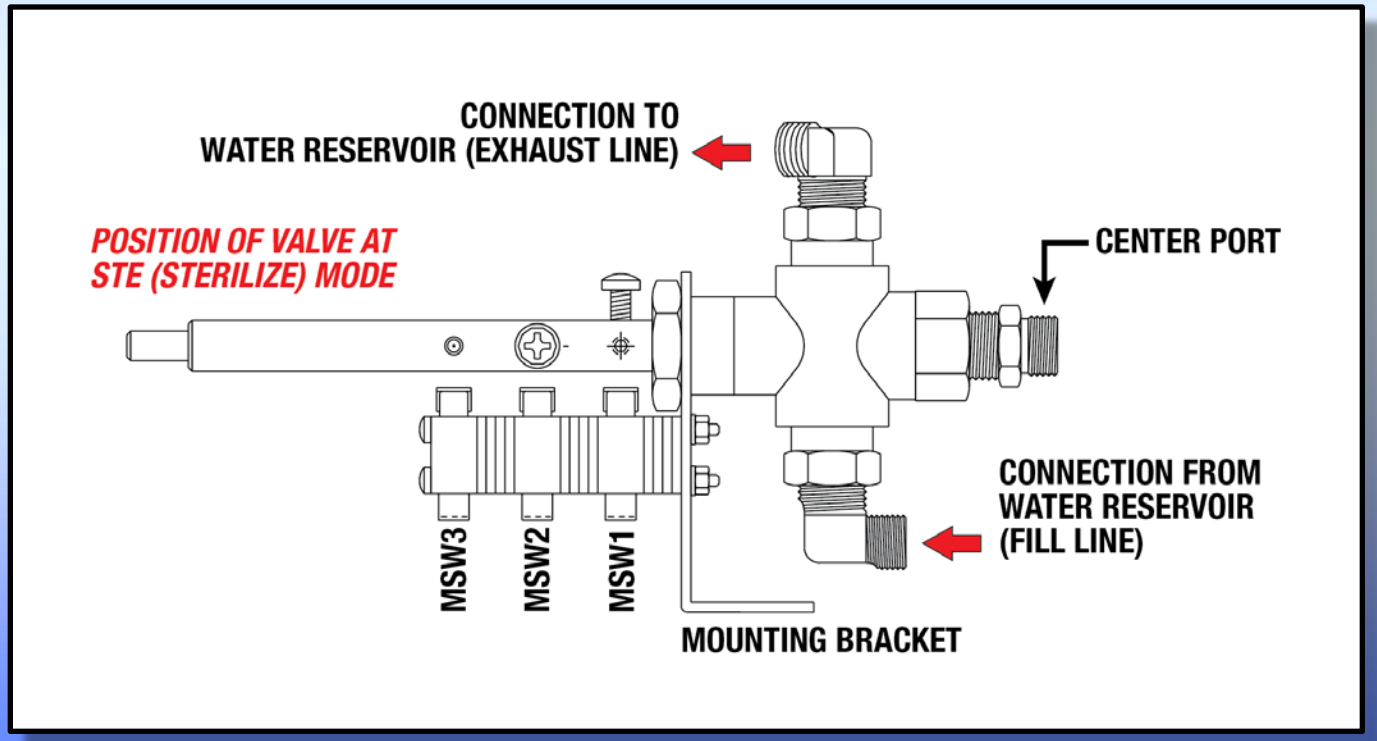
Heat Up and Sterilization

Manual sterilizer schematic



Heat Up and Sterilization

Multi-Purpose Valve in sterilize position.



Heat Up and Sterilization

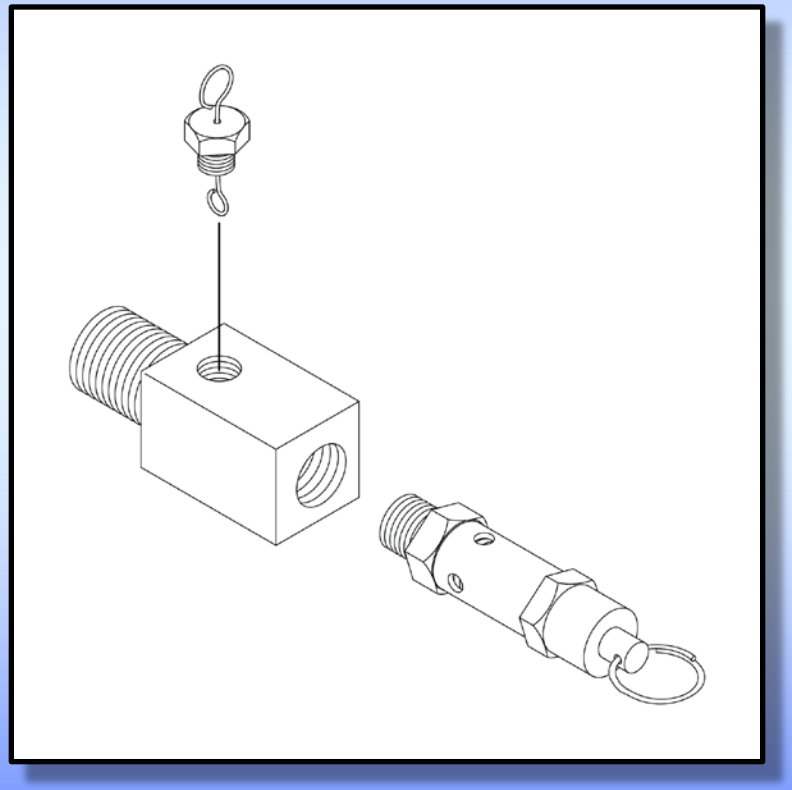
The heat indicator “ON” light blinking signifies the operation of the control thermostat, Which keeps the temperature stable by turning the heating elements on and off.

Heat Indicator*

***Note: Depending on the version of the unit’s face plate, the order of the indicator lights from top to bottom is Power, Heat, and Dry (as shown here), and the order of the other version is Power, Dry, and Heat.**

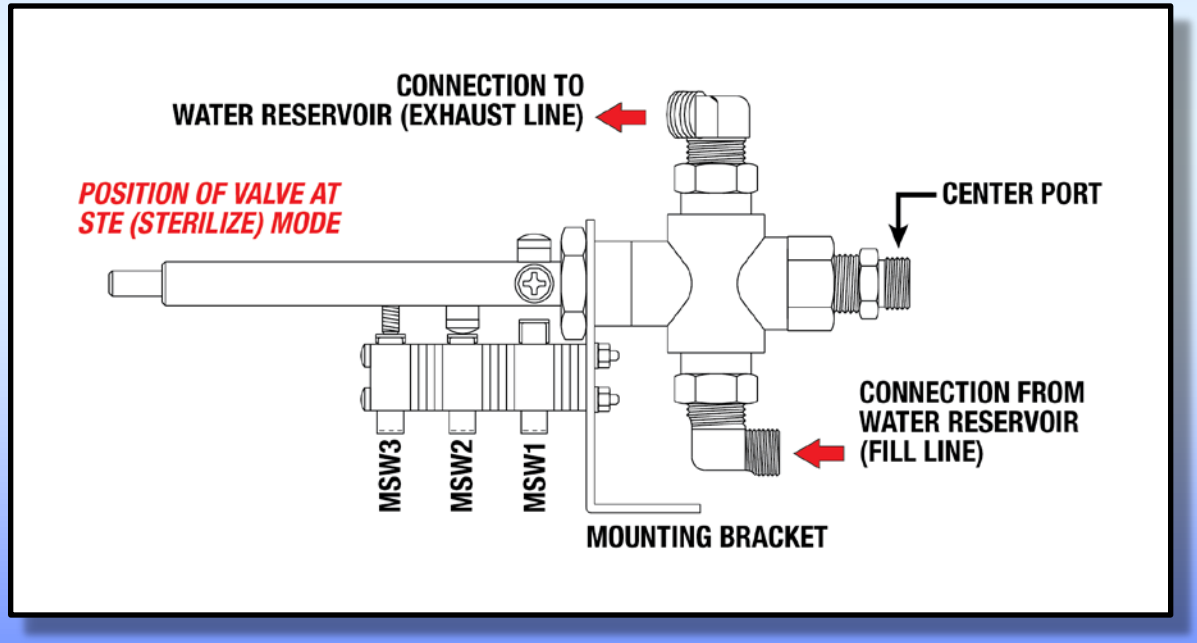
Heat Up and Sterilization

The Air Jet Valve removes air pockets from the chamber during the heating and sterilization Phases.



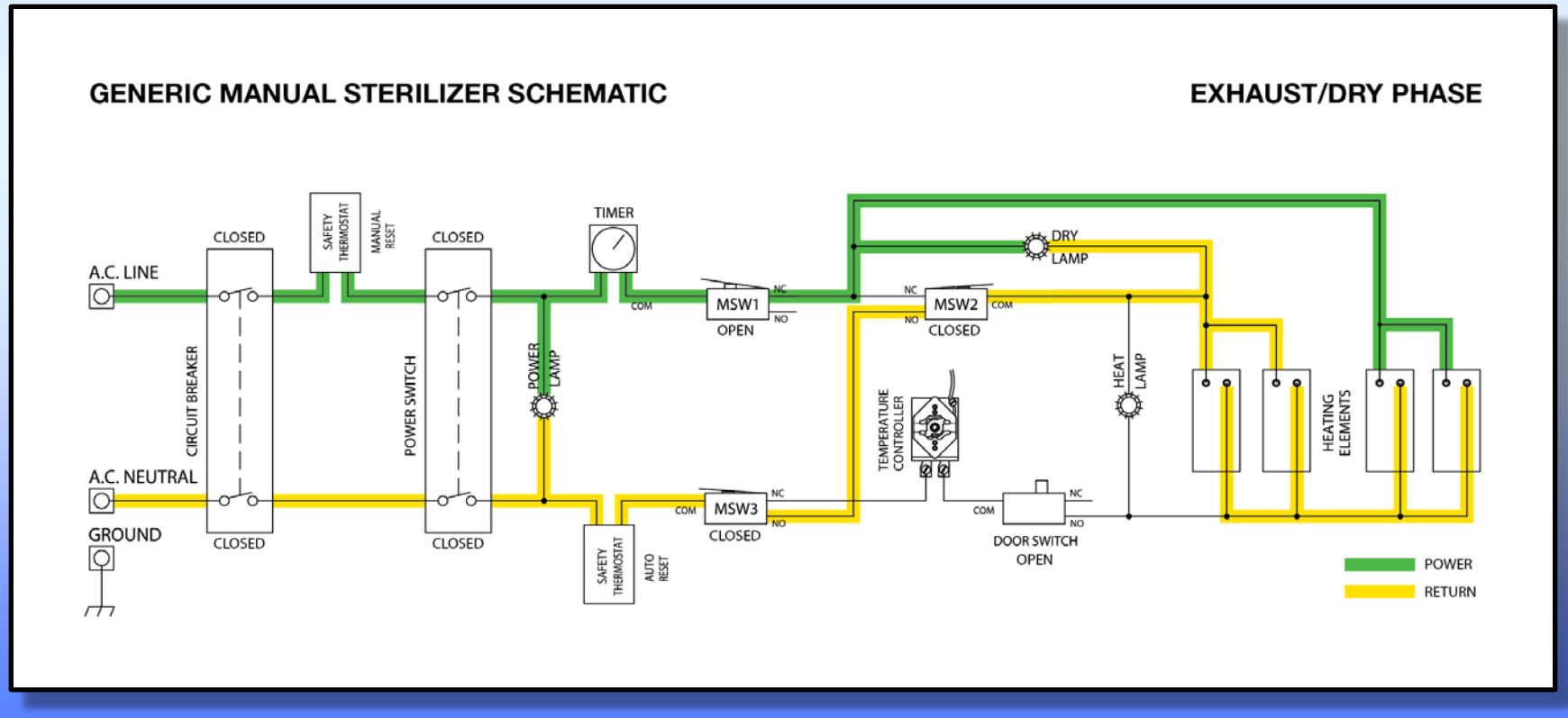
Exhaust Phase

Rotating the MPV clockwise From Sterilize to EXH + DRY opens the path to the condensation coil.



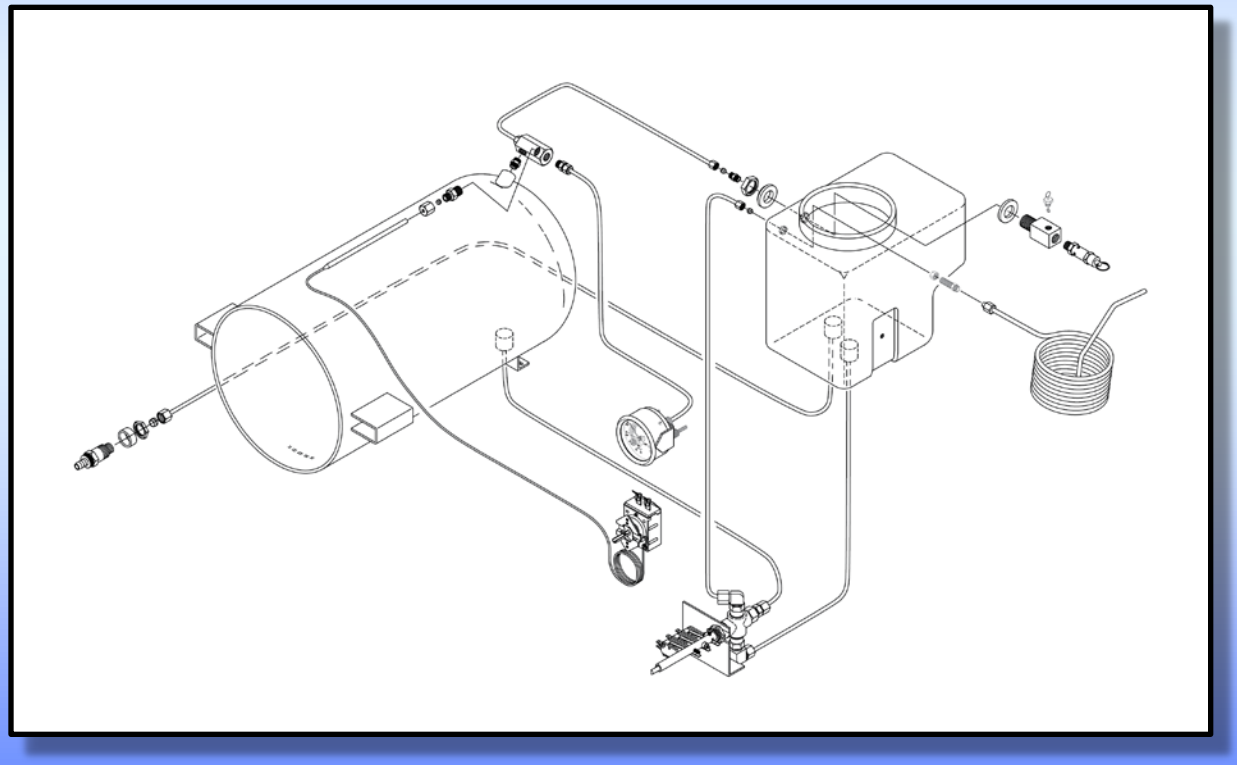
Exhaust Phase

Electronic Schematic



Exhaust Phase

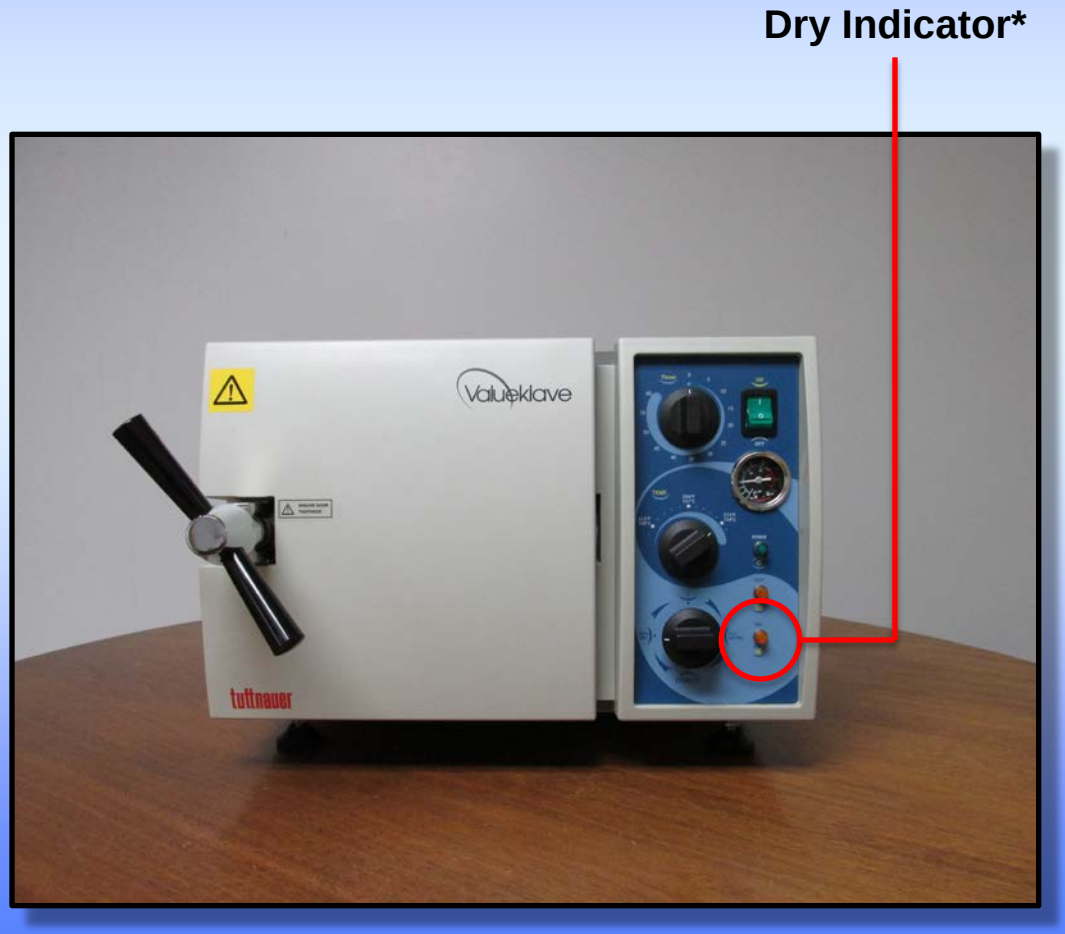
Plumbing Diagram



Drying Phase

- Once the Exhaust stage is complete, the MPV knob will remain in the “EXH+DRY” position.
- To activate the Dry Cycle, open the door until it stops turning (approx. 1”), then set the timer for the appropriate time.
- The Dry indicator light (Amber) will be lit indicating the Dry Cycle has begun.

***Note: Depending on the version of the unit’s face plate, the order of the indicator lights from top to bottom is Power, Heat, and Dry (as shown here), and the order of the other version is Power, Dry, and Heat.**



Fill Stage

Power Switch does not illuminate

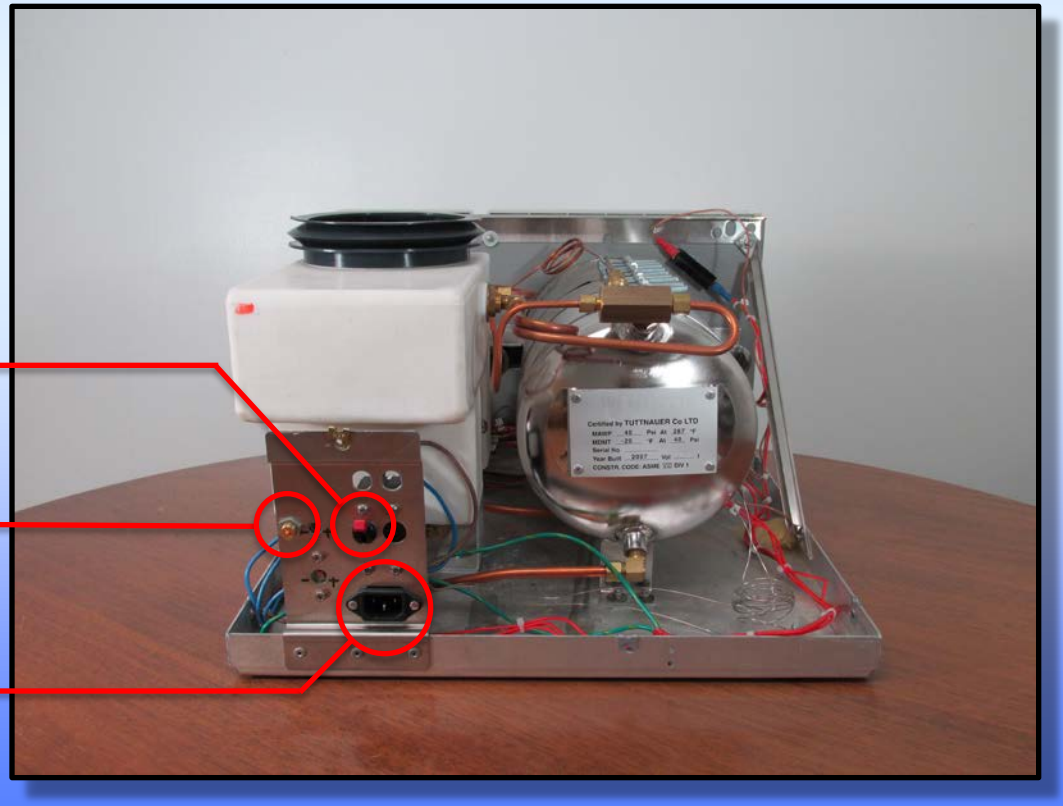
Make sure the power switch is not defective

Power Switch

Fill Stage

Power Switch does not illuminate

- *Check the circuit breaker*
- *Check the manual safety thermostat*
- *Check the line voltage*



Fill Stage

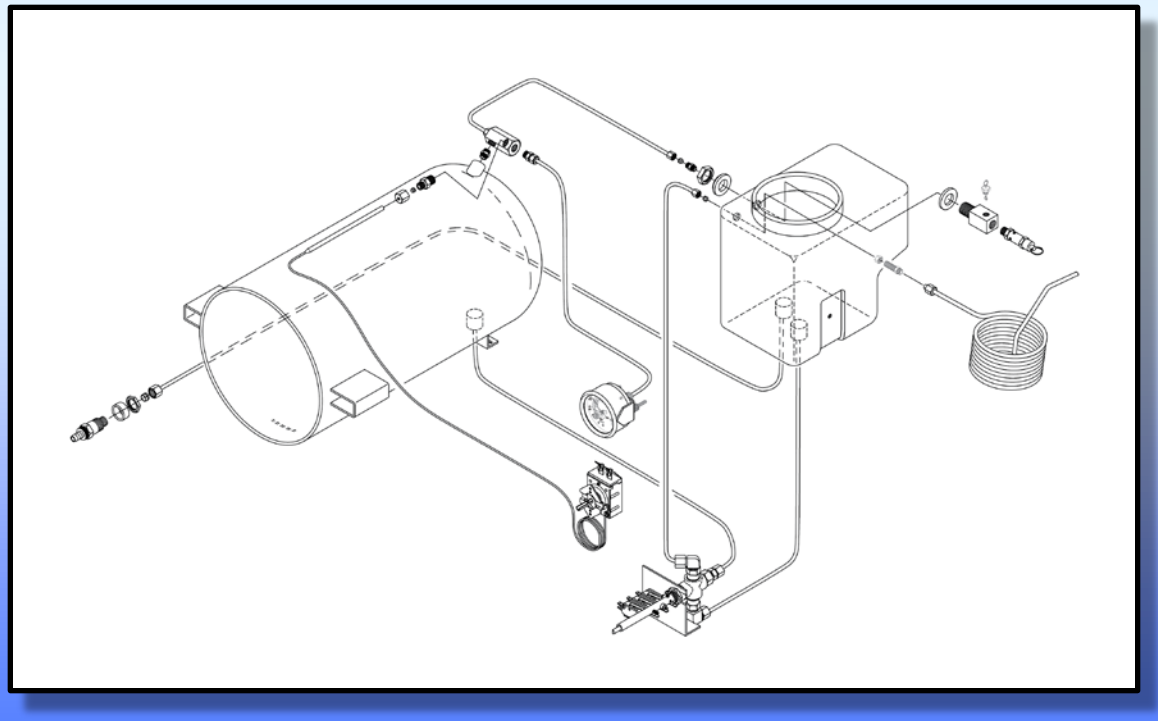
Water does not flow into the chamber

Make sure the water filter is not clogged

Fill Stage

Water does not flow into the chamber

Make sure the copper tubing from the reservoir to the MPV and from the MPV to the chamber is not clogged.



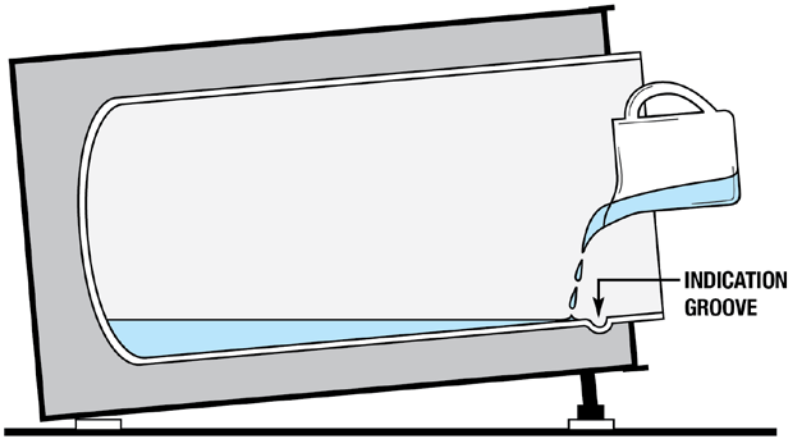
Fill Stage

Water does not flow into the chamber

Check the water level of the machine.

AMOUNT OF WATER NEEDED, TO CHECK IF STERILIZER IS LEVEL.

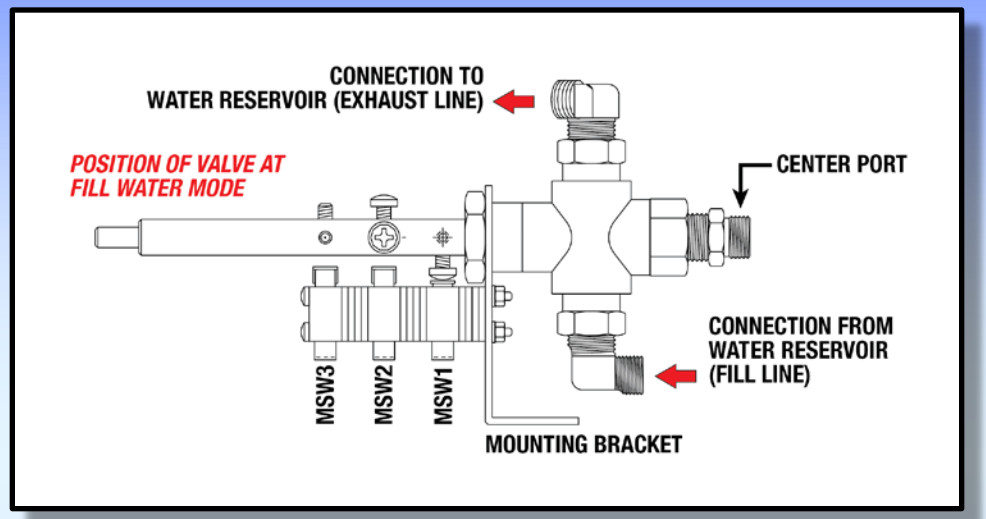
Model	Amount of Water
1730 Series & Valueklave 1730 MKV	10 - 12 oz. (300 - 355 ML)
2340 & 2540 Series	12 - 15 oz. (355 - 444 ML)
3870 Series	24 - 27 oz. (710 - 798 ML)

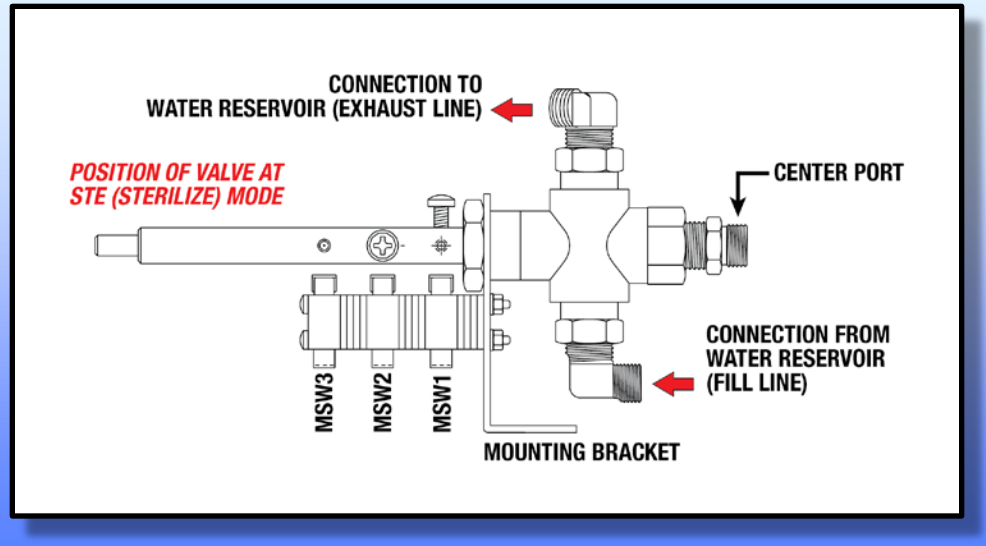


Fill Stage

Multi-Purpose Valve (MPV)
Ensure MPV Switches and activation Screws are in proper positions.

If MPV rotates in both directions, this indicates a broken Spring Clip.

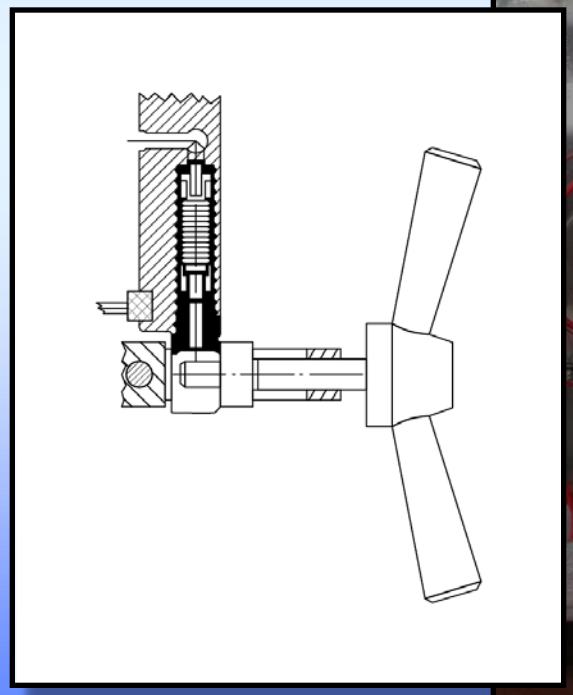


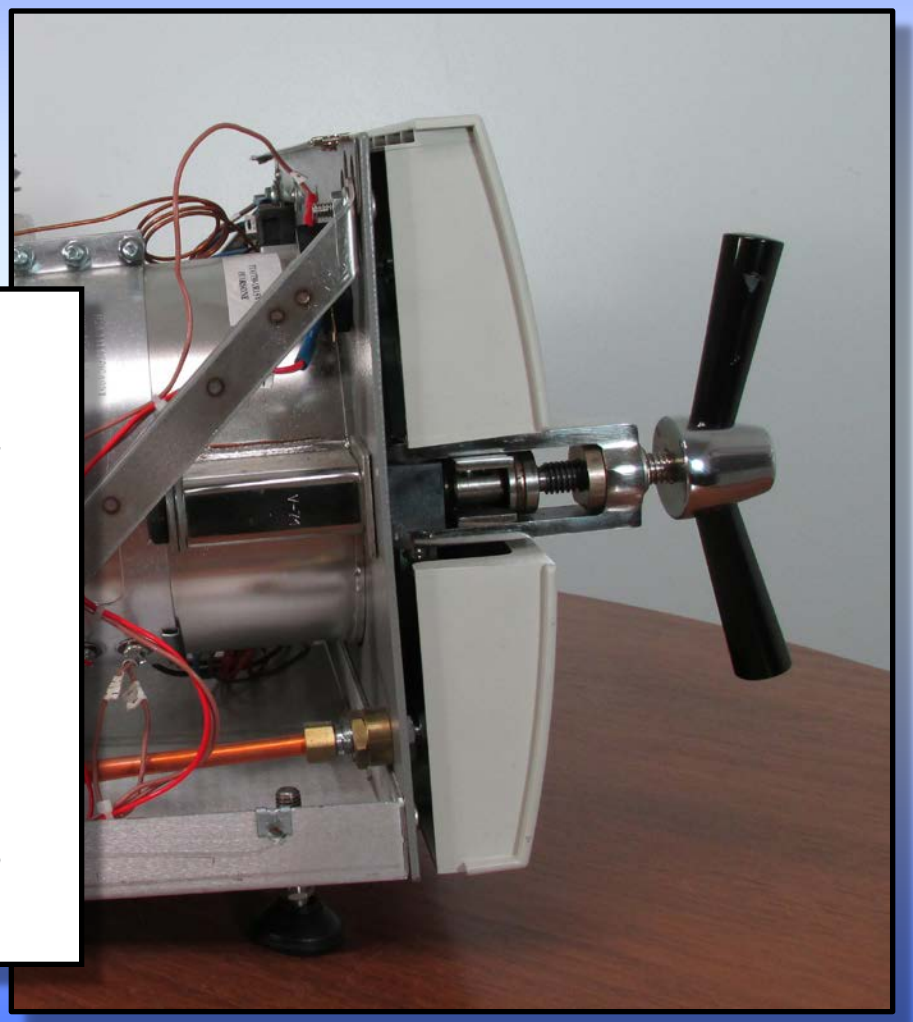


Fill Stage

Door closing mechanism will not close properly

Examine threads and bushings for damage



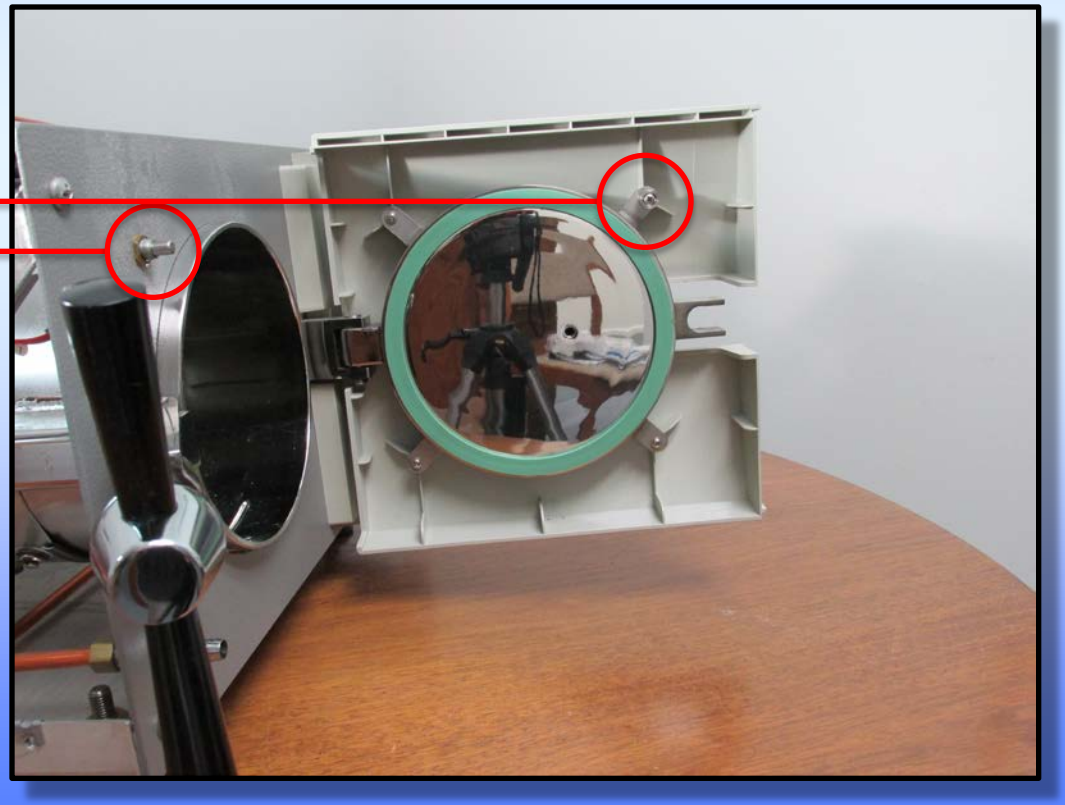


Fill Stage

Door closing mechanism will not close properly

Door Switch activator requires adjustment.

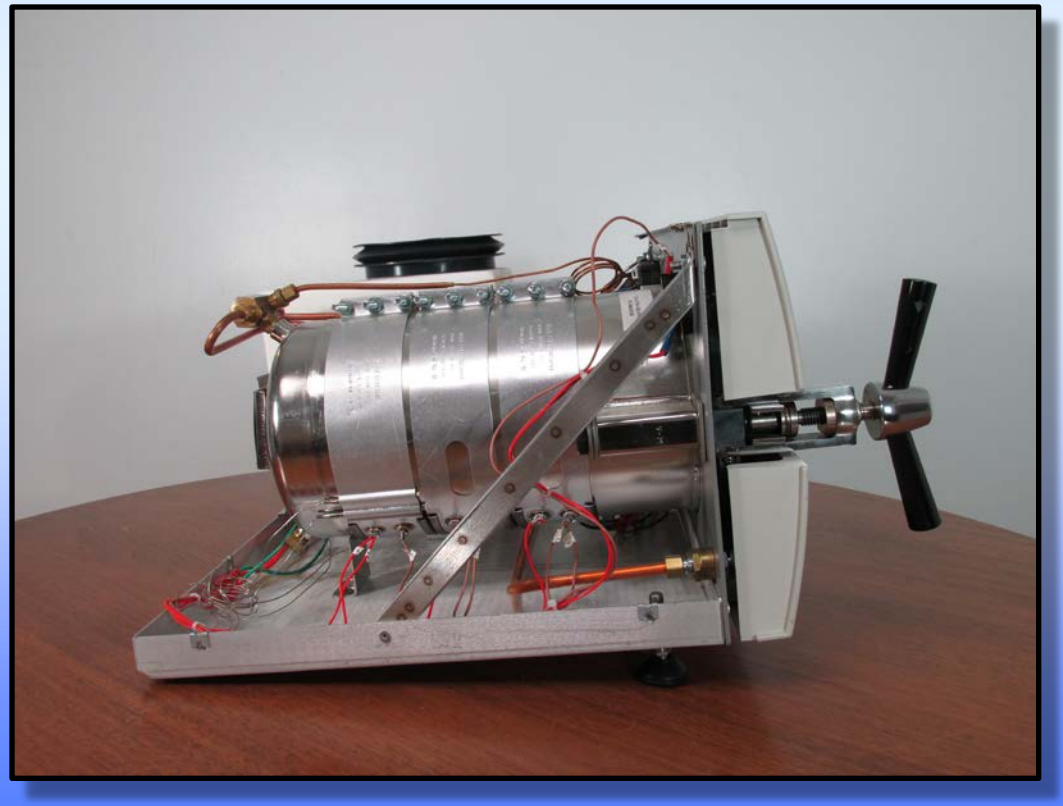
Door Switch Activator



Heat Up Phase

Heating elements will not heat up

Check heating elements for proper resistance



Heat Up Phase

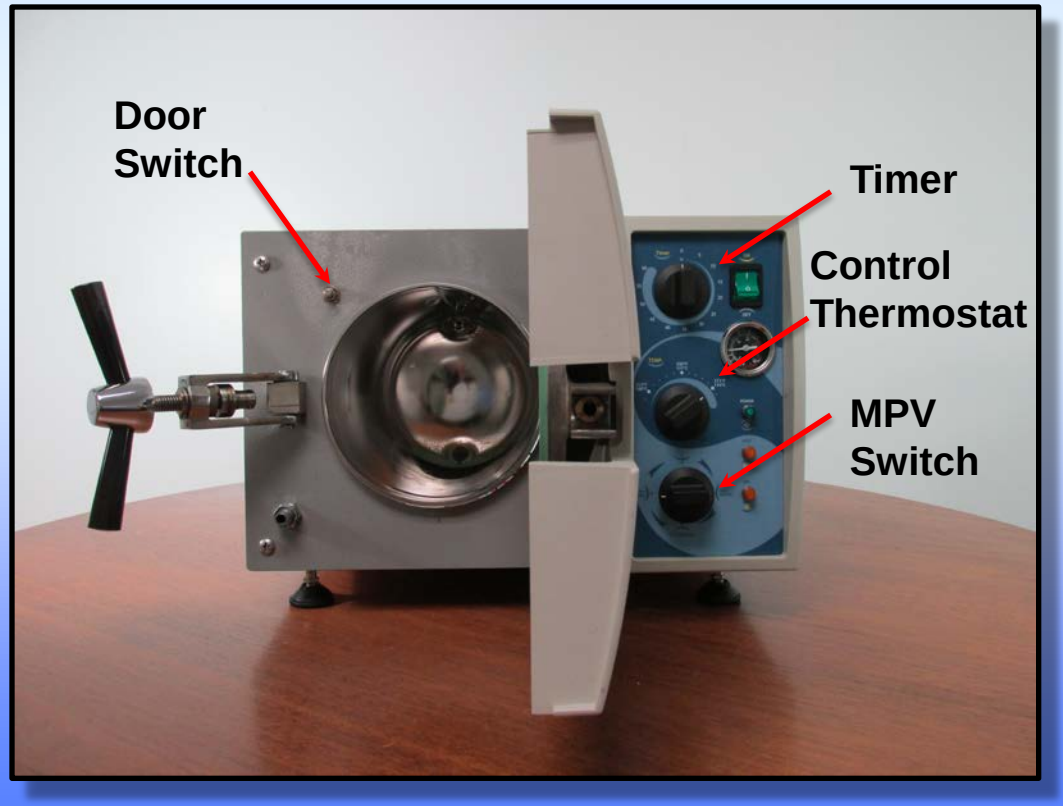
Heating elements will not heat up

– *Check setting of control thermostat*

– *Timer must be set to more than 10 minutes*

– *Faulty door switch*

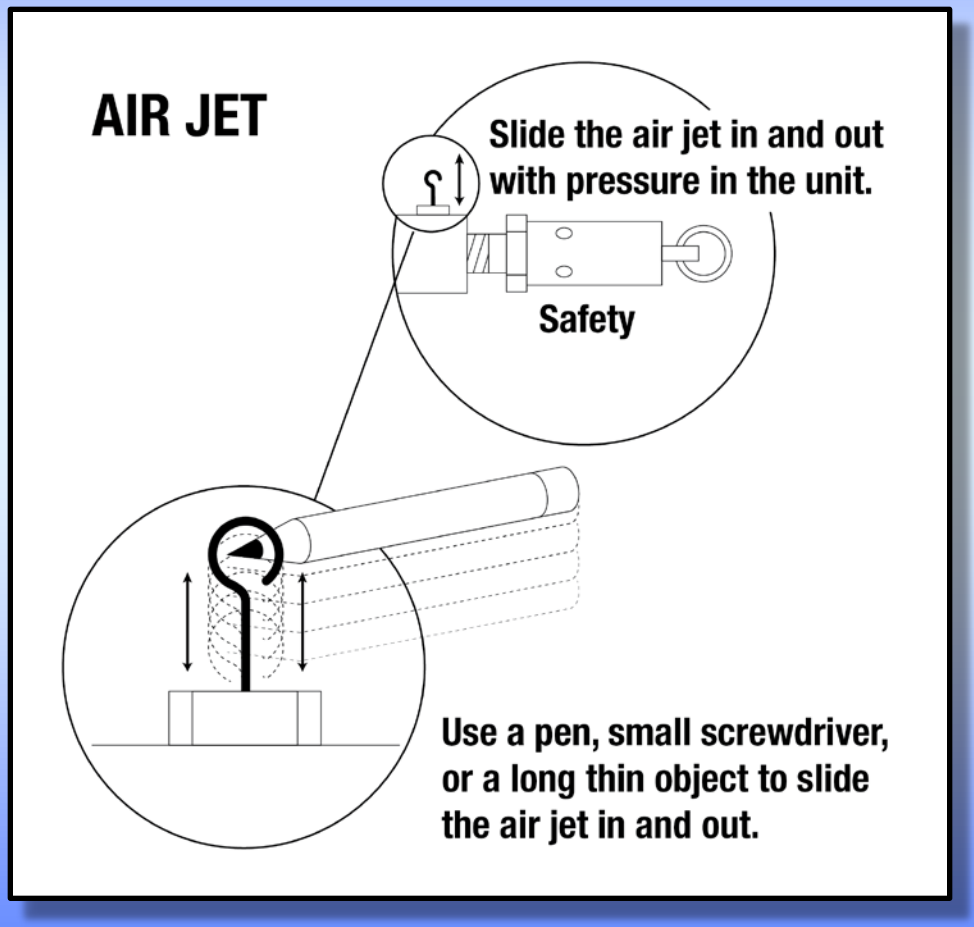
– *Faulty switch on MPV*



Heat Up Phase

Heating elements will not heat up

Check and clean air jet valve weekly to prevent clogging. If clogged, the air removal system will fail and result in incomplete sterilization and failed spore tests.



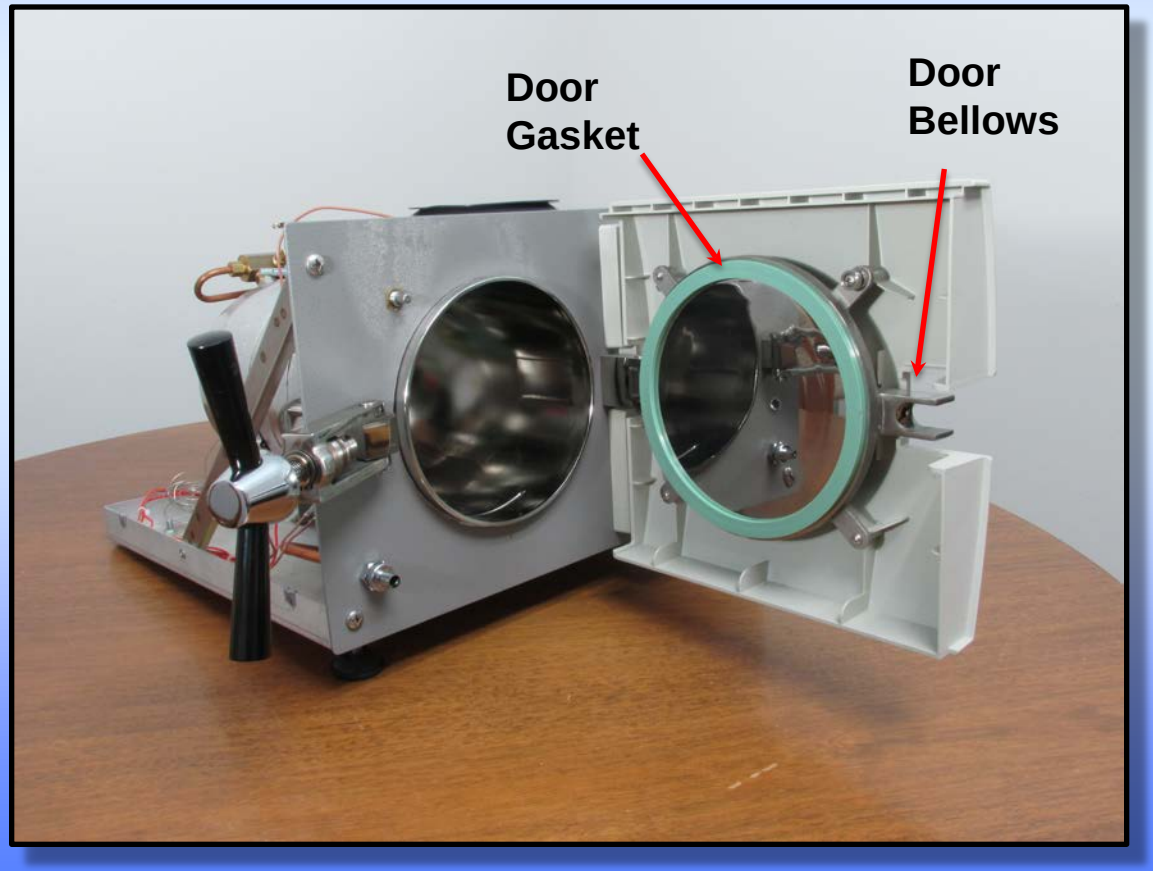
Source: Technicians Service and Repair Manual for the "E" Series Tuttnauer Autoclave, Tuttnauer USA Co. Revised Edition Nov 18, 2004

Sterilization Phase

Steam leak

– *Check door gasket*

– *Check door bellows*



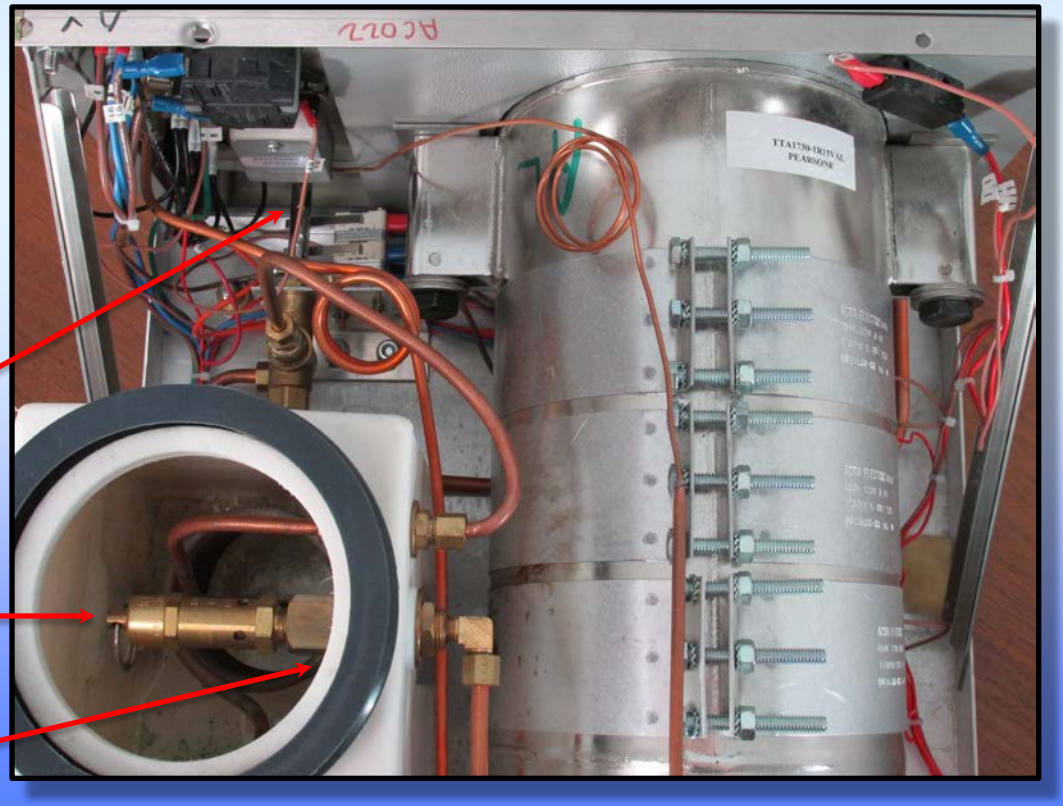
Sterilization Phase

Steam leak

– *Check safety valve*

– *Check air jet valve*

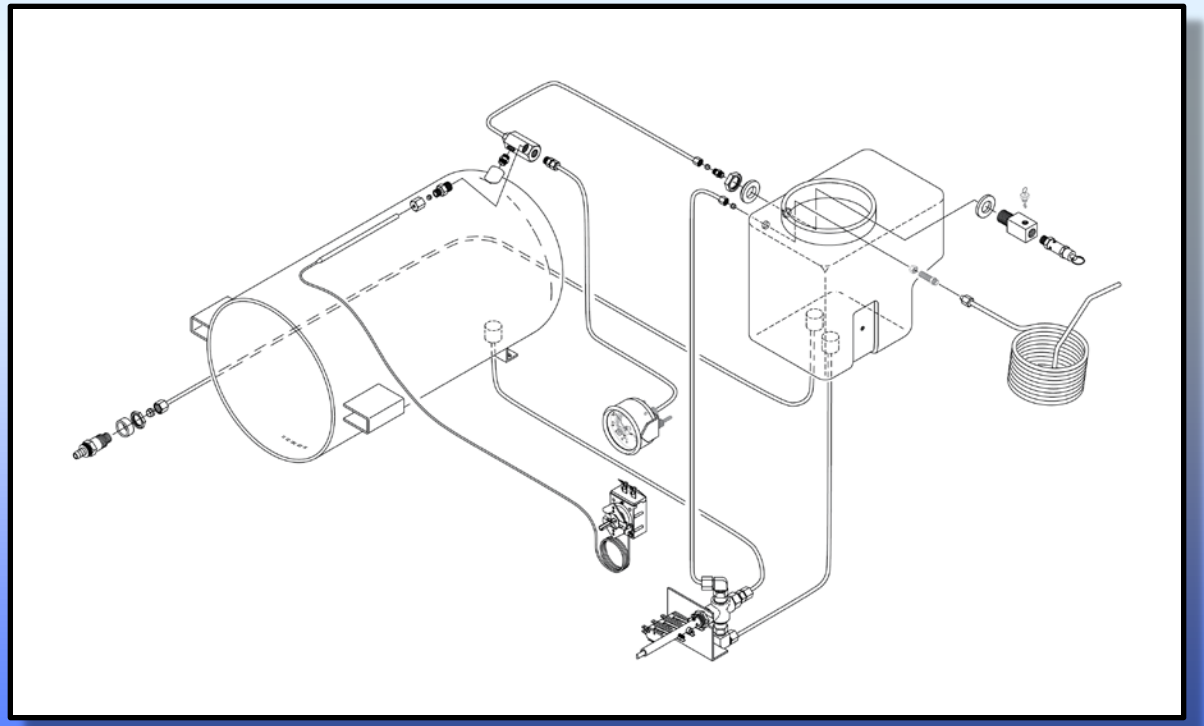
– *If there are air bubbles in the reservoir, check the MPV – rebuild or replace*



Exhaust Phase

Steam not evacuating the chamber quickly –
Should take less than 30 seconds

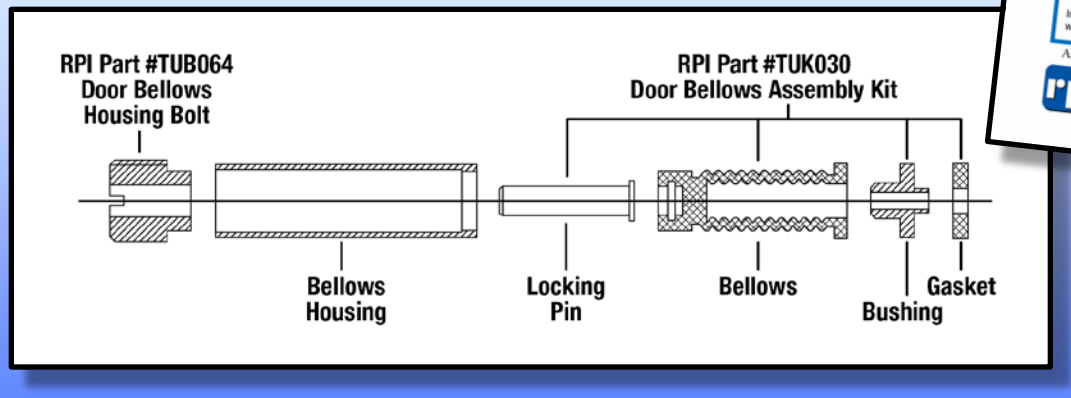
Check condensation coil, tubing connecting the MPV to the reservoir, the MPV itself, or the mesh chamber filter for clogging



Exhaust Phase

Chamber door will not open

Likely due to door bellows not retracting properly



"Tech Talk"

Tech Help

TUTTNAUER DOOR BELLOWS Stuck in the Locked Position And Now Pressure Is Building

By Chris Jacobs, RPI Product Development

Your Tuttnauer autoclave may have run a perfect cycle with zero pressure left in the machine, you go to spin the handle but it stops and you can't get the door open. Depending on the model (ie. a mechanical vs. an electrical machine) the door bellows could be stuck in the locked position and now pressure could be building behind the door making it impossible to open the door.

So what do you do? First thing is to ensure that the machine is not allowed to heat any longer by either powering the unit off or by unplugging the unit.

Now it's time to get a good look at the problem; so remove the cover to gain access to all the parts that are keeping the door closed. Reach inside the reservoir with a screwdriver and use it to pull the safety relief valve's key ring to relieve pressure inside the chamber. Remember the air coming out will be hot and if the chamber is still warm, pressure can build up again.

If the door will still not open, then you will want to look behind the door closing mechanism to locate a large black bolt (it is a 7/8 hex on most Tuttnauer autoclaves). This bolt is keeping the door closing mechanism in place (see illustration to the right). You can unscrew this bolt and literally slide the whole closing mechanism out allowing the door to open. At the very least, you can loosen this bolt enough to allow you to swing the closing mechanism away from the door bellows locking pin.

In some rare cases, if that does not work, you have one last option at your disposal. At the point where the closing mechanism meets the frame of the chassis you will see the closing mechanism branch into a "E". Locking the "E" into place is a cotter pin with an "C" clip. You can remove the "C" clip and use a rubber mallet to tap out the cotter pin.

As a warning, if there is any pressure behind the door, you may damage the cotter pin in the process. That is why this is considered a last resort and shouldn't be used unless all else fails. Now that you have the door open you have only to contend with the door bellows itself.

The easiest way to get that out is simply unscrew the bellows housing bolt and then use compressed air on the hole on the interior of the door to force the bellows assembly out of the socket. Just use a rag or exam glove over the bellows housing to catch all the components.

See the "Door Bellows Housing" illustration below, and note that there are six parts to the bellows housing: the bellows, locking pin, brass bushing, gasket, bellows sleeve and the bellows housing bolt. The illustration above will give you the correct order that the parts must go in. One of the most crucial things to remember is the direction of the bellows sleeve. One side is actually tapered, making it thicker internally on one end than the other. The thicker end must slide in first to leave the thinner side to accommodate the housing bolt.

Door Closing Mechanism

There are several options available to open a chamber door that is locked in position due to pressure inside the chamber. Two of these options involve the large black bolt behind the door closing mechanism.

Door Bellows Housing

Note the correct order of the parts and the tapered end of the sleeve.

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Drying Phase

Unit not drying properly

– *Check heating elements*

– *Chamber could be over-packed*

– *Excess water in chamber*

Drying Phase

Other symptoms and solutions

TROUBLESHOOTING
Multi-Purpose Valve Assembly (MPV)

IMPORTANT NOTE! ***Before working on the Multi-Purpose Valve or the Door Bellows:***
Turn the power **OFF**. Wear protective hand and eye gear. Use a tool such as a screwdriver or wrench ***(do not use your fingers)*** to *pull* the Safety Valve Pull Ring, and vent the Chamber to ZERO pressure. **Allow the unit to cool down.**

SYMPTOM	CAUSE	SOLUTION
MPV will not rotate.	MPV is jammed.	Remove, disassemble, clean and rebuild, or replace MPV. See **Important Note!, above**.
MPV valve rotates in both directions.	Broken Anti-rotational Spring Clip.	Remove, disassemble, clean and rebuild, or replace MPV. See **Important Note!, above**.
MPV will not exhaust in the EXH-DRY position; Pressure remains high	Clogged MPV, Condensation Coil, or MPV Tubing.	Remove, disassemble, clean and rebuild, or replace MPV. See **Important Note!, above**.
With power ON, MPV in EXH-DRY; Dry Light is OFF, but unit is drying properly	Dry Light malfunction.	Replace Dry Light.
With power ON, MPV in EXH-DRY; Unit is not drying properly	Excess water in Chamber.	If Chamber door is closed, then open the door 1" to allow for proper ventilation.
	Chamber over packed.	Refer to Owners Manual for maximum load.
	Heater malfunction.	Measure **Heater** for proper resistance, see ***Table C, page 2***. Check for broken/disconnected wiring. Replace if necessary.
In EXH-DRY position, Power Light is ON, Dry Light OFF, but unit is not drying	Timer not activated.	Activate Timer by setting it ***past 10 minutes***. If timer still does not activate, then replace Timer.
	Micro-Switch 1 (MSW1) is defective or it is stuck in the **down** position.	Set MPV to STE position, if Heat Light is OFF, adjust or replace **MSW1**. Refer to **MULTI-PURPOSE VALVE & MICRO-SWITCHES, page 9.**
	Micro-Switch 2 (MSW2) is defective or it is stuck in the **down** position.	Set MPV to STE position, if Heat Light is OFF, adjust or replace **MSW2**. Refer to **MULTI-PURPOSE VALVE & MICRO-SWITCHES, page 9.**
In EXH-DRY position, Dry and Heat Lights OFF (Door open)	Micro-Switch 3 (MSW3) is defective or it is stuck in the **up** position.	Adjust or replace **MSW3**. Refer to **MULTI-PURPOSE VALVE & MICRO-SWITCHES, page 9.**
In EXH-DRY position, Circuit Breaker trips when Timer is set.	Micro-Switch 2 (MSW2) is defective or it is stuck in the **up** position.	Adjust or replace **MSW2**. Refer to **MULTI-PURPOSE VALVE & MICRO-SWITCHES, page 9.**
	Short circuit in Wiring Harness.	Check and replace **Wiring Harness** or repair shorted wire.
With power ON, MPV in EXH-DRY position, all three lights ON (indicating unit is overheating).	Micro-Switch 3 (MSW3) is defective or it is stuck in the **up** position.	Adjust or replace **MSW3**. Refer to **MULTI-PURPOSE VALVE & MICRO-SWITCHES, page 9.**
Door will not open after Chamber is exhausted and MPV is in the EXH-DRY position	Door Bellows could be jammed.	1) See **Important Note!, above**. Then turn door closing device slightly clockwise to tighten, then turn counter clockwise to open. 2) See **Important Note!, above**. Remove covers. Carefully move the Insulation Blanket on the left side to expose the Chamber Tightening Bolt. Loosen Bolt until Door Locking Assembly is loose enough to open the Door. After the Door is open, tighten the Bolt and replace the Insulation Blanket. If necessary, replace **Door Bellows Assembly**.
	Vacuum in Chamber (pressure below zero).	See **Important Note!, above**. If this does not correct the situation, then check if MPV has blockage, see **page 3, REMOVING OBSTRUCTIONS**.

Multi-Purpose Valve Tips

Installation

What to order

- *Long stem vs. short stem*
- *Rebuild or replace*

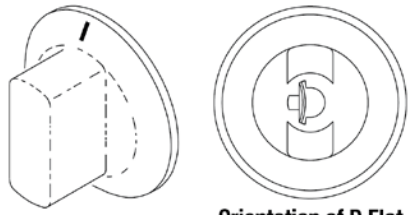
How to install

- *Two wrench installation technique*

What knob to use

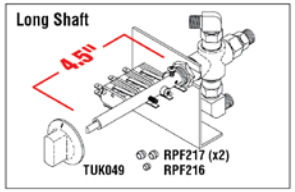
- *Use the correct knob*

Multi-Purpose Valve Knob (RPI Part #TUK049)



Orientation of D Flat

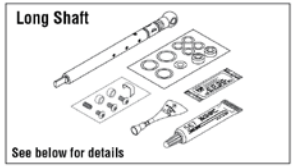
1730, 2340, 2540 & 3870 Series



RPI Part #TUV025
OEM Part #CT810013

MULTI-PURPOSE VALVE
- Valve includes ***Long*** shaft assembly
- Includes all parts as shown
- Also available: Repair Kit (MPV) (RPI Part #TUK037)

Fits: Front Panel, right side of machine
Model: 1730M/MK, 2340M/MK, 2540M/MK & 3870M

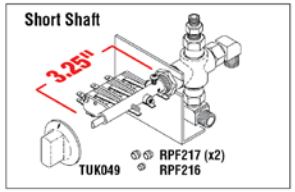


RPI Part #TUK037
OEM Part # *(No OEM Part # Available)*

REPAIR KIT (MPV)
- Use this Kit to repair Multi-Purpose Valve Assemblies with the ***Long*** shaft
- Includes:
  - Long Shaft
  - Cam Spacers
  - Spring Clip, Screws, Set Screw
  - Valve Seat
  - Screws (RPI Part #RPH130)
  - Pipe Sealant 567 (RPI Part #RPA459)
  - Threadlocker 242 (RPI Part #RPA032)
  - High Temp Lubricant (RPI Part #RPL090)
  - O-rings (RPI Part #RP0360, RP0439, RP0448 & RP0488)

Fits: Front Panel, right side of machine
Model: 1730M/MK, 2340M/MK, 2540M/MK & 3870M

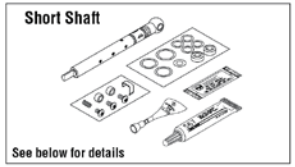
ValueKlave 1730MKV



RPI Part #TUV098
OEM Part #CMT173-0031

MULTI-PURPOSE VALVE
- Valve includes ***Short*** shaft assembly
- Includes all parts as shown
- Also available: Repair Kit (MPV) (RPI Part #TUK099)

Fits: Front Panel, right side of machine
Model: ValueKlave (1730MKV)



RPI Part #TUK099
OEM Part # *(No OEM Part # Available)*

REPAIR KIT (MPV)
- Use this Kit to repair Multi-Purpose Valve Assemblies with the ***Short*** shaft
- Includes:
  - Long Shaft
  - Cam Spacers
  - Spring Clip, Screws, Set Screw
  - Valve Seat
  - Screws (RPI Part #RPH130)
  - Pipe Sealant 567 (RPI Part #RPA459)
  - Threadlocker 242 (RPI Part #RPA032)
  - High Temp Lubricant (RPI Part #RPL090)
  - O-rings (RPI Part #RP0360, RP0439, RP0448 & RP0488)

Fits: Front Panel, right side of machine
Model: ValueKlave (1730MKV)

Heater Bank Tips

How to tell which band is bad (internal shorts and shorts to ground)

AMP DRAW*

UNPLUGGED RESISTANCE**

Model	VAC	* STE Amps	** STE Ohms	* EXH-DRY Amps	** EXH-DRY Ohms
1730M	120	9.5	13.0	2.0	60
1730M	230	4.8	48.0	1.2	218
1730MK	230	6.0	38.0	1.3	170
1730MKV (Valueklave)	120	13.0	9.0	3.0	40
2340M	120	13.0	9.5	3.2	38
2340M	230	6.5	35.0	1.6	140
2340MK	230	11.5	21.0	2.8	90
2540M	120	13.0	9.0	3.2	38
2540M	230	6.5	35.0	1.6	140
2540MK	230	11.5	9.5	2.8	90
3870M	230	12.0	19.0	3.2	76

APPROXIMATE CIRCUIT VALUES (±10%) AT STE AND EXH-DRY POSITIONS

Model	VAC	Watts	Resistance (Ohms)
1730M	120	350	41
1730M	230	350	147
1730MK	230	450	117
1730MKV (Valueklave)	120	450	32
2340M	120	350	41
2340M	230	350	147
2340MK	230	550	96
2540M	120	350	41
2540M	230	350	147
2540MK	230	550	96
3870M	230	1000	112

APPROXIMATE HEATER ELEMENT RESISTANCE VALUES (±10%)

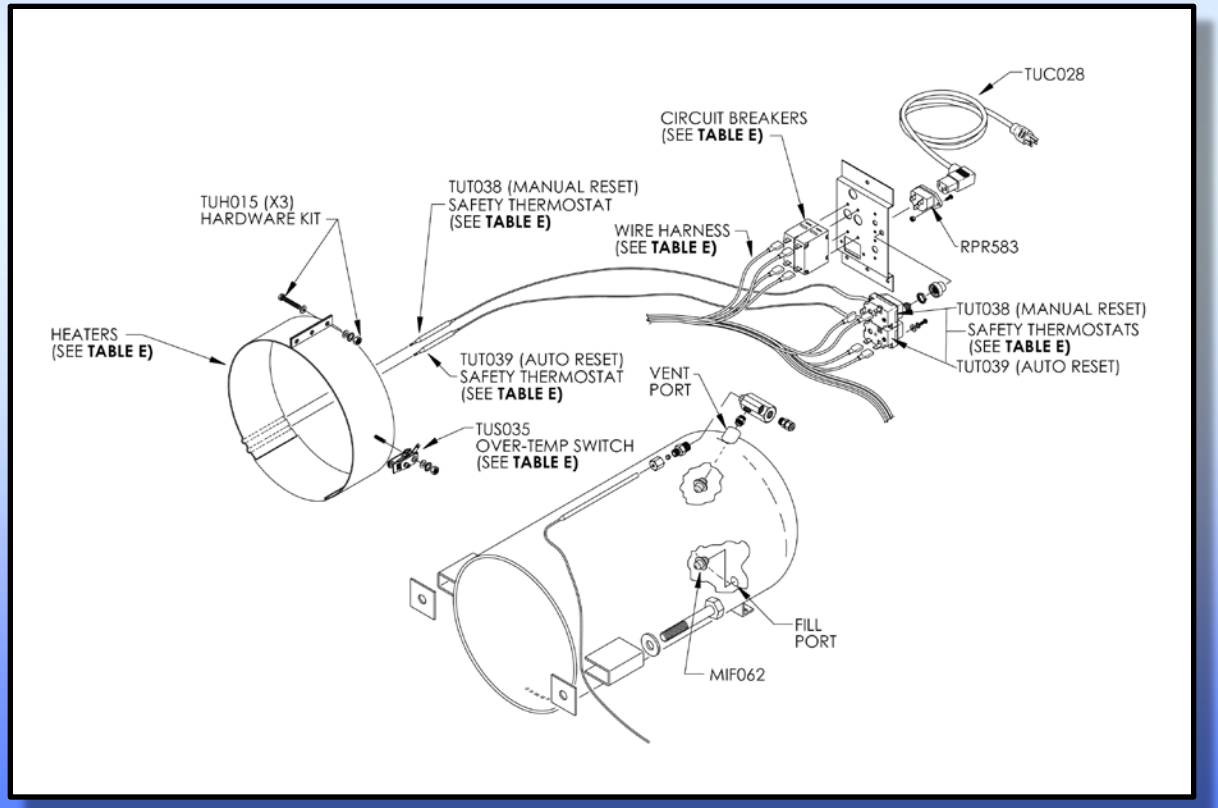
Heater Band Tips

Tightening bands correctly

Heater Band Tips

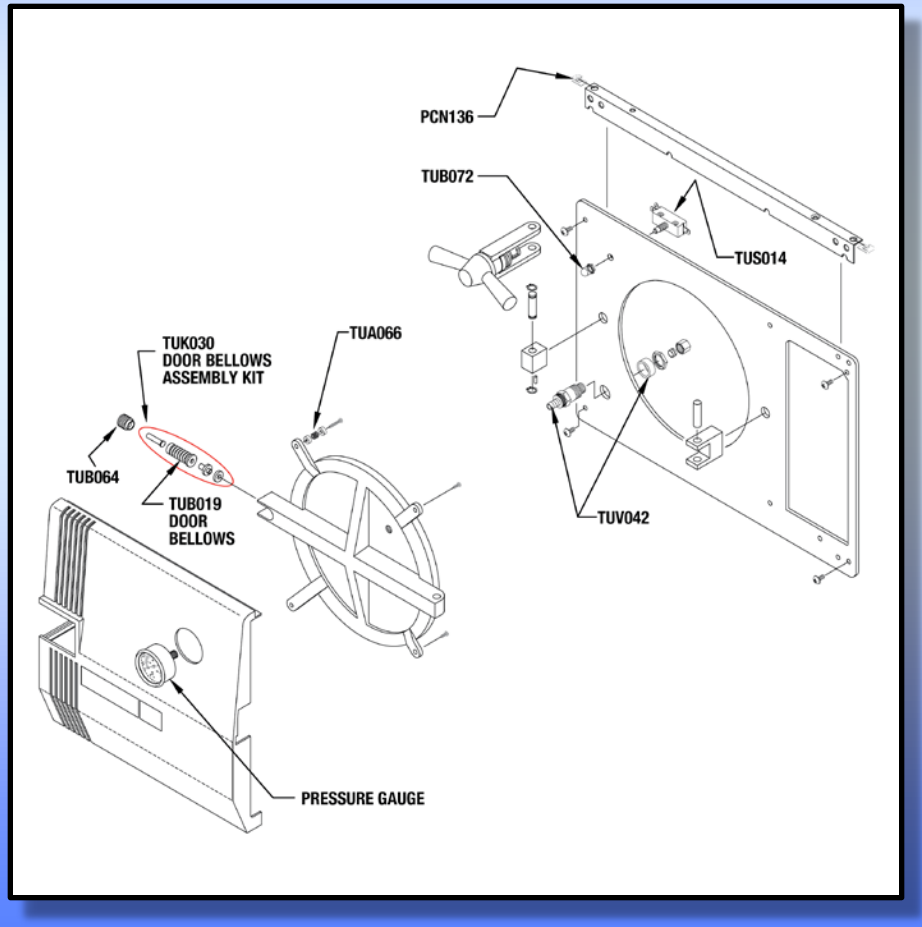
Installing safety thermostat rods

– Install order and ensuring good contact in place



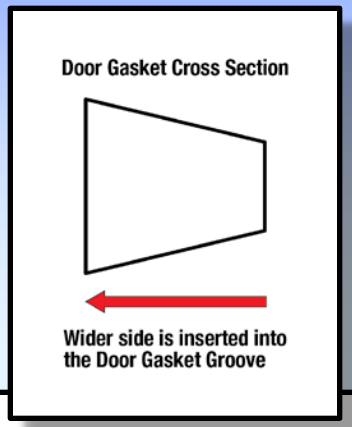
Door Closer and Switches Tips

- Closed door and safety system
- Releasing a stuck door bellows pin
- Removing door closure assembly
- Replacing door bellows (including canned air)
- Reassembling door bellows and using door tap
- Adjusting door switch and using door switch cover

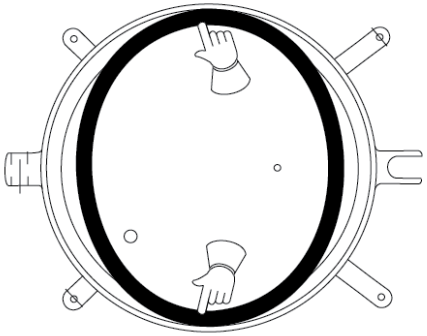


Door Gasket Tips

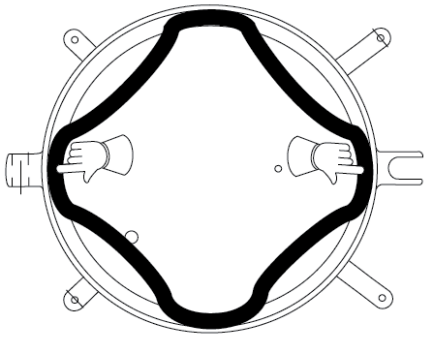
– Proper way to install door gasket
– Cleaning door grooves



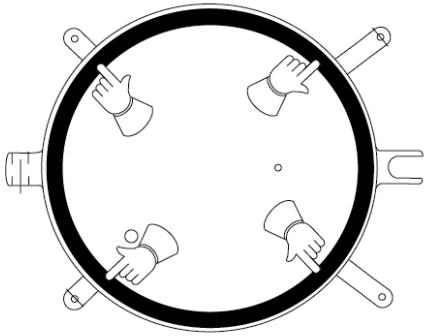
Step 1



Step 2



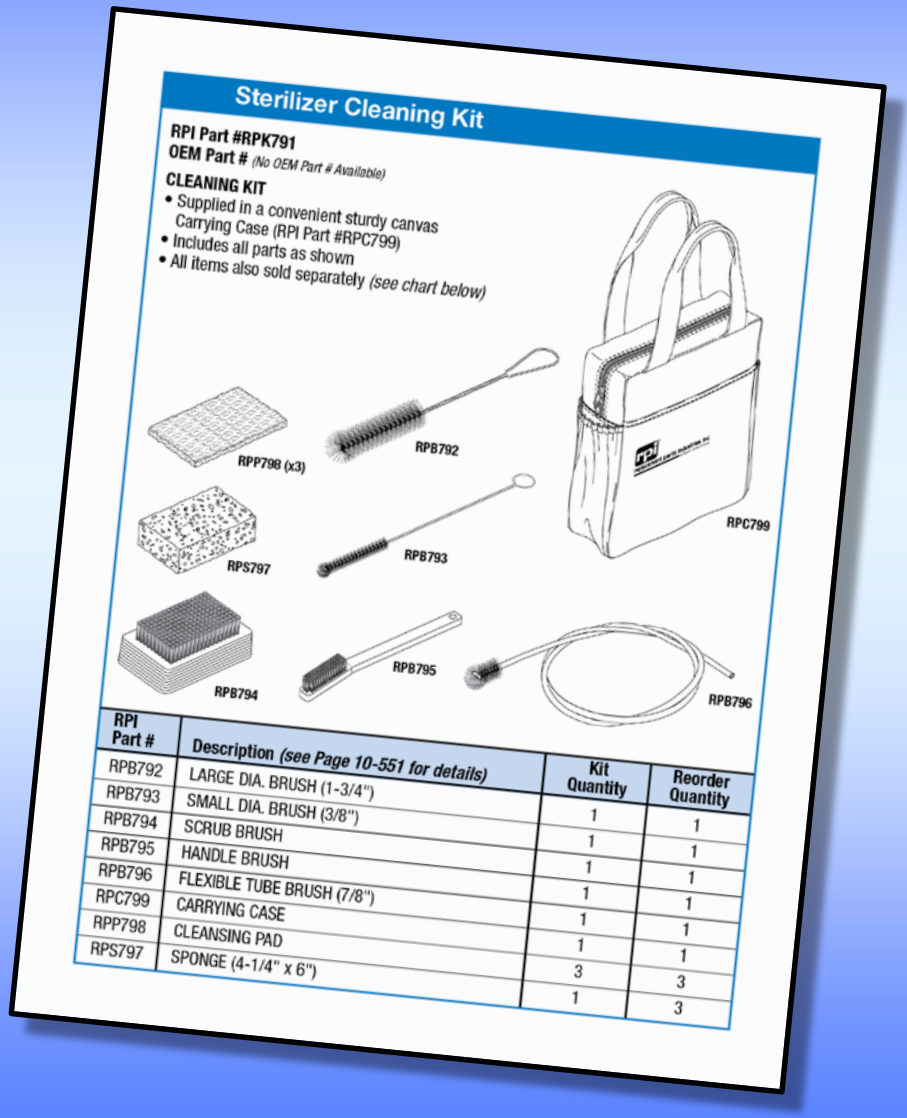
Step 3



PM and Cleaning

Scheduled PM and cleaning using the RPI Sterilizer Cleaning Kit custom designed just for cleaning sterilizers.

Sterilizer Cleaning Kit
RPI Part #RPK791



Sterilizer Cleaning Kit

RPI Part #RPK791
OEM Part # *(No OEM Part # Available)*

CLEANING KIT
- Supplied in a convenient sturdy canvas Carrying Case (RPI Part #RPC799)
- Includes all parts as shown
- All items also sold separately *(see chart below)*

RPP798 (x3)
RPB792
RPC799
RPS797
RPB793
RPB794
RPB795
RPB796

RPI Part #	Description *(see Page 10-551 for details)*	Kit Quantity	Reorder Quantity
RPB792	LARGE DIA. BRUSH (1-3/4")	1	1
RPB793	SMALL DIA. BRUSH (3/8")	1	1
RPB794	SCRUB BRUSH	1	1
RPB795	HANDLE BRUSH	1	1
RPB796	FLEXIBLE TUBE BRUSH (7/8")	1	1
RPC799	CARRYING CASE	1	1
RPP798	CLEANSING PAD	1	1
RPS797	SPONGE (4-1/4" x 6")	3	3
		1	3

PM and Cleaning

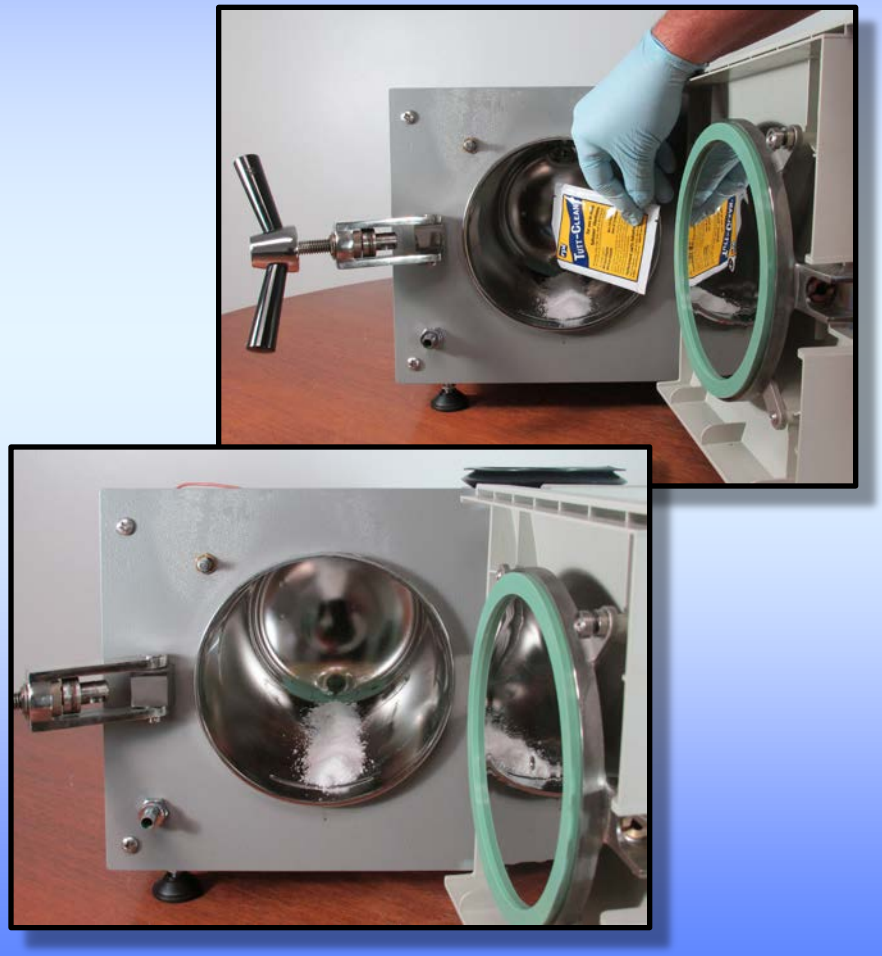
Scheduled PM and cleaning Tutt-Clean®

Tip #1 Do not run thru the Dry Cycle

Tip #2 Pour the Tutt-Clean power in a straight clean line inside the center of the chamber.

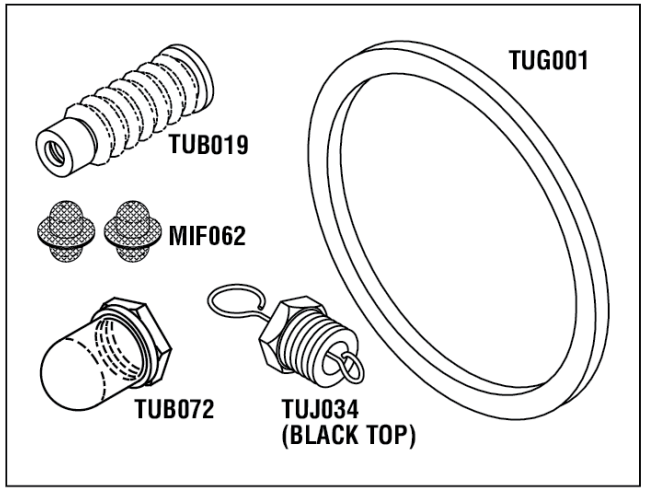
Tutt-Clean
RPI Part #TUC094

Pour Tutt-Clean powder in a straight line inside the center of the chamber.



PM and Cleaning

RPI Sterilizer PM Kits



RPI Part #TUK121
OEM Part #02610020 (Door Gasket Only)

STERILIZER PM KIT

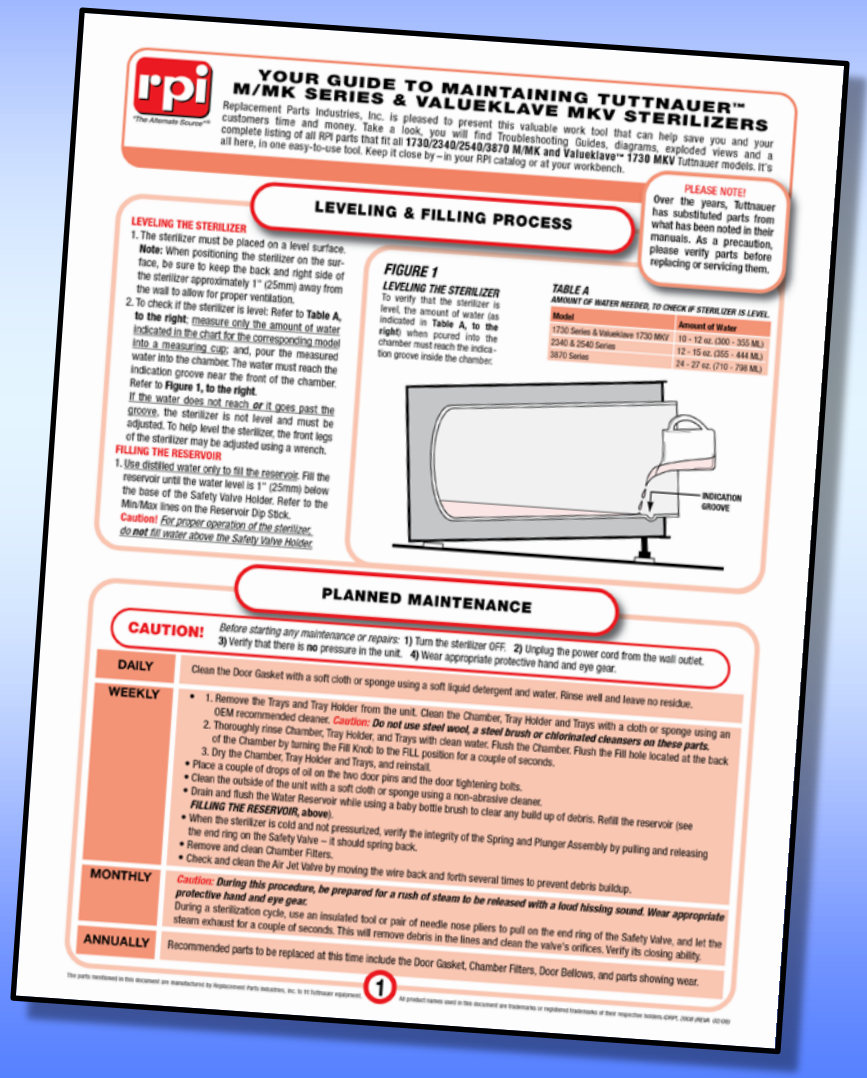
- Includes all parts as shown plus a PM Check List & PM Sticker
- All parts also sold separately

Models: 1730E/M

RPI Troubleshooting Guide

Todays' presentation included material from RPI's troubleshoot guide – "Your Guide to Maintaining TuttnauerTM M/MK Series & Valueklave MKV Sterilizers.

You can download and print this guide from the RPI website: www.rpiparts.com.



YOUR GUIDE TO MAINTAINING TUTTNAUER™ M/MK SERIES & VALUEKLAVE MKV STERILIZERS

Replacement Parts Industries, Inc. is pleased to present this valuable work tool that can help save you and your customers time and money. Take a look, you will find Troubleshooting Guides, diagrams, exploded views and a complete listing of all RPI parts that fit all **1730/2340/2540/3870 M/MK and Valueklave™ 1730 MKV** Tuttnauer models. It's all here, in one easy-to-use tool. Keep it close by – in your RPI catalog or at your workbench.

PLEASE NOTE! Over the years, Tuttnauer has substituted parts from what has been noted in their manuals. As a precaution, please verify parts before replacing or servicing them.

LEVELING & FILLING PROCESS

LEVELING THE STERILIZER

1. The sterilizer must be placed on a level surface. **Note:** When positioning the sterilizer on the surface, be sure to keep the back and right side of the sterilizer approximately 1" (25mm) away from the wall to allow for proper ventilation.
2. To check if the sterilizer is level: Refer to **Table A, to the right**; measure only the amount of water indicated in the chart for the corresponding model into a measuring cup; and, pour the measured water into the chamber. The water must reach the indication groove near the front of the chamber. Refer to **Figure 1, to the right**. If the water does not reach ***or*** it goes past the groove, the sterilizer is not level and must be adjusted. To help level the sterilizer, the front legs of the sterilizer may be adjusted using a wrench.

FILLING THE RESERVOIR

1. Use distilled water only to fill the reservoir. Fill the reservoir until the water level is 1" (25mm) below the base of the Safety Valve Holder. Refer to the Min/Max lines on the Reservoir Dip Stick.

Caution! *For proper operation of the sterilizer, **do not** fill water above the Safety Valve Holder.*

FIGURE 1
LEVELING THE STERILIZER
To verify that the sterilizer is level, the amount of water (as indicated in **Table A, to the right**) when poured into the chamber must reach the indication groove inside the chamber.

TABLE A
AMOUNT OF WATER NEEDED, TO CHECK IF STERILIZER IS LEVEL

Model	Amount of Water
1730 Series & Valueklave 1730 MKV	10 - 12 oz. (300 - 355 ML)
2340 & 2540 Series	12 - 15 oz. (355 - 444 ML)
3870 Series	24 - 27 oz. (710 - 798 ML)

PLANNED MAINTENANCE

CAUTION! *Before starting any maintenance or repairs:* **1)** Turn the sterilizer OFF. **2)** Unplug the power cord from the wall outlet. **3)** Verify that there is **no** pressure in the unit. **4)** Wear appropriate protective hand and eye gear.

DAILY
Clean the Door Gasket with a soft cloth or sponge using a soft liquid detergent and water. Rinse well and leave no residue.

WEEKLY
- 1. Remove the Trays and Tray Holder from the unit. Clean the Chamber, Tray Holder and Trays with a cloth or sponge using an OEM recommended cleaner. ***Caution: Do not use steel wool, a steel brush or chlorinated cleansers on these parts.***
  2. Thoroughly rinse Chamber, Tray Holder, and Trays with clean water. Flush the Chamber. Flush the Fill hole located at the back of the Chamber by turning the Fill Knob to the FILL position for a couple of seconds.
  3. Dry the Chamber, Tray Holder and Trays, and reinstall.
- Place a couple of drops of oil on the two door pins and the door tightening bolts.
- Clean the outside of the unit with a soft cloth or sponge using a non-abrasive cleaner.
- Drain and flush the Water Reservoir while using a baby bottle brush to clear any build up of debris. Refill the reservoir (see ***FILLING THE RESERVOIR, above***).
- When the sterilizer is cold and not pressurized, verify the integrity of the Spring and Plunger Assembly by pulling and releasing the end ring on the Safety Valve – it should spring back.
- Remove and clean Chamber Filters.
- Check and clean the Air Jet Valve by moving the wire back and forth several times to prevent debris buildup.

MONTHLY
Caution: During this procedure, be prepared for a rush of steam to be released with a loud hissing sound. Wear appropriate protective hand and eye gear.
During a sterilization cycle, use an insulated tool or pair of needle nose pliers to pull on the end ring of the Safety Valve, and let the steam exhaust for a couple of seconds. This will remove debris in the lines and clean the valve's orifices. Verify its closing ability.

ANNUALLY
Recommended parts to be replaced at this time include the Door Gasket, Chamber Filters, Door Bellows, and parts showing wear.

RPI Technical Assistance Center

Replacement Parts Industries, Inc. (RPI) has been the leader in replacement parts since 1972.

Service Technicians have come to rely on RPI for our valuable technical assistance, including:

- **One-on-One Tech Help**
  - Available via Phone, Fax, and Email (*Monday – Friday, 8:00 am – 4:30 pm, Pacific Time*)

- **Mobile Site – Now Available!**
  - Go to **www.rpiparts.com/mobile.html**

- **RPI Website – Technical Assistance Center with new "eLibrary" and more!**
  - "Quick Search" feature to help identify parts needed
  - "Create a Parts Listing" feature to identify all parts available for a specific equipment model
  - Troubleshooting Guides, Exploded Views and Installation Instructions
  - Tech Talk and Service Tip Articles
  - At-a-glance Cross References and Quick Reference Guides

- **RPI Planned Maintenance Kits and Posters**
  - Kits specifically for planned maintenance of a variety of tabletop and bulk sterilizers
  - Informative posters featuring planned maintenance service tips and technical assistance articles

Phone (800) 221-9723 or (818) 882-8611 • Fax (818) 882-7028

Email: techsupport@rpiparts.com • Website: www.rpiparts.com

Thank You

Thank you for joining us for our presentation on Tuttnauer manual sterilizers.