

# Organomation<sup>TM</sup>

Laboratory Evaporators and Extractors

<sup>TM</sup>  
N-EVAP

Nitrogen Evaporation System

Instruction Manual



For Models: 11634 and 11645 (all configurations)

**Your Partners In Sample Preparation since 1959**

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Product designs are subject to change without notice



### Items Shipped

Carefully check the contents of all cartons received for damage which may have occurred in transit. Retain all cartons and packaging materials until all components have been checked against the packing slip, the component list below, and the equipment has been assembled and tested. Contact Organomation Associates Inc. immediately if any damage or discrepancies are found.

Your shipment should contain one or more of the instruments shown below. Option codes are listed on the next page.

Cat #	Instrument Size
<b>11634</b>	<b>34 Position N-EVAP Nitrogen evaporation system</b>
<b>11645</b>	<b>45 Position N-EVAP Nitrogen evaporation system</b>
Flow meter Assembly with Mounting Bracket & Connector Tube	
NA1521	0-20 LPM for 20 position N-EVAP
NA1421	0-30 LPM for 34/45 position N-EVAP
NA0603	19 ga. x 4" Stainless Steel Luer Lock Needles, blunt end
	2 Dz for 20 Position N-EVAP
	36 or 48 each for 34 / 45 Position N-EVAP
B1602	OA-HEAT Water Bath 1400W, for 34 / 45 position N-EVAP
V11291	SS Adapter Tube 1/4" (7 mm) OD, <b>34/45 position only</b>
	T-Handle Hex Key adjustment tools
V10127	1 ea. 1/8" x 6" Long, for 20 position N-EVAP
V10128	1 ea. 5/32" x 6" Long, for 20 position N-EVAP
V11437	1 ea. 3/16" x 8" Long, for 30/45 position N-EVAP
V10124	Manual for N-EVAP models 11220, 11634, 11645
NA0636	Pasteur Pippet Adapter with flow controller, 1 Dozen per set ( <b>Optional</b> )

N-EVAP and OA-HEAT are Trademarks of Organomation Associates Inc.

**Option Codes and additional items shipped**

The following list contains option codes and items which may have been shipped in conjunction with the standard parts shown on the previous page. Please check your packing list and order information carefully to determine if these items are included in your shipment. For a complete list of available accessories, please refer to the Accessories Section.

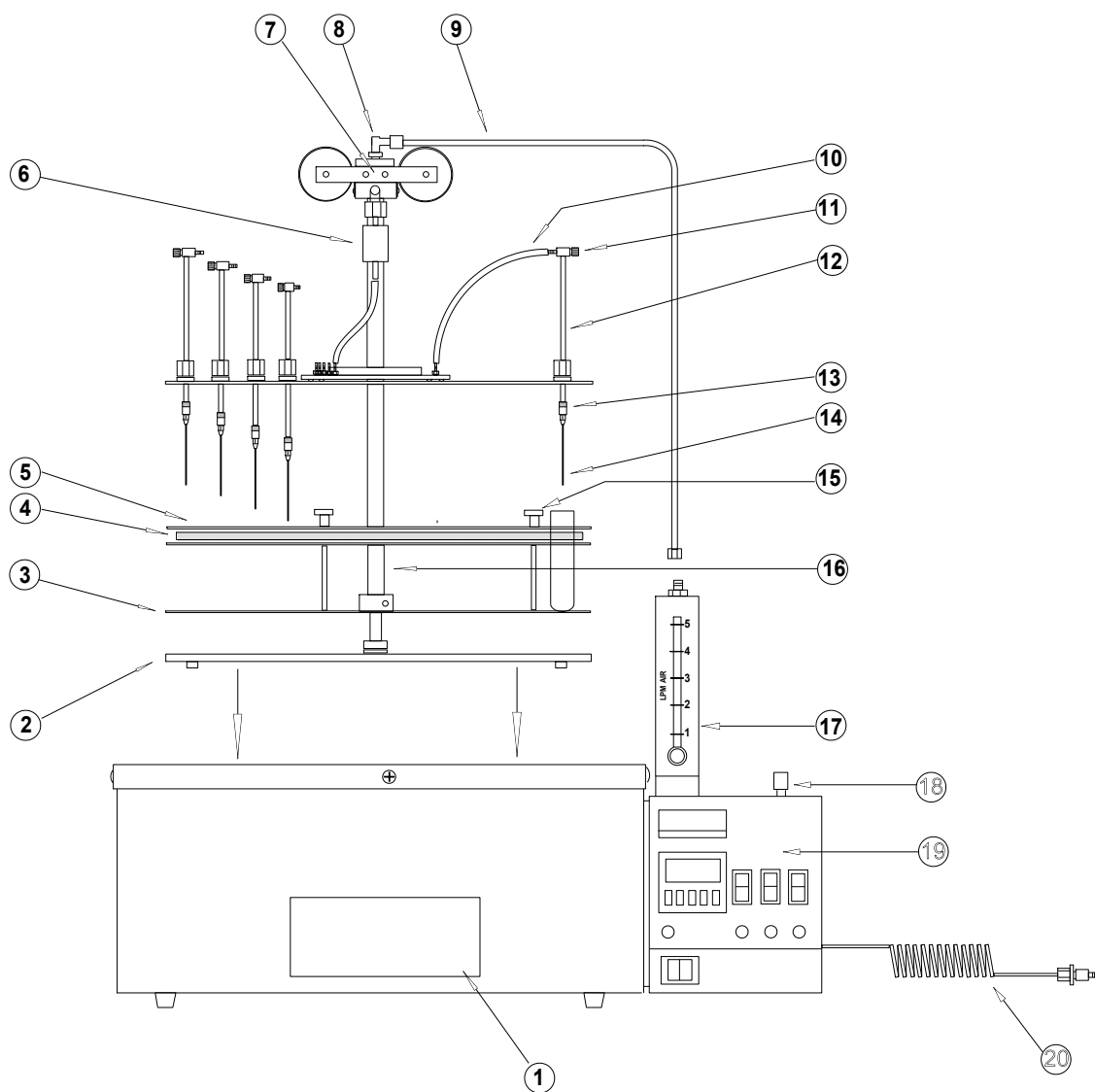
Your shipment may contain the following optional items:

<b>Option</b>	<b>Description</b>
<b>-O</b>	34 or 45 position N-EVAP Instrument ordered without OA-HEAT water bath, includes a flow meter mounting bracket (included with flow meter) for direct mounting to stand base versus to the bath.
<b>-P</b>	Pasteur Pipit Fittings replace SS needles and Luer fittings on the N-EVAP. 34, or 45 pieces are provided with the respective N-EVAP size ordered, reference part # NA0636
<b>-RT</b>	34 or 45 position N-EVAP Instrument and OA-HEAT water bath are coated in PTFE. Instrument is black in color. The water bath exterior is blue and the pan is black.
<b>-T</b>	SS Needles 19 gauge x 4" (100mm) Long, are coated in PTFE and are black in color.
<b>-Z</b>	OA-HEAT water bath has been modified for the Type-Z Purge Intrinsicly Safe bath option. Additional parts include: differential pressure gauge, mounting bracket, and tubing.
<b>-2</b>	OA-HEAT water bath is wired as a 240 volt unit.

**Instrument Description**

The N-EVAP Nitrogen Evaporation System is designed for general evaporation and / or concentration of analytical or biological samples in a variety of test tube based glassware under controlled and reproducible conditions.

The complete instrument is shown below.



**Figure 1**

**PARTS LIST**

<b>Item</b>	<b>Part Name</b>	<b>11634/45</b>	<b>11645</b>	<b>Description</b>
(1)	Water Bath	B1602	B1602	Round water bath, provides heat.
(2)	Stand	-----	-----	Supports N-EVAP in bath or bench.
(3)	Support Tray	V12078	V12078	Supports test tube samples.
(4)	Sample Spring	P0614	P0614	Holds and centers samples.
(5)	Sample Holder	P1615	P1616	Holds various sized samples.
(6)	Filter	NA0403	NA0403	Removes particles from gas stream.
(7)	Hoist Assembly	P1524	P1524	Assists lifting of instrument
(8)	Swivel Fitting	P1204	P1204	Connects gas tube for unlimited rotation.
(9)	Gas Tube	V11291	V11291	Delivers gas to rotating instrument.
(10)	Silicone Tubing	P1610	P1611	Delivers gas to each Valve Tube Assembly.
(11)	Needle Valve	P0627	P0627	Adjusts gas flow to each sample.
(12)	Valve Tube Assembly	P0607	P0607	Delivers gas to each sample.
(13)	Luer Fitting	NA0603	NA0603	Connects needle or Pipet Adapter.
(14)	Blunt Needle	NA0603-T	NA0603-T	Delivers gas into sample tube.
	PTFE coated (Optional)			PTFE coated (Optional)
(15)	Obsolete			
(16)	Center Tube Assem.	P1626	P1626	Allows mounted hardware to rotate.
(17)	Flow meter / Bracket	NA1421	NA1421	Meters gas flow to samples.
(18)	Regulator & Gauge	V11985	V11985	Pressure reduction to instrument.
(19)	Control System	11202	11202	Digital / Time control system.
(20)	Connector Tube	NA1101	NA1101	Connects gas source to instrument.



## Location

The N-EVAP Evaporator System should be located on a bench top or in a chemical fume hood if hazardous or flammable materials and solvents are to be used. The location should provide the necessary support services for the instrument. These include electrical power (required for water bath) and a clean inert gas source (Air or Nitrogen). Please review the Specifications Section for further information.

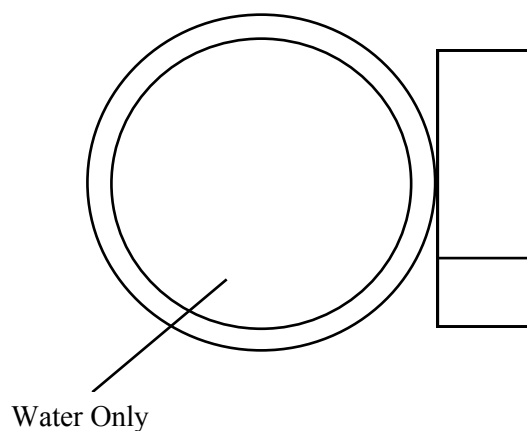
## Bath Setup

1. Position the bath on a stable flat surface such as a lab bench or in a chemical fume hood.
2. Turn the bath rocker switch to the “OFF” position.
3. Turn the heat switch to the center “OFF” position.
4. Plug the bath electrical cord into a 3 wire grounded electrical outlet rated for 110-120 VAC, 50-60 Hz, single phase, 15 amps.

Optional 220 VAC baths are clearly marked and should be plugged into a 3 wire grounded electrical outlet rated for 220-240 VAC, 50-60 Hz, single phase, 15 amps.

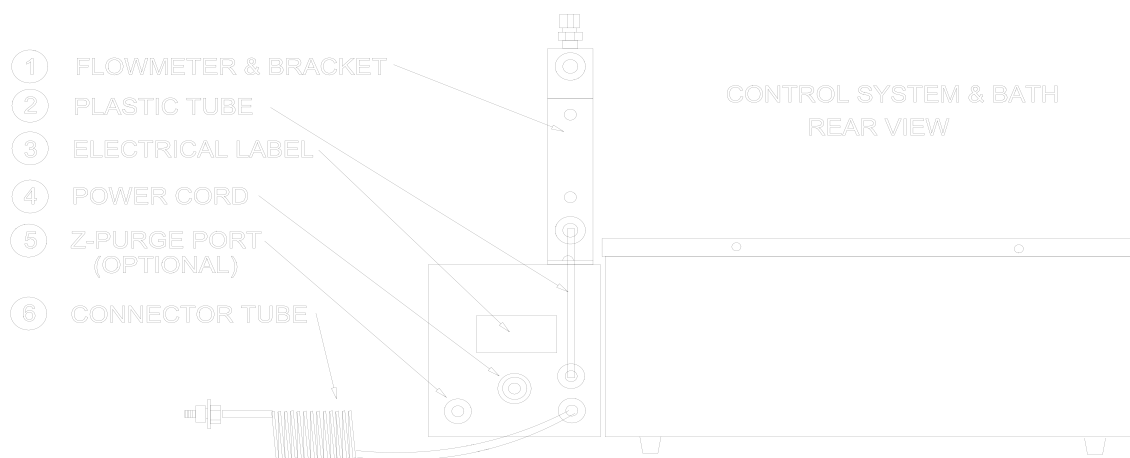
## 5. Water Bath

Fill the bath with water to within 0.5 inch of the bath rim. The use of de-ionized water will reduce mineral build up and extend bath operational life and is recommended.



**Bath Setup (Continued)**

7. Flow meter Assembly - Provided with all N-EVAP Systems. **If an OA-HEAT bath was purchased without an N-EVAP instrument, proceed to the next section.** See figure 4 for parts identification and position.
  - A. Attach the flow meter and bracket to the top left rear corner of the Control Box with the two 10/32 x 1/2" screws provided. The meter should be positioned with the needle valve facing forward.
  - B. Connect the connector tube to the bulkhead fitting located in the left rear corner of the control box.
  - C. Connect the 1/4" plastic tube from the control box to the lower fitting on the flow meter.
  - D. Connect the Connector Tube to a clean gas source (Air or Nitrogen). Source should be capable of being regulated down to 30 psig maximum.
  
8. Pressure Reducing Regulator is standard on all systems utilizing a side mounted control box. This item is pre-installed onto the top of the control box immediately in front of the flow meter. Adjustment range is 0 - 30 psig.

**Figure 4**

### Instrument Setup

1. Place the instrument and rod into the bath or on a flat level surface. A stand plate is available for the Model 116 as an accessory. The stand or rod is loose relative to the instrument and must be held in place while placing the assembly into position.
2. Flow meter Assembly - for N-EVAP Systems purchased without OA-HEAT bath unit.  
**Please proceed to the next section if you have already set up a water bath.**
  - A. Remove one cap nut from one of the stand feet. Secure the meter and bracket to the foot screw and replace and tighten the cap nut.
3. Connect the silicone or SS gas line as follows:
  - A. Connect the SS Gas Tube into the swivel fitting at the top of the instrument. Insert the tube into the fitting as far as it will go, approximately 1/2 inch (13mm).
  - B. Connect the lower end of the SS Gas Tube to the fitting on the top of the flow meter. Secure with a wrench.
4. Loosen the Thumb Screw at the top of the unit. Raise the instrument to its highest position, then retighten the Thumb Screw to hold the instrument in place.
5. Connect the coiled black connector tube to the fitting located on the back right corner of the control box. For units without the OA-HEAT bath unit, connect directly to the lower fitting on the flow meter. Press firmly into place.
6. Adjustments for test tube sizes above or below 100mm length as follows:
  - A. For test tube lengths between 25 and 100mm length, the lower support tray may be raised by turning each of the three thumb screws located on the upper surface of the sample holder plate. Rotate clockwise to raise the support plate and counterclockwise to lower it. For mixed test tube sizes, the support plate may be adjusted in a “tilted” position.
  - C. For test tubes greater than 100 mm length or if Pasteur pipet adapters are used, the top plate may be adjusted upwards to its second position on the center tube. Locate the small hole approximately 35 mm above the manifold in the center tube. Loosen the set screws in the manifold and slide the top plate assembly upwards until one set screw is over the upper hole. Retighten the set screws.

**Instrument Setup (Continued)**

- D. Sample Holder Plate Adjustment - This item may need to be adjusted from time to time as follows:
  - 1. Loosen the set screws located in the white collar above the plate .
  - 2. Raise the sample holder to the desired height, align with the Valve Tubes to center the needles, and secure in place with the set screws.
- 7. Needles and Pipets - SS Luer Lock Needles are supplied with the standard N-EVAP system. Optional Pasteur Pipet Adapters allow the use of glass pipets. These adapters replace the SS Needles on the N-EVAP. Pasteur Pipet Adapters allow the use of both needles and pipets.
  - A. SS Needles - Install into the Luer fitting at the bottom of the Valve Tube assembly by rotating the needle 1/2 turn. Do not over tighten, finger tight only.
  - B. Pasteur Pipet “Push-On” Adapters - Push the pipet onto the end of the adapter. The tubing on the end of the adapter will make a gas seal. Two sizes of tubing are provided for larger or smaller diameter pipets. Once the pipet is on the adapter, screw the adapter into the luer fitting on the instrument just like a needle.
- 8. Raise all Valve Tubes to their highest position. The plastic tube nuts on the top plate should be adjusted so that the Valve Tubes slide easily by hand, but do not fall when released.
- 8. Turn all needle valves on the Valve Tube Assembly off by rotating clockwise.
- 9. Close the valve on the flow meter by rotating clockwise.
- 10. Install needles or pipets as required.

## Safety Considerations

### READ THIS SECTION BEFORE EQUIPMENT OPERATION!

**This equipment is designed for use in the Analytical or Environmental Laboratory by trained laboratory personnel for evaporative applications.** Use of this equipment beyond its stated intended purpose and operating parameters is not recommended and will be the sole responsibility of the user. This equipment should not be modified or altered. Organomation Associates, Inc. assumes no liability for any misuse of or modification to this product and such misuse or modification will immediately void all warranties.

This equipment should be used in accordance with the operating instructions contained in this manual. For alternative uses not covered in this manual, please contact Organomation Associates technical department for product suitability, safety, and alternative operating instructions.

The following are general safety guidelines recommended when using this product. Please consult your laboratory safety officer for any additional safety steps which may be necessary for your specific application or material.

1. Thoroughly review your MSDS (Material Safety Data Sheets) for all chemicals to be used with this equipment.
2. Do not use this equipment with materials with auto ignition points below 210 °C.
3. Hand and eye protection are required when using this product. Additional protection may be required with respect to the materials being used. Please consult your laboratory safety officer.
4. This product should only be used in a chemical fume hood with adequate ventilation.
5. Do not move the product when hot. Scalding from bath water or media may result.
6. Do not open bath enclosure while energized - SHOCK HAZARD!
7. Repairs of electrical components should be conducted by a trained electrical technician. Incorrect replacement parts or assembly may damage the product and create a serious safety hazard for the user. Factory repair is highly recommended.
8. **The use of samples containing ether based, fuel, munitions, or other extremely flammable or explosive materials, compounds, or residues should not be used in this equipment without significant additional safety precautions being taken. Contact Organomation Associates Inc. prior to any such use.**
9. Use of acidic or base materials may damage this product is are not recommended unless the product was ordered with the optional protective coating in PTFE

## Planning and Preparation

It is important to thoroughly understand the procedures and equipment operation prior to the use of the equipment. High speed Nitrogen evaporation requires a balance of sample volume, Nitrogen flow, bath temperature, needle position and adjustment. Improper use can impair performance, contaminate samples or result in loss of samples. Environmental conditions are also important, examples include use of dry or wet heating media, hood airborne contaminants, gas purge purity, and sample handling procedures. If you are unfamiliar with the use of the N-Evap System or are working with a new procedure, it is recommended that a trial run be made using a sample blank to determine optimal operating conditions.

The N-EVAP System is designed to handle multiple samples simultaneously up to the capacity of the equipment. Glass or plastic tubes from 10 to 30mm OD and up to 150mm height may be accommodated. Centrifuge tubes, scintillation vials, small beakers, and Erlenmeyers (50 ml) may also be used. Choice of SS needles or disposable glass pipets (fittings) are available.

The N-EVAP System is manufactured utilizing inert materials. The FDA approved tubing used in the gas distribution system is 100% free of Phthalate presence.

## WARNING!!!

**The use of samples containing ether based, fuel, munitions, or other extremely flammable or explosive materials, compounds, or residues should not be used in this equipment.**

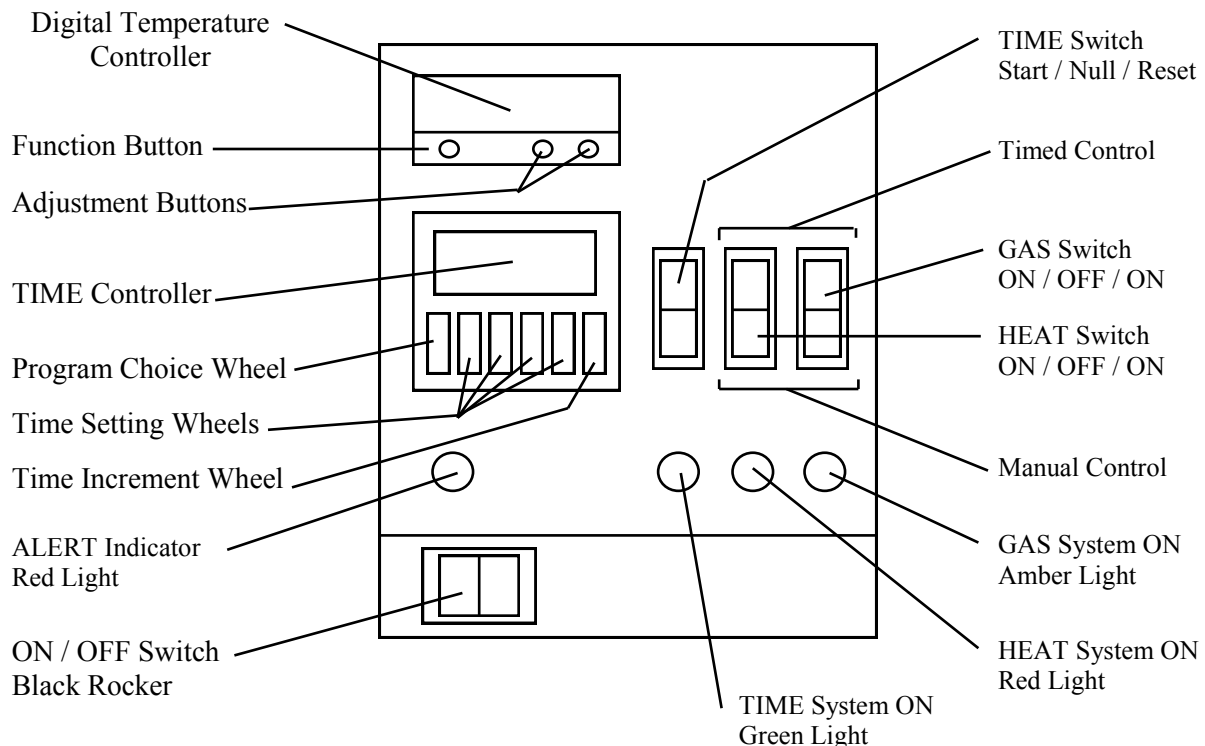
The use of OAI equipment in any hazardous location or with hazardous materials is not recommended, endorsed, or warranted by OAI and any such use is at the sole discretion and is the responsibility of the user. A TYPE -Z Purged Intrinsically Safe Bath Option is available for additional safety.

Even equipped with this option, either passive or active, extreme care and caution must be exercised when using these materials. The equipment must be placed in a location with adequate ventilation and safe guards, recommendations include fire suppression system, shatter proof glass, and adequate shielding for personnel. No other electronic devices should in the same location unless they are either Z-Purge protected or are explosion proof. No flammable solvents should be stored in this location. Materials capable of forming peroxides prior to or during evaporation must be stabilized with sufficient anti-oxidant or they should not be used. Under no circumstances should this equipment be used with materials capable of auto ignition below 210 Degrees Centigrade or with materials containing peroxides.

The Type Z Purged Intrinsically Safe Bath Option meets the requirements as set forth by the National Fire Protection Association (NFPA) for electrical equipment in Class 1, Division I and II locations. **OAI equipment has not been tested to any safety standard for use in hazardous locations or with hazardous materials. No endorsements have been made or given by the NFPA or Underwriters Laboratories (UL) as regards OAI equipment or its use in this regard.** Please Contact Organomation Associates Technical Support if you have any questions concerning the use of TYPE-Z Purged equipment or questionable materials in OAI equipment.

**Instrument Controls - Main Control Panel**

- Digital Controller** - Controls bath temperature
- Timer Controller** - Controls timed functions when selected. Used for bath preheat or automated control of services.
- Time Switch** - Starts or resets timed operation, momentary switch.
- Heat Switch** - Selects manual or timed control of heat system.
- Gas Switch** - Selects manual or timed control of gas system.
- Time Light** - Green, indicates timed operation in progress.
- Alert Light** - Red, indicates timed operation complete or inactive.
- Heat Light** - Amber, indicates heat system is active.
- Gas Light** - Amber, indicates gas system is active.



### Bath Operation

1. Press the reset button on the GFCI (if present).
2. Turn the bath rocker switch on.
3. **Digital Electronic Control** - Adjust the digital controller to the desired temperature set point.

The controller set point may be adjusted by depressing the “\*” on the front panel and depressing the up or down arrow keys to the desired temperature. Release the “\*” key when the temperature desired is shown on the display. This setting will be retained even after the system is turned off.

To view the current set point, depress and hold the “\*” key. Release when done.

Digital Controllers are programmed by Organomation for maximum operating set point as follows:

Water Baths	100°C
-------------	-------

**Note:** The controller set point can be set above the maximum heating capability of the bath it is mounted in.

Example: Setting water bath temperature above 75°C when floats are not present.

Doing so will cause the bath to operate continually at 100% heat without temperature control. This type of operation defeats the purpose of the controller and is not recommended.

### Over-Temperature

Temperature is controlled by a Digital Temperature Controller. All Organomation heating systems utilize a High Temperature Protection Switch to protect against temperature control failure. In the event of temperature control failure, the heating unit will operate at failsafe temperature levels. Equipment should be monitored periodically during use to ensure user selected parameters are being maintained. A red blinking light on the digital controller will activate and blink if the temperature exceeds 10°C above the user set point. Should abnormal temperature values be observed, turn the unit off. Unplug it from the wall. Contact Organomation Technical Department prior to any further use of the equipment.

**Do not operate the equipment if loss of temperature control is detected.**



### Bath Operation

#### 4. Manual Gas and Heat Control

- A) To operate the heat system manually, depress the heat switch to the lower position. The Amber heat light will glow indicating the heat system is active. Temperature will be controlled by the digital temperature controller.
- B) To operate the gas system manually, depress the gas switch to the lower position. The Amber gas light will glow indicating the gas system is active. The gas system is controlled by a solenoid valve located within the control box. When active the solenoid is open allowing gas flow to the flow meter and subsequently to the needle valves on the instrument.
- C) To turn off either service, simply return their respective switches to the middle “OFF” position.

#### 5. Timed Gas and Heat Control

The Time control system allows several operating modes which can be set for different operations. The timer may be used to preheat the bath in the morning prior to use, to shut down the system after a specific period of time (unattended operation), or for non-dryness endpoint operations. **Only functions C and H are functional on this system.**

### Preheat Bath Timed Operation

To begin heating the bath automatically prior to use the following morning, please follow the procedures below.

- A) Fill the bath with water to within 0.5 inches of the bath rim or up to the overflow port if so equipped.
- B) Turn the bath off.
- C) Set the left hand timer dial to program “C”. Program C is DELAY / OPERATE time function.

**Bath Operation**

- D) Set the right hand dial to 0.1H. This will allow time settings to tenths. The three center dials may be set to the correct number of hours with the right hand most dial representing 0.1 hours. Calculate the amount of time that will elapse from the point the bath will be left until it will be needed the following day less 1 hour for heat up time.

Example: You leave at 5:30 PM and plan to arrive at 7:00 AM and want the bath heated and ready to go.

Elapsed time is 13.5 hours less 1 hour for heating leaves 12.5 hours. Set the timer as follows:



- E) Set the heat switch to timed operation
- F) Set the gas switch to the middle position (OFF).
- G) Turn the main power switch on.
- I) Press the start switch to begin the timed countdown operation. At the completion of the operation the bath heat will be turned on automatically.

**Bath Operation****5. Timed Gas and Heat Control (Continued)****Automatic shutdown of gas or heat services - unattended operation**

To shut down the bath services after a period of time during a sample evaporative run, ideal when each sample is to be taken to dryness and the operator will not be present at the completion of the run. Please follow the procedures below.

- A) Set the left hand timer dial to program "H". Program H is an OPERATE / STOP time function.
  
- B) Set the right hand dial to the time increment (seconds, minutes, hours, or tenths of same) which is most ideal for the period necessary to process the sample. The three center dials may be set to the correct amount of time to complete the run. As most samples will vary slightly in their evaporative times to dryness an additional period of time should be allowed prior to shutdown. Ten to twenty minutes should be adequate.

Example: You wish to process 18 samples in 16 x 100mm test tubes to dryness. Experience has shown that this takes approximately 25 minutes to complete. As you are expected in a meeting which may take an hour or more., you should use the automatic time system as there is no need to waste unnecessary gas flow:

Evaporation time is 25 minutes plus 10 minutes for variance, this gives 35 minutes. Set the timer as follows:

H 0 3 5 M

- C) Set the heat switch to timed operation or manual to bypass timed control.
  
- D) Set the gas switch to the timed position.
  
- E) Follow instrument instruction procedures for flow meter and needle valve settings.
  
- F) Press the start switch to begin the timed countdown operation. At the completion of the operation the gas flow will be turned off automatically.

NOTE: To stop a timed run at any point simply push the reset switch.

**Bath Operation****5. Timed Gas and Heat Control (Continued)****Non-dryness automated endpoint - unattended operation**

The N-EVAP system may be used for timed non-dryness endpoint evaporation. In order for this operation to be successful the following parameters must be maintained.

Test Tube Size -	All tubes must be the same size
Sample Volume -	All sample volumes must be equal
Gas Flow Rate -	Must be the same per sample / per position / per run
Bath temperature -	The same set point must be used for each run

A trial run must be made to determine the time required to obtain the specific endpoint desired. Careful notes should be maintained on all operating conditions. Sample size, volume, and gas flow are the most critical, with gas flow being the most difficult to control. Please follow the procedures outlined in the previous section for operation of the timed system with unattended operation and shut down.

The following procedures will help to improve accuracy for each run.

- A) Set the pressure regulator to a position high enough to meet all flow requirements 20 - 30 PSIG should be sufficient for most applications.
- B) Open each valve tube with a sample 1.5 revolutions.
- C) Gas flow to each position should be increased to 1 LPM / Position.
- D) Samples should be equally distributed around the bath.
- E) Position each needle or pipet at the same distance from the sample surface. This position should not be altered during the run and should be duplicated on successive runs.
- F) Maintain a log of all operating conditions and positions for future use.

Experimentation has demonstrated that evaporation rate at a given temperature range is largely a function of gas flow rate, 92%. Minor fluctuation in temperature +/- 2 degrees Celsius have little impact on rate, less than 8%. At endpoint, evaporative losses by heat alone are negligible for short periods of time, 10 - 30 minutes, except for very volatile compounds.

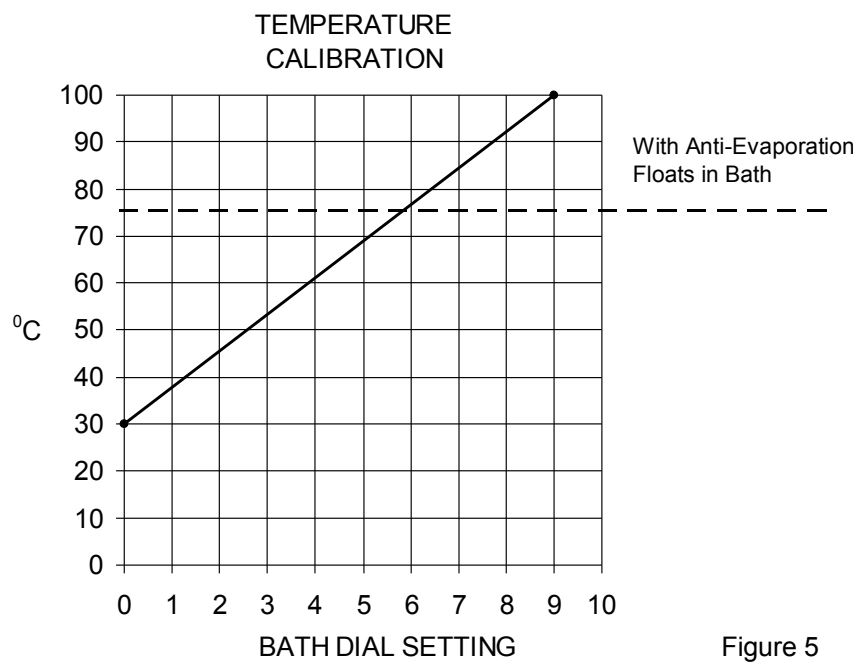


Figure 5

**Type Z-Purge Bath Operation - Optional****IMPORTANT - PLEASE READ**

**If you do not have this option please proceed to the next section.**

**What It Does**

The Type-Z Purged system helps to prevent ignition of flammable materials caused by contact with electrical components inside the heating unit.

**Statement of Use - Please Read!**

The Type Z Purged Intrinsically Safe Bath Option meets the requirements as set forth by the National Fire Protection Association (NFPA) for electrical equipment in Class 1, Division I and II locations.

OAI equipment has not been specifically tested to any safety standard for use in hazardous locations or with hazardous materials. No endorsement has been made or given by the NFPA or Underwriters Laboratories (UL) as regards OAI equipment or its use in this regard.

The use of OAI equipment in any hazardous location or with hazardous materials is not recommended, endorsed, or warranted by OAI and **any such use is at the sole discretion and is the responsibility of the user.** Please Contact Organomation Associates Technical Support if you have any questions concerning the use of TYPE-Z Purged equipment or questionable materials in OAI equipment.

**How It Works**

The concept behind this purge system is to create a small positive pressure gradient inside the bath case. By carefully sealing the heating unit or control enclosure, a small flow of clean air or inert gas will create a slight positive pressure within the enclosure. It is important to note that there is constant leakage out of the enclosure. In this way the enclosure is continually purged. The pressure gradient prevents flammable vapors and occasional spills from entering the enclosure where arcing components or high surface temperature heaters might cause ignition. The use of an inert gas such as Nitrogen enhances the technique by removing all Oxygen from the enclosure. By purging the enclosure for 10 minutes, the gas volume within the enclosure is replaced multiple times ensuring that no flammable vapors remain which may have entered while the purge system was inactive.

**Type Z-Purge Bath Operation - Optional****Operating Procedure**

1. Turn on the gas flow to the Z-Purge System. Purge gas may be clean air or inert gas such as Nitrogen. The use of Nitrogen is recommended.
2. Adjust the gas flow until 0.5 inches water pressure is maintained on the gauge mounted on the heating unit.
3. Purge the bath for 10 minutes before engaging the electrical system. This applies to both the active and passive versions.
4. After 10 minutes the gas flow may be adjusted to 0.1 (passive) or 0.3 (active).
5. Turn on the electrical heating unit. The purge rate must be maintained for as long as the equipment is operating.
6. Please follow the normal operating instructions for the purged equipment once the purge option has been properly engaged.

### Instrument Operation

1. Raise the instrument to its highest position and secure.
2. Place the test tubes with samples into the sample holder plate assembly. The positions are numbered for sample identification. The sample holder spring will hold the test tube firmly in place. The test tube bottom should rest on the support tray. If the support tray assembly is too low, adjust it upwards as follows:

Adjust the support tray up or down by turning the three thumb screw knobs located on the sample holder assembly. Rotate clockwise to raise the support tray and counterclockwise to lower it.

3. Install the SS needles or pipets for the number of positions to be used. Reference the instrument setup instructions for detailed needle or pipet installation instructions.
4. Turn on the gas flow switch to manual.
5. Lower the needle/valve tube assembly until the needle or pipet tip is 1/4 inch (6 mm) from the solution surface.

Adjustment:

The valve tube assembly will slide up or down through the retaining nut on the top plate assembly by applying even pressure from the top. Tension may be adjusted by tightening or loosening the retaining nut.

6. Open the needle valve on each valve tube position which is to be used - one revolution only.



**Instrument Operation (Continued)**

7. Adjust the flow meter needle to the correct flow rate for the number of positions being used. Please reference Figure 7.
8. Adjust the needle valve for each sample as needed so that a dimple in the surface of the sample is created by the gas flow. Avoid splashing, as this may cause sample loss and possible contamination.
9. Continue the evaporation until complete. For non-dryness endpoint requirements, please review the automated bath operation section.
10. At the end of the evaporative process, rinse the needle or pipet tips with one or two drops of solvent using a clean pipet. This step is optional, but should be used if the following conditions apply: sample splashing occurs, needle or pipet tip is accidentally immersed in the sample, or micro quantities of material are to be recovered.
11. Remove samples when done by sliding the valve tube assembly upwards and lifting the sample from the sample holder.
12. When evaporation is complete and all samples are removed, proceed as follows:
  - A. Turn off the gas source.
  - B. Close the needle valves and the flow meter valve.
  - C. Turn off the bath power (toggle switch).
  - D. Remove and clean the needles. Pipets should be disposed of properly.
  - E. Refer to Maintenance Section for bath and instrument care and upkeep.

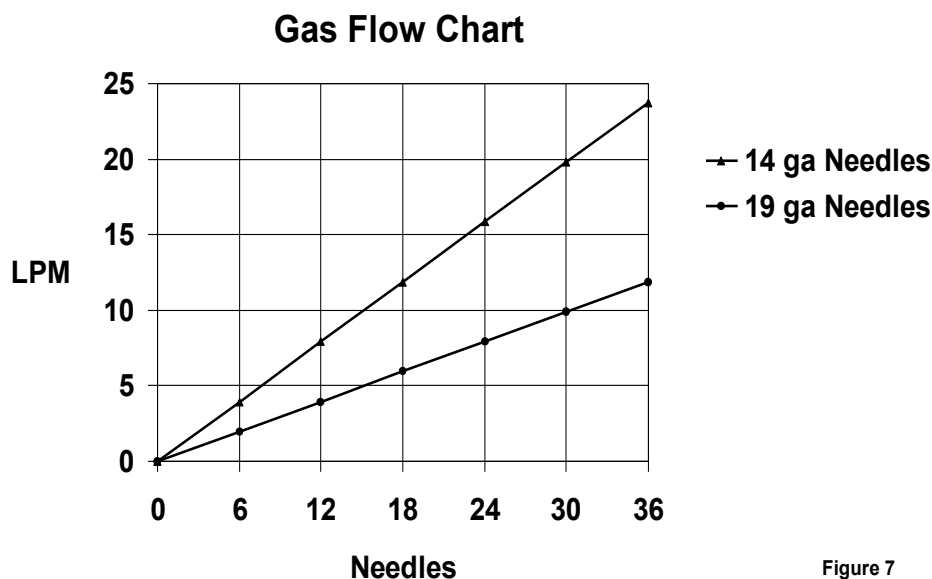


Figure 7

## Maintenance and Cleaning

The N-EVAP Evaporation system is manufactured from extremely durable materials and may last for years if operated and maintained properly. The following guidelines are recommended for use with all N-EVAP systems.

**Heating Media** - Tap water, distilled water, de-ionized water, and bath heating oils may be used. Distilled and de-ionized water are preferred as they reduce scale and mineral buildup on bath walls.

Paraffin (wax) may be used with the Z-Purge option.

**Do not use organic solvents as a heating medium.**

**Algaecide** - The use of algaecide in the bath water poses no threat to the water bath and will keep biological materials under control. Algaecide should not be acidic. Verify type of algaecide used to insure that it will not adversely affect the samples being processed.

### **Recommended Algaecides:**

VWR brand - Clear Bath®  
Fisher Scientific Brand - Bath Clear®

**Follow manufacturer instructions concerning use and disposal of these materials.**

**Water Changes** - The bath water should be changed once per week (recommended), but not less than once per month.

**Acidic Environment** - When in contact with or exposed to acidic materials, vapors, or samples, the instrument should be cleaned immediately after use and neutralized with a suitable mild base solution of **Sodium BiCarbonate** or similar material followed by a clean water rinse. Prolonged contact with acidic materials will damage the instrument unless precautions are taken.

**Needles** - Needles should be solvent cleaned after every use to reduce the chance of contamination. Solvent rinsing, autoclaving, and Soxhlet Extracting are viable techniques.

**Maintenance and Cleaning (Continued)**

**Immersion -**            **The bath case is water resistant, not water tight. Under no circumstances should the bath be immersed in any liquid or placed in a location where this may occur.            SHOCK HAZARD!**

**Cleaning -**            **The stainless steel components** may be cleaned with a cleaner approved for use with Stainless Steel. Non abrasive cleaners are recommended to preserve the surface finish, however an abrasive material may be used on areas with heavy mineral buildup. Non-abrasive scouring pads are recommended. Steel wool may be used on heavily soiled areas. Rinse all cleaned areas with water using a sponge or towel.

PTFE **coated parts** (black in color) and **Epoxy coated parts** (blue in color) should be cleaned with non-abrasive materials only, otherwise scratching will result and the coating will be compromised. Rinse with clean water using sponge or towel.

**NOTE: Do not rinse electrical equipment under running water!**

**Recommended Cleaning Agents:**

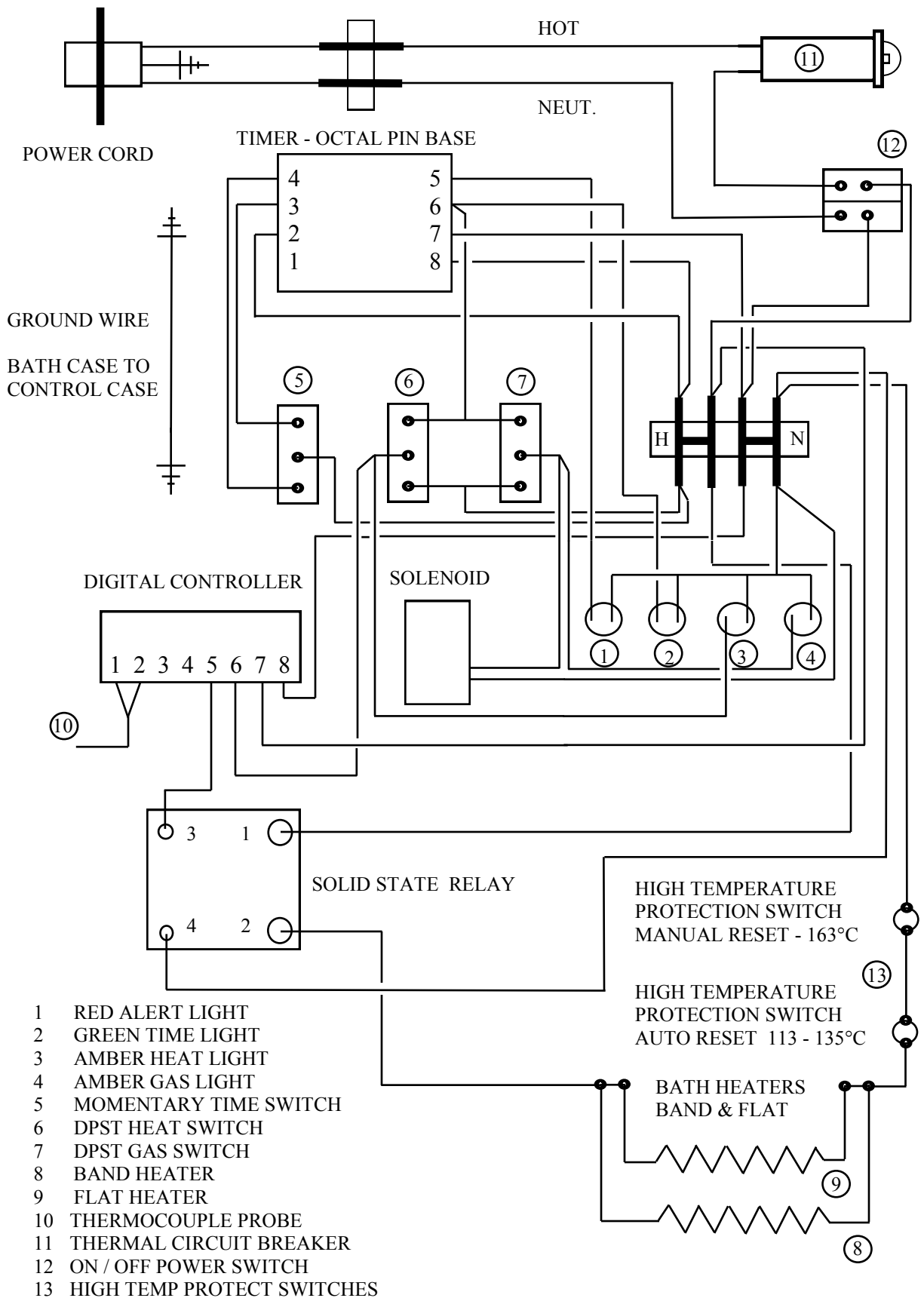
Sheila Shine® - Stainless Steel cleaner and polish	non-abrasive
Simple Green® - All Purpose Cleaner	non-abrasive
Orange Clean® - All Purpose Cleaner	non-abrasive
CameO® - Aluminum & Stainless Steel Cleaner	abrasive
AJAX® Cleanser	abrasive
Comet® Cleanser	abrasive

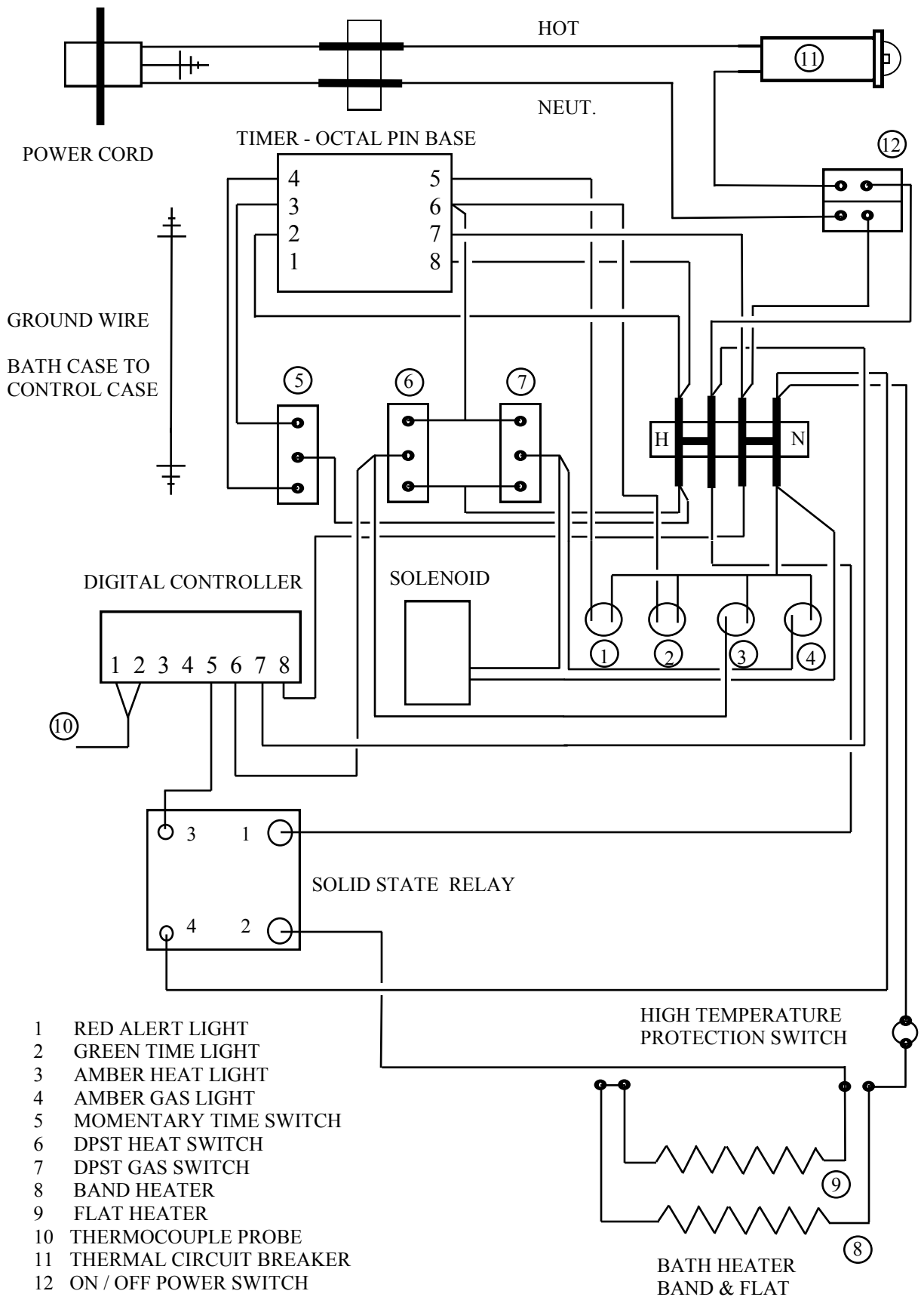
**Decontamination -** No hazardous materials are used in this equipment. In the event of a hazardous material spill by the user or outside source, immediately contact your laboratory safety officer or the manufacturer of the material for instruction on cleanup or other decontamination procedures.

Reference your Material Safety Data Sheets (MSDS) for instructions on proper cleanup and handling procedures.

**Contact Organomation Technical Department at (978) 838-7300 concerning any issue regarding decontamination and / or for alternative cleaning procedures.**

SYMPTOMS	CAUSES	SOLUTIONS
<b>No Power to bath.</b>	Electrical outlet not energized. Bath power cord not plugged in. GFCI not reset. Internal electrical fault.	Energize electrical outlet. Plug in bath power cord. Reset light gray switch on GFCI. Contact factory for instructions.
<b>Bath does not heat.</b> (heat light is on)	Improper control setting Bad wire connection. Defective digital temperature control or relay.	Check temperature setting Bath will require service, contact factory for instructions.
<b>No temperature control.</b> (temperature continues to rise)	Defective controller	Replace controller, contact factory for instructions.
<b>Bath will not heat above 65 - 75 C.</b>	Open faced bath, no cover disk. One of two heaters defective. Defective high temp. switch Defective controller	Purchase anti-evaporation floats. Replace heater, switch, or controller, contact factory for instructions.
<b>GFCI trips or will not reset.</b>	Water in bath causing leakage. Defective GFCI.	Refer to “water in bath” section. Replace GFCI.
<b>Water inside bath.</b>	Water floods in hood. Leaky bath drain fitting. Bath surface spill. Pinhole in bath pan.	Consult factory, do not disable GFCI - serious safety hazard. Disassemble bath, dry all contents thoroughly. Return for service highly recommended.
<b>Rust in bath or equipment.</b>	Use of acidic materials in or near equipment.	Clean carefully with steel wool. Remove source of acidic presence. Return unit to factory to be coated in PTFE.
<b>Phthalate Contamination</b>	Human error	Exercise better handling procedures, avoid latex gloves, hand cream, rubber tubing.
<b>Inconsistent evaporation rates.</b> (or excessive Nitrogen use)	Nitrogen leaks. Incorrect needle valve adjustment	Check all connections, soap/water. Close needle valves - open valves one revolution and adjust flow using flow meter.
<b>Biological growths in bath</b>	Algae, molds, etc. in bath water	Use algaecide, change bath water once per week.





## Service and Returns

In the event a product purchased from Organomation needs service or must be returned please follow the outlined procedures below.

### 1) **Contact Organomation Technical Support Department**

Before returning any product to Organomation Associates for any reason, please contact the Technical Support Department, toll free at 888-838-7300 or email [sales@organomation.com](mailto:sales@organomation.com). Support is available Monday through Friday from 8:30 AM to 5:00 PM EST. Support is available free of charge to customers of Organomation in good standing for all products manufactured by Organomation.

### 2) **Pack the product for return shipment**

The product should be packaged in its original shipping carton if available. If other packaging is required, use a suitable shipping container which will allow a minimum of two (2) inches clearance between the product and the side walls of the shipping carton. Peanuts, semi rigid foam, cardboard, and other items may be used inside for packaging. Care should be taken when packaging heavy items. Some packaging, such as peanuts, will allow the item to shift in transit and may result in damage.

### 3) **Insurance**

Most common carriers offer insurance. UPS and Federal Express automatically insure your product up to \$100.00 without charge. It is highly recommended that you insure your product. **Organomation is not liable for any return shipping damages.**

### 4) **Documentation**

When returning items to Organomation, a Return Authorization form must be included with the following information: Contact persons name, phone number, email, return address, and statement of the problem.

### 5) **How will your return be handled?**

Organomation will evaluate the returned item for damage. If the return is a repair, the product will be examined for problems and a repair estimate will be made. The contact person will be contacted, at which time a Purchase Order will be requested. After the PO is issued, the product will be repaired and return shipped. Most repairs are done within a 24 hour period. Return for credit items will be evaluated and your account credited after the item is received. The contact person will be notified immediately in the event any shipping damage has occurred. Items under warranty will be repaired and return shipped at no charge.

**Shipping - Claims for damage and shortage**

Organomation Associates Inc. makes a sincere effort to ensure your purchase is properly packed and all items listed on the packing slip are in fact enclosed with the shipment. In the event that your purchase is damaged or if any items are missing, please follow the procedures below.

- 1) All packaging materials must be retained until the issue is resolved.
- 2) Thoroughly search all packing materials for the missing items. Review your packing list for back ordered items and the manual for a list of items affiliated with your purchase.
- 3) Contact Organomation immediately at 888-838-7300 or sales@organomation.com
- 4) If a damaged item needs to be replaced, Organomation will send this item under warranty at no charge. The damaged item must be returned to Organomation. Please follow the instructions listed in the Service and Returns section. **Important - items not returned or which are further damaged or destroyed in transit are the responsibility of the customer and will be billable.**
- 5) No claims for shipping damage or shortage will be accepted after 15 days of receipt of the items by the purchaser.

All items should be returned to:

**Organomation Associates, Inc.  
266 River Road West  
Berlin, MA 01503**

An RAN (Return Authorization Number) is required prior to all returns.



**Specifications (includes available options)**

<b>Environmental:</b>	Humidity 0-90%, Temperature 5-40°C, Indoor use only. Elevation up to 3000 Meters.
<b>Electrical Requirements:</b>	120 or 240 VAC single phase, non-switchable, 50 - 60 Hz., 3 wire grounded outlet required. For use in Installation Category II and Pollution Degree II locations in accordance with IEC 60664 Model 116 34/45 Position Bath 1200 W
<b>Electrical Compliance's: (as marked on bath)</b>	Underwriters Laboratories Listed 2D93, E163892. Underwriters Laboratories Canadian Listed 2D93, E163892. EC compliance EN55014.
<b>Bath Water:</b>	Regular tap, distilled, or de-ionized water. Manual addition, Fill to 0.5 inch (12mm) from rim.
<b>Gas Service:</b>	Nitrogen, clean air, or other inert gas, 5 - 30 Psig, adjustable. Flow indication standard with all complete N-EVAP™ systems.
<b>Sample Sizes Accepted: (consult factory for instrument configurations to match your needs)</b>	Glass or Plastic Test Tubes, 10-30mm Dia. x 10-150mm Long Scintillation Vials Centrifuge Tubes (size range above) Auto sampler vials (size range above) 50ml Erlenmeyer Flasks & Beakers Consult factory for optional smaller & larger sizes.
<b>Sample Types Utilized:</b>	Organic Solvents with Boiling Point range 30 - 140 Celsius. Water and aqueous solutions. Strong acidic or base materials, PTFE coating required - consult factory.
<b>Safety Provisions:</b>	3 wire grounded power cord. High Temperature Protection Switch Stainless Steel construction. Temperature controlled bath. Optional PTFE Coating (for use with acidic samples) Optional Type-Z intrinsically safe bath purge

**Contact Information**

**General Contact Number:** (978)-838-7300  
**Sales and Service:** (888)-838-7300  
**Fax Number:** (978) 838-2786  
**E-Mail:** sales@organomation.com  
**Web Site:** www.organomation.com

**Hours of Operation**

**Monday - Friday 8:30 AM - 5:00 PM Eastern Standard Time**

**Shipping and Receiving**

**Prepaid and added to Invoice, insured unless specified in writing otherwise.**

**ABF Motor Freight  
United Parcel Service (UPS)**

**Vendors Requiring Customer Account Numbers:**

**AirBorne Express  
Federal Express (overnight services only)  
DHL**

**OAI cannot guarantee same day shipping on orders placed after 2:00 PM EST**

**Payment**

<b>COD</b>	<b>Company Check</b>
<b>Credit Cards</b>	<b>VISA and Master Card</b>
<b>Open Account</b>	<b>Net 30 days. Requires Credit Approval.</b>
<b>Prepayment</b>	<b>Company Check or Credit Card</b>

## CE Declaration of Conformity Revised June 1, 2015

We, Organomation Associates Inc a corporation registered in Massachusetts, United States of America, declare under sole responsibility that the following equipment to which this declaration relates, meets the principal protection requirements and is in conformity with relevant sections of the applicable CE standards and other normative documents. If changes are made to the products covered by this declaration then the declaration is no longer valid.


Equipment type: Laboratory sample preparation instruments.  
Bench top size, multiple sample position.  
Analytical evaporators and extractors.

Model(s): N-EVAP Nitrogen evaporator models:  
11106, 11155, 11250, 11634, 11645  
MULTIVAP Nitrogen evaporator models:  
11364, 11300, 11809, 11830, 11848, 11880  
11801, 11803, 11815, 11824  
S-EVAP solvent evaporator models:  
12060, 12080, 12008  
12027, 12037, 12010, 12018, 12048  
  
Rot-X-Tract-S solid-liquid extractor models:  
13070, 13090, 13008  
Rot-X-Tract-L liquid-liquid extractor models:  
13318, 13308

All of the above wired for 110 and 220 volts (-2 option code).  
All of the above with dry bath and aluminum beads (-DA option code).  
All of the above with acid resistant coatings (-RT option code).  
All of the above with intrinsically safe, purged bath case (-Z option code).

EC Directives and Amendments: 89/336/EEC - Electromagnetic Compatibility  
Directive (EMC).

Harmonized Standards and  
IEC publications used: EN61326, EN61010-1

Authorized signature	Title	Date
	President	June 1, 2015