Instructions TS-66518 AZ-1
General Purpose Water Baths

Precision Scientific

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1: INTRODUCTION

Precision General Purpose Water Baths are designed for a wide variety of serological research procedures as well as a broad range of other general laboratory applications. Operation and maintenance of these baths are covered in this manual; unless specifically noted otherwise, the information provided applies to all available models.

Precision water baths feature a one-piece, deep-drawn stainless steel chamber with welded and painted stainless steel outer body. Depending on the model, either one or two heaters are attached to the bottom of the bath chamber. For faster temperature recovery and reduced power consumption, the baths are equipped with a stainless steel cover (except Model 181, which is equipped with a plastic cover).

All units (except Models 180 and 181) also feature an adjustable support shelf which may be set at three different height levels by simply changing the position of the legs. Models 180 and 181 are equipped with a non-adjustable diffuser shelf.

2: SPECIFICATIONS

Precision General Purpose Water Baths feature the following capacities. Volume calculations are based using a water level approximately 1-1/2" from the chamber top (1/2" from the chamber top for the Model 180).

Catalog Number	Model Number	Electrical Characteristics			Capacity	
		Volts	Watts	Amps	Liters	Gallons
66630 66631	180 180	120 240	225	1.9 0.9	2.0	0.5
66557 66564	181	120 240	225	1.9 0.9	2.2	0.58
66643 66617	182	120 240	300	2.5 1.3	5.3	1.4
66551 66553	183	120 240	400	3.4 1.7	11.0	3.0
66648 66618	184	120 240	600	5.0 2.5	19.0	5.0
66562 66563	185	120 240	600	5.0 2.5	17.0	4.4
66634 66647	186	120 240	1200	10.0 5.0	50.0	13.2
66552 66554	188 Dual	120 240	700	6.7 3.3	5.3 (Small) 11.0 (Large)	1.4 (Small) 3.0 (Large)

3: INSTALLATION

3.1 Location

To obtain the most uniform operating conditions and results, place the bath in an area remote from drafts, ventilation outlets, radiators, and other rapidly changing ambient conditions.

To assure proper ventilation, allow a minimum of 4 inches clearance between the rear, top, and sides of the unit and adjacent walls. If two or more units are positioned side-by-side, allow a minimum of 8 inches between cabinets.

3.2 Cleaning

The interior of the bath, shelf platform, and cover should be washed with a mild detergent solution and rinsed with distilled water prior to use.

3.3 Electrical Connections

⇒ **IMPORTANT:** *Please read carefully.*

⇒ **WARNING:** *For personal safety, this apparatus must be properly grounded.*

⇒ **CAUTION:** *Be sure that the power supply is of the same voltage as specified on the nameplate.*

The power cord of this instrument is equipped with a three-prong (grounding) plug which mates with a standard three-prong (grounding) wall receptacle to minimize the possibility of electric shock hazard. The user should have the wall receptacle and circuit checked by a qualified electrician to make sure the receptacle is properly grounded. Where a two-prong receptacle is encountered, it is the personal responsibility and obligation of the user to have it replaced with a properly grounded three-prong receptacle.

⇒ **WARNING:** *Do not, under any circumstances, cut or remove the third (ground) prong from the power cord. Do not use a two-prong adapter plug.*

Determine the total amount of current presently being used by other apparatus connected to the circuit that will be used for this unit. It is critical that the added current demand and other equipment on the circuit not exceed the rating of the fuse or circuit breaker in use.

4: OPERATION

⇒ **CAUTION:** *Exercise care when using acidic or caustic solutions as they will attack the stainless steel bath body if spilled into the bath. If spills do occur, the bath liquid should be immediately drained and the unit thoroughly flushed. Spills and condensation should be cleaned/removed from all metal surfaces after each test.*

4.1 Shelf Placement

Models 180 and 181: Place the stainless steel metal tray (corners facing downward) inside the bath chamber. The tray provides a sample base and protects samples from touching the hot metal bath bottom.

All Other Models: Adjust the diffuser pan legs so that the pan will be at the desired depth when the water level is within 1-1/2" of the chamber top.

4.2 Filling Bath

⇒ **NOTE:** *Distilled water is recommended; it will not corrode the bath chamber and reduces the need for frequent bath cleaning.*

Before filling, check the power switch and make sure that it is in the "off" position.

Fill the bath with distilled water, making allowance for displacement by the sample(s) being immersed and for expansion of the media upon reaching operating temperature.

For Model 181 and above, the maximum liquid level should be 1- 1/2" from the top surface of the bath after sample(s) are immersed. For the Model 180, the maximum liquid level should be 3/4" from the top of the bath.

4.3 Bath Cover

To conserve energy and reduce evaporation, use the cover supplied with the bath throughout the temperature range of the bath.

⇒ **CAUTION:** *Do not use aluminum foil as a cover; it may cause corrosion of the stainless steel as a result of an electrolytic reaction.*

4.4 Bath Thermometer

Each bath is supplied with a thermometer and O-ring (packed separately). The thermometer is attached to the bath via a metal clip on the top of the bath.

Slip the O-ring onto the thermometer; insert this assembly through the metal clip until the immersion depth indicator line is at or below the water surface. The thermometer bulb should always be located above the diffuser pan.

⇒ **CAUTION:** *Care should be taken to protect the thermometer from accidental breakage and spillage of hazardous mercury content.*

4.5 Power On

Insert the line cord into the proper receptacle and turn the power switch to the "on" position. This action will energize the heater(s) and cause the amber pilot lamp to light. The pilot lamp will stay lit as long as the heater(s) is energized.

4.6 Setting Thermostats

⇒ **NOTE:** *Dial numbers are for reference only; they are not values for water temperature within the unit.*

A. Turn both the Temperature Control and High Temperature Limit thermostat knobs fully clockwise. The Temperature Control pilot lamp should light.

B. When the bath temperature reaches the desired temperature, slowly turn the High Temperature Limit thermostat counterclockwise and stop when the High Temperature Limit pilot lamp just lights.

C. Turn the High Temperature Limit thermostat knob clockwise one division. The High Temperature Limit pilot light should go off. The High Temperature Limit thermostat is now set 1° to 5°C above the desired bath temperature.

D. Turn the Temperature Control thermostat counterclockwise until both pilot lamps are off. If necessary, allow the unit to cool to the desired operating temperature.

E. Turn the Temperature Control thermostat clockwise until the Temperature Control pilot lamp lights. Allow the unit to stabilize, readjusting the Temperature Control thermostat as necessary.

5: MAINTENANCE

⇒ **WARNING:** *Unit must be disconnected from power source prior to servicing. It is recommended that all service be performed by qualified service personnel.*

⇒ **CAUTION:** *Electrolysis can damage stainless steel. This can occur if an object is allowed to rest directly on the surface, trapping moisture that becomes oxygen starved but is surrounded by water containing oxygen. The resulting electrolytic action will pit or erode the stainless steel.*

5.1 Cleaning

Proper maintenance of the stainless steel bath chamber will help assure many years of service.

It should be cleaned regularly with mild soapy water and rinsed with distilled water. Always thoroughly dry the chamber after cleaning.

Should algae or other undesirable microorganisms form on the top of the bath media, add a little formaldehyde or zephiran chloride to alleviate this problem.

⇒ **IMPORTANT:** *If it is necessary to use the following chemicals, limit the time to a maximum of four hours. Clean surfaces immediately after use.*

Aluminum Chloride	Barium Chloride	Bichloride of Mercury
Calcium Chloride	Carbolic Acid	Chlorinated Lime
Citric Acid (boiling)	Dakin's Solution	Ferrous Chloride
LysolMercuric Chloride	Mercury Salts	Phenol
Potassium Permanganate	Potassium Thiocyanate	Sodium Hypochlorite
Stanous Chloride	Tartaric Acid	

⇒ **CAUTION:** *Never use the following chemicals.*

Aqua Regia	Ferric Chloride	Iodine
Sodium Azide	Sulfuric Acid	

5.2 Removing Discoloration

Should the stainless steel ever become discolored by iron rust, use the following procedure to remove all traces of the rust and restore the stainless steel.

⇒ **WARNING:** *Observe the following safety precautions! Use heavy gloves or other adequate hand protection. Wear goggles or other adequate eye protection. Only work in areas with adequate ventilation.*

Prepare a solution of 20% nitric and 1.5% hydrochloric acid (if preferred, a 2% to 5% solution of warm oxalic acid may be used). Swab solution over surface, allowing it to remain until all rust is loosened. This will usually take 1 to 2 minutes.

As soon as rust is loosened, immediately flush with clean water until all acid is removed. Dry thoroughly.

6: SERVICE

⇒ **WARNING:** *Unit must be disconnected from power source prior to servicing. It is recommended that all service be performed by qualified service personnel.*

⇒ **NOTE:** *Assembly and disassembly of these water baths for servicing requires a special tool for removal of TORX® type screws. The tool necessary is a TORX® T-25 key and may be purchased at most auto parts or hardware stores.*

6.1 General Information

To service the water bath, turn it on its side or top and remove the bottom plate and insulation. To prevent scratching of the enameled surface, place protective material (such as cardboard, cloth, or newspaper) under the unit.

6.2 Heater Element Replacement

A. Put the power switch in the "off" position and disconnect power to the bath.

B. Turn bath upside down and remove bottom plate and fiberglass insulation.

C. Disconnect the two leads from heater element.

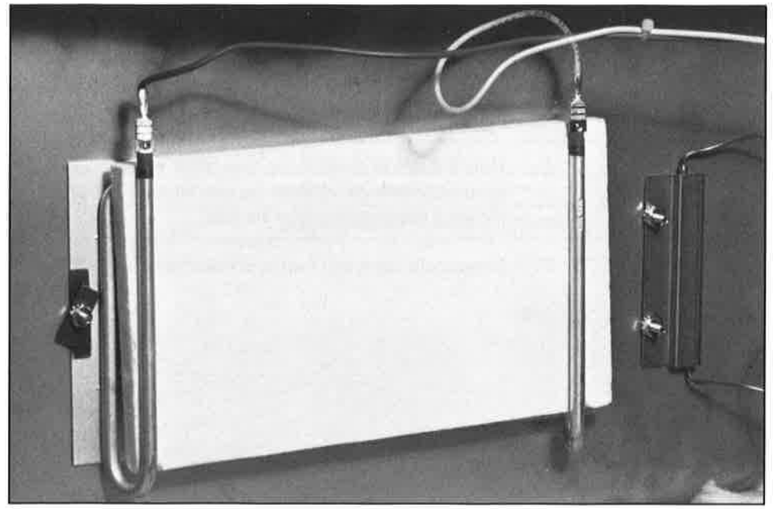
D. Remove the two hex nuts that fasten the heater element to the pan and remove element.

E. Remove Fiberfrax insulation from the old element and insert it into the new element.

F. Fasten the new heater element to the pan and connect the two leads.

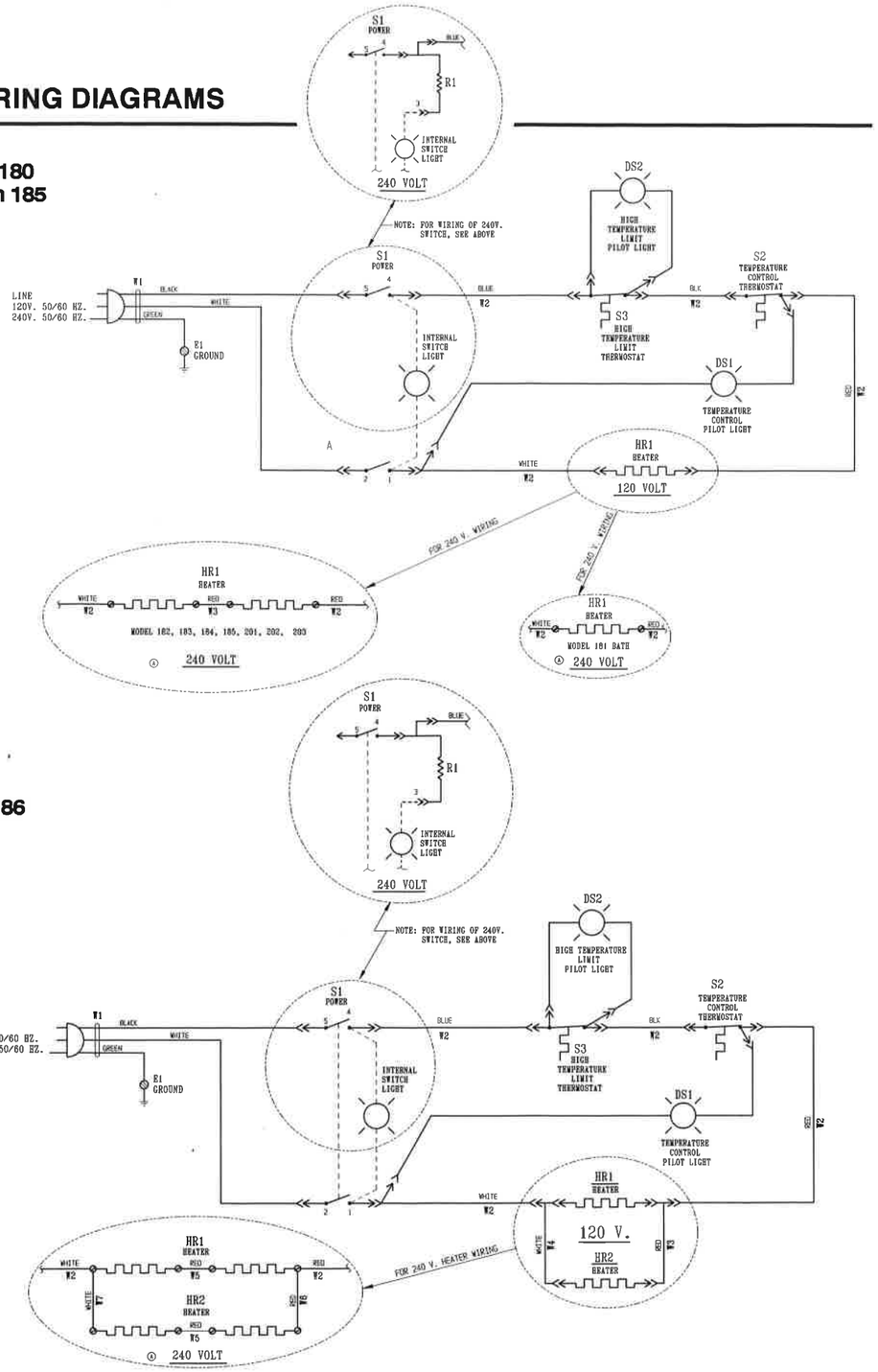
⇒ **CAUTION:** *Be sure the wire leads do not touch the heater element.*

G. Replace insulation and install bottom plate.



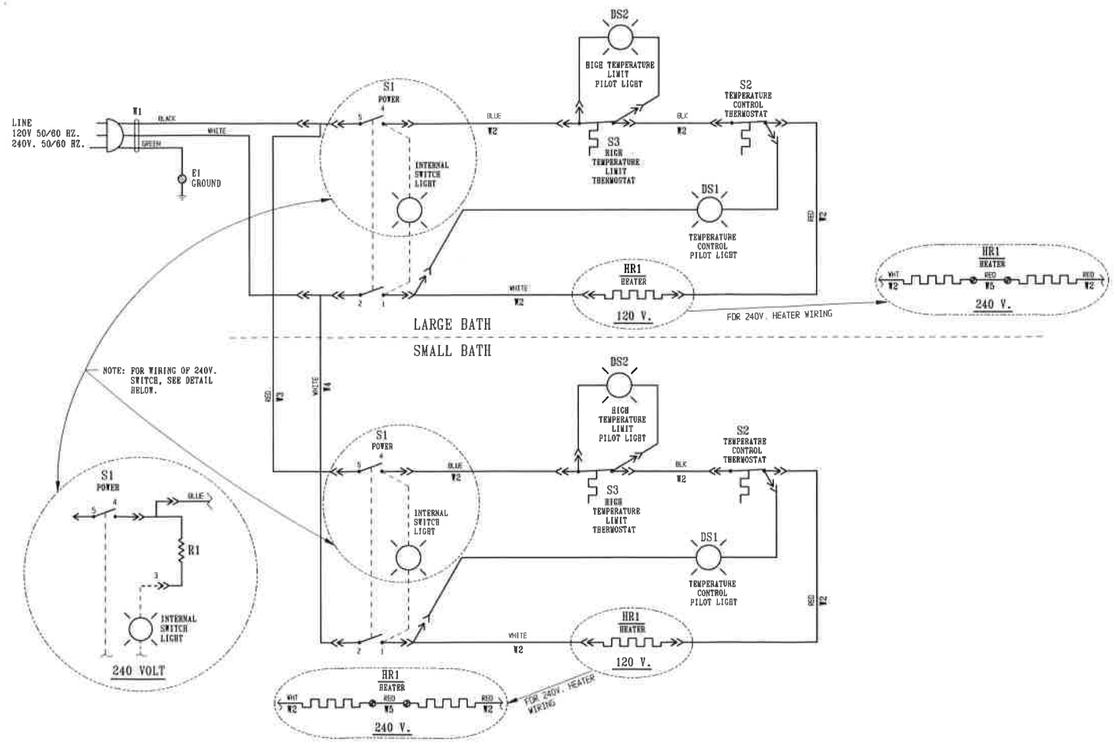
8: WIRING DIAGRAMS

Models180 through 185



Model 186

Model 188



WARRANTY

Exclusive Precision Warranty

PRECISION SCIENTIFIC warrants its products against defects in material or in workmanship, when used under appropriate conditions and in accordance with appropriate operating instructions for a period of no less than five (5) years from the date of delivery of the product.

Sole obligation of PRECISION SCIENTIFIC shall be to repair or replace at our option, FOB factory or locally, without charge, any part(s) that prove defective within the warranty period, provided the customer notifies PRECISION SCIENTIFIC promptly and in writing of any such defect. Compensation for labor other than PRECISION SCIENTIFIC employees will not be our obligation. Part(s) replacement does no constitute an extension of the original warranty period.

PRECISION SCIENTIFIC MAKES NO WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, AS TO THE DESIGN, SALE, INSTALLATION, OR USE OF ITS PRODUCTS, AND SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS PRODUCTS.

PRECISION SCIENTIFIC will not assume responsibility for unauthorized repairs or failure as a result of unauthorized product modifications, or for repairs, replacements, or modifications negligently or otherwise improperly made or performed by persons other than PRECISION SCIENTIFIC employees or authorized representatives.

While our personnel are available to advise customers concerning general applications of all manufactured products, oral representations are not warranties with respect to particular applications and should not be relied upon if inconsistent with product specifications or the terms stated herein.

In any event, the terms and conditions contained in PRECISION SCIENTIFIC formal sales contracts shall be controlling; and any changes must be in writing and signed by an authorized executive of PRECISION SCIENTIFIC.

All defective components will be replaced without charge for five (5) year from date of delivery. There will be no charge for labor up to one (1) year from the date of delivery if the apparatus is returned to the factory prepaid. Conditions and qualifications of the warranty statement shall prevail at all times.

General Purpose Water Baths

Your satisfaction and safety are important to PRECISION SCIENTIFIC and a complete understanding of this unit is necessary to attain these objectives.

As the ultimate user of this apparatus, it is your responsibility to understand its proper function and operational characteristics. This instruction manual should be thoroughly read and all operators given adequate training before attempting to place this unit in service. Awareness of the stated cautions and warnings, and compliance with recommended operating parameters — together with maintenance requirements — are important for safe and satisfactory operation. The unit should be used for its intended application; alterations or modifications will void the Warranty.

⇒ **WARNING:** *As a routine laboratory precaution, always wear safety glasses when working with this apparatus.*

This product is not intended, nor can it be used, as a sterile or patient connected device. In addition, this apparatus is not designed for use in Class I, II, or III locations as defined by the National Electrical Code.

Unpacking and damage

Save all packing material if apparatus is received damaged. This merchandise was carefully packed and thoroughly inspected before leaving our factory.

Responsibility for its safe delivery was assumed by the carrier upon acceptance of the shipment; therefore, claims for loss or damage sustained in transit must be made upon the carrier by the recipient as follows:

Visible Loss or Damage: Note any external evidence of loss or damage on the freight bill, or express receipt, and have it signed by the carrier's agent. Failure to adequately describe such external evidence of loss or damage may result in the carrier's refusing to honor your damage claim. The form required to file such a claim will be supplied by the carrier.

Concealed Loss or Damage: Concealed loss or damage means loss or damage which does not become apparent until the merchandise has been unpacked and inspected. Should either occur, make a written request for inspection by the carrier's agent within 15 days of delivery date; then file a claim with the carrier since the damage is the carrier's responsibility.

By following these instructions carefully, we guarantee our full support of your claim to be compensated for loss from concealed damage.

DO NOT — FOR ANY REASON — RETURN THIS UNIT WITHOUT FIRST OBTAINING AUTHORIZATION. In any correspondence to PRECISION SCIENTIFIC please supply the nameplate data, including catalog number and serial number.