

# Model 400 Hybridization Incubator

## USER MANUAL

Cat. #1040-60-1 (115V) and #1040-60-2 (230V)



**FOR RESEARCH USE ONLY**  
**Not for Use in Diagnostic Procedures**

**Serial Number**

The following serial number identifies the specific oven you have purchased and must be referenced when requesting service. A copy is affixed to the oven.

Technical Service: (408) 733-7337, [techserv@scigene.com](mailto:techserv@scigene.com)

**Warranty**

SciGene warrants that the heating unit described in this manual shall be free of defects in materials and workmanship for a period of 12 months from date of delivery. This warranty does not cover removable parts or accessories. In the event of a defect during the warranty period, SciGene's limit of liability will be to provide replacement parts at no charge or, at its sole discretion, replace the product. The foregoing warranty is void in the event the unit was abused or modified or used in a manner inconsistent with its intended purpose. SciGene makes no other warranty, expressed or implied including warranties of merchantability and fitness for a particular purpose. In no event shall SciGene be liable for any direct, indirect, special, incidental or consequential damages or for any damages resulting from loss arising out of or in connection with the sale, use or performance of the product.

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## Table of Contents

<b>I. SAFETY NOTICES .....</b>	<b>3</b>
A. Intended Use.....	3
B. Oven Safety.....	3
C. Symbols and Conventions.....	3
D. Warnings .....	4
E. Cautions .....	4
F. Compliance .....	5
<b>II. UNPACKING AND SET UP .....</b>	<b>6</b>
A. Unpacking, Lifting and Moving the Oven.....	6
B. Items Provided .....	6
C. Environmental Requirements.....	6
D. Installation and Location.....	6
<b>III. USING YOUR MODEL 400 HYBRIDIZATION INCUBATOR.....</b>	<b>7</b>
A. Components, Controls and Accessories.....	7
B. Using the Temperature Controller.....	8
C. Calibrating the Temperature Controller .....	8
D. Setting the Rotator Speed.....	9
E. Using the Jog Switch .....	9
F. Closing and Opening the Door .....	9
G. Loading and Removing Rotators .....	9
<b>IV. MAINTAINING YOUR INCUBATOR .....</b>	<b>10</b>
A. Powering Off .....	10
B. Cleaning the Oven.....	10
C. Checking and Replacing Fuses .....	10
<b>V. TROUBLESHOOTING .....</b>	<b>11</b>
<b>VI. SPECIFICATIONS .....</b>	<b>11</b>
<b>VII. RELATED ACCESSORIES.....</b>	<b>11</b>
<b>VIII. DECLARATION OF CONFORMITY .....</b>	<b>12</b>

## I. SAFETY NOTICES

### A. Intended Use

The **Model 400 Hybridization Incubator** is a high precision rotating convection oven for Northern blot and Southern blot hybridizations and other applications.

*Le modèle 400 est un incubateur d'hybridation haute précision rotation four à convection pour Northern blot et hybridations par transfert de Southern et d'autres applications.*

### B. Oven Safety

Before operating the oven, read the information in this section concerning hazards and potential hazards. Ensure that anyone involved with the oven's operation is instructed in both general safety practices for laboratories and specific safety practices for the oven.

*Avant le fonctionnement de l'oven, lisez les renseignements dans cette section concernant les risques et les dangers potentiels. S'assurer que toute personne impliquée avec le fonctionnement de l'oven est instruit dans les pratiques générales de sécurité pour les laboratoires et les pratiques de sécurité spécifiques pour l'oven. Avant le fonctionnement de l'oven, lisez les renseignements dans cette section concernant les risques et les dangers potentiels. S'assurer que toute personne impliquée avec le fonctionnement de l'oven est instruit dans les pratiques générales de sécurité pour les laboratoires et les pratiques de sécurité spécifiques pour l'oven.*

### C. Symbols and Conventions

The following chart is an illustrated glossary of the electrical symbols that are used on the oven. Whenever such symbols appear on ovens, please observe appropriate safety measures.

*Le tableau suivant est un glossaire illustré des symboles électriques qui sont utilisées sur le système. Chaque fois que ces symboles apparaissent sur les ovens, veuillez observer les mesures de sécurité appropriées.*

#### 1. Electrical Symbols



This symbol indicates that this is a protected ground terminal that must be connected to earth ground before any other electrical connections are made to the oven.

*Ce symbole indique qu'il s'agit d'un terminal de terrain protégé qui doit être connecté à la terre avant que toutes les autres connexions électriques sont apportées à l'oven.*



**CAUTION:** This symbol warns of an electrical hazard and alerts you to consult this Operator's Manual for further information and to proceed with caution.

*ATTENTION: Ce symbole vous avertit à consulter ce guide de l'utilisateur pour plus d'informations et de procéder avec prudence.*



This symbol indicates the OFF position of the main POWER switch.  
*Ce symbole indique la position OFF de l'interrupteur principal.*



This symbol indicates the ON position of the main POWER switch.  
*Ce symbole indique la position ON de l'interrupteur principal.*

## 2. Non-Electrical Symbols



CAUTION: This symbol illustrates a heat hazard. Proceed with caution when working around these areas to avoid being burned by hot components.

*ATTENTION: Ce symbole illustre un danger pour la chaleur. Faire preuve de prudence lorsque vous travaillez autour de ces zones pour éviter d'être brûlé par les composants du chauds.*



CAUTION: This symbol alerts you to consult this Operator's Manual for further information and to proceed with caution.

*ATTENTION: Ce symbole vous avertit à consulter ce guide de l'utilisateur pour plus d'informations et de procéder avec prudence.*

## D. Warnings

Failure to comply with the following warnings that are affixed to the product can lead to possible personal injury or death.

*Défaut de respecter les avertissements suivants qui sont apposées sur le produit peut conduire à possibles lésions corporelles ou la mort.*



This symbol on the rear of the oven indicates the presence of the fuse box.  
**Warning: For Continued Protection Against Fire, Replace Only with Same Type Rating of Fuse.** Always disconnect the power cord before attempting to replace the fuse.

*Ce symbole sur l'arrière de l'oven indique la présence de la boîte de fusibles.*  
**Avertissement: Pour le maintien de la Protection contre l'incendie, remplacer uniquement avec la même cote de Type de fusible.** Toujours débrancher le cordon d'alimentation avant d'essayer de remplacer le fusible.

## E. Cautions

Failure to comply with the following cautionary statement affixed to the product may lead to possible personal injury.

*Omission de se conformer à la mise en garde suivante apposée sur le produit peut entraîner des blessures possibles.*



This symbol indicates the potential presence of a **Hot Surface**. Use care when working inside the oven chamber to avoid being burned.

*Ce symbole indique la présence potentielle d'une surface chaude. Faites attention lorsque vous travaillez à l'intérieur de la chambre du four pour éviter d'être brûlé.*

## F. Compliance

### 1. European Conformity (CE)



This symbol indicates the instrument is in compliance with all applicable European Union Electromagnetic Compatibility and Low Voltage Directives.

### 2. Restriction of Hazardous Substances (RoHS)



The RoHS directive was adopted in February 2003 by the European Union. It restricts (with exceptions) the use of six hazardous materials (including lead and mercury) in the manufacture of various types of electronic equipment. All SciGene instruments carrying the CE mark are also RoHS compliant.

### 3. Electrical and Electronic Equipment Waste (WEEE)



WEEE is a European Community directive that became European Law in February 2003. The crossed out wheeled bin symbol on a product or its packaging indicates that it must NOT be disposed of with standard waste at the end of its lifetime. Instead, it is your responsibility to return it to a designated collection point for electronic equipment recycling. Contact your local SciGene distributor for information on drop off locations.

### 4. Electromagnetic Compatibility (EMC)

The Model 400 Hybridization Incubator is a Class A digital device under FCC Title 47 Part 15B and designated as Class A electrical equipment for measurement, control, and laboratory use (EN61326).

*Note regarding Canadian EMC compliance: Le present appareil numerique n'emet pas de bruits radioelectrique dépassant les limites applicables aux appareils numeriques de class A prescrites dans le reglement sur le brouillage radioelectrique edicte par le Ministere des Communications du Canada.*

**II. UNPACKING AND SET UP**

**A. Unpacking, Lifting and Moving the Oven**

The **Model 400 Hybridization Incubator** weighs approximately 70 lbs (32 kg) so caution is needed when lifting the unit to protect yourself and others from personal injury. Two people are required to lift the unit, one on each side, keeping it balanced and sharing the load. Remove any packing material from around the top and sides of the oven, then carefully lift out, place on the bench and inspect for damage.

*If the oven is damaged upon arrival, please retain all shipping materials and contact SciGene or your local distributor for assistance.*

**B. Items Provided**

The following items are included in the shipping carton with the oven:

- Power Cord
- User Manual
- Drip Pan
- Standard Tube Rotator with 35x300mm hybridization tube (if so equipped)

**C. Environmental Requirements**

Ensure that the area where the oven is installed meets the following conditions, for reasons of safety and performance:

Ambient temperature	+15 to +32°C (58 to 90°F)
Relative humidity	20 to 80% RH non-condensing
Air flow clearance	6 inches (15 cm) minimum above unit

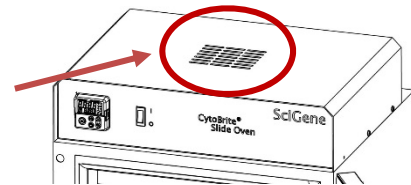
**D. Installation and Location**

Place the oven on a stable, level surface within a few feet of the power source. Allow 6 inches of clearance at top for adequate air flow. **DO NOT** place under a shelf where solutions are stored. Any liquid entering the electrical compartment through the vent holes on the top of the unit will cause damage.

Ensure there is adequate clearance on all sides of the oven, which may be warm to the touch, including enough space to open the door completely. Using only the power cord provided, plug it into the back of the oven and then to a properly grounded outlet. Turn on power using the ON/OFF switch on the front control panel.



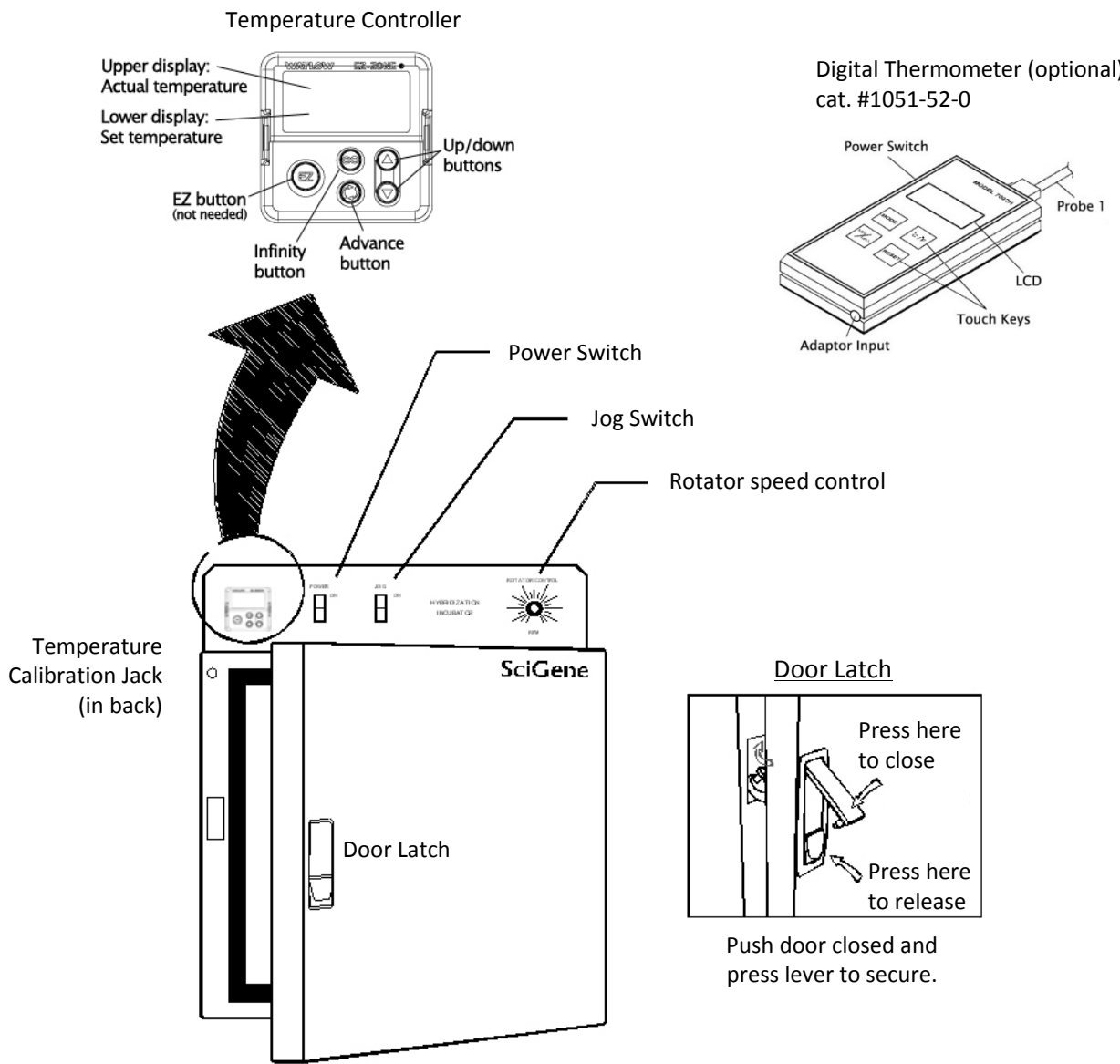
***To avoid a safety hazard or damage to the instrument, do not allow liquids to enter the vent holes on top of the oven.***



III. USING YOUR MODEL 400 HYBRIDIZATION INCUBATOR

A. Components, Controls and Accessories

Name	Function
Power Switch	Turns ON/OFF power to the oven
Rotator Speed Control	Selects desired speed for internal rotator
Jog Switch	Moves rotator at selected speed with door open
Temperature Controller	Used to set, control and observe temperature
Door Latch	Secures the door, with button release to open
Digital Thermometer (optional)	Used to verify and calibrate temperature
Temperature Calibration Jack	Connection for optional digital thermometer





## B. Using the Temperature Controller

The Model 400 Hybridization Incubator is equipped with a Watlow EZ-Zone temperature controller. It is calibrated at the factory to provide accurate chamber temperatures from ambient +5 to 99°C. The controller has two LED displays: the upper red display shows ACTUAL temperature inside the chamber and the lower green display shows the SET or programmed temperature. To program an oven temperature, simply push the up or down arrows until the desired temperature is shown in the lower display. The oven will adjust the heat of the chamber until the SET temperature is attained.

## C. Calibrating the Temperature Controller

To ensure accurate ( $\pm 0.5^\circ\text{C}$ ) oven temperatures, the performance of the EZ-Zone controller should be periodically checked by comparing the temperature displayed on the controller to an accurate, NIST-certified (National Institute of Standards and Technology) thermal measurement device. SciGene recommends the calibration method below to achieve accurate oven temperatures. No other methods are recommended.

### 1. Calibration Check

- a. Turn on the oven, set to 65°C and allow temperature to stabilize (30 min).
- b. Connect a NIST-certified digital thermometer (SciGene Cat. #1051-52-0) to the blue jack at the top back of the oven.
- c. Verify that the temperature shown on the digital thermometer matches that shown on the controller within  $\pm 0.5^\circ\text{C}$ . If it does not, follow the steps below to adjust the controller.

### 2. Calibration Procedure

- a. Turn on the oven, set to 65°C and allow temperature to stabilize (30 min).
- b. Connect a NIST-certified digital thermometer (SciGene Cat. #1051-52-0) to the blue jack at the top back of the oven.
- c. Calculate the difference in temperature shown on the controller to the digital thermometer. For example, if the controller displays 65.0°C and the thermometer displays 66.5°C, the difference (offset) is 1.5°C.
- d. On the controller, press the up and down arrows simultaneously for 3 seconds. The upper display will now read "A1" and the lower display "open".
- e. Press the green circle button 3 times until the lower display shows "i.CA". The upper display shows the offset value between the controller and thermometer when the unit was last calibrated.
- f. Use the up/down arrows to adjust the offset value to the temperature difference calculated in Step c. For example, if the controller displays a temperature 1.5°C lower than the thermometer, adjust the offset by adding 1.5 to the value shown.
- g. Press the  $\infty$  key twice to return to the operation display. Your oven is now calibrated to provide accurate temperatures between ambient + 5 to 99°C.

**D. Setting the Rotator Speed**

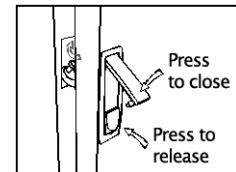
The rotator is turned on and off and its speed of rotation controlled through the rotary switch. Turn the dial clockwise from its stopping point to turn on the rotator drive system and set the speed of rotation. Rotation speed is adjustable up to 20 RPM.

**E. Using the Jog Switch**

The jog switch is used to momentarily advance the rotator when the door is open. When the jog switch is pressed, the rotator will turn at the speed selected on the speed controller. It will not move if the speed controller is turned off or is set too low.

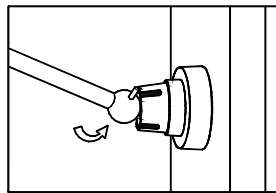
**F. Closing and Opening the Door**

To secure the door closed, press the door against the cabinet and push down the top lever. To open, press the lower latch release button.

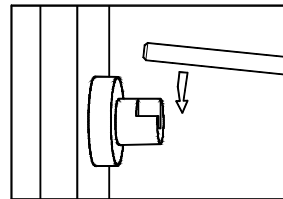


**G. Loading and Removing Rotators**

Rotators are loaded and removed using a two-step process. When loading, first insert the end of the shaft that ends in a ball joint with alignment pin into the slotted bearing on the right wall of the chamber. The left end of the shaft is then placed into the bearing on the left side of the chamber. Reverse this procedure when removing the rotator.



Insert ball with alignment pin into right bearing



Place shaft on left bearing

## IV. MAINTAINING YOUR INCUBATOR

### A. Powering Off

Turn the power switch to the OFF position and unplug the power cord before performing any cleaning or service procedure.

### B. Cleaning the Oven

Clean metal surfaces using a soft cloth and mild, detergent-based cleaner. Avoid abrasive cleaners that can scratch surfaces. Do **NOT** use caustic or strongly alkaline solutions (e.g., strong soaps, ammonia, or bleach). Under no circumstances should solutions be allowed to enter through the ventilation slots on the top of the oven.

If running radioactive or biohazardous reactions, consult your institution's radiation safety officer or biosafety office for assistance.



**Turn power switch to the OFF position and unplug the power cord before performing any cleaning procedure!**

*Tournez le commutateur d'alimentation sur la position OFF et débranchez le cordon d'alimentation avant d'effectuer toute opération de nettoyage!*



**Ensure oven has cooled to room temperature prior to cleaning.**

*Assurer le four est refroidi à température ambiante avant de le nettoyer!*

### C. Checking and Replacing Fuses

Two fuses are located in the removable block below the power cord receptacle on the top, back of the oven. Blown fuses will have a broken filament or appear dark. Always replace fuses with the same amperage and voltage as shown on the label below the fuse block.

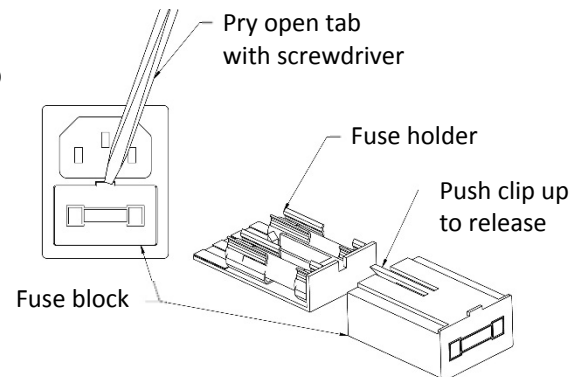


**Turn power switch to the OFF position and unplug the power cord before performing any service procedure.**

*Tournez le commutateur d'alimentation sur la position OFF et débranchez le cordon d'alimentation avant d'effectuer toute opération de service!*

To remove fuses:

1. Insert a small, flat blade screwdriver into the tab recess just below the plug receptacle.
2. Push down to release the fuse block.
3. Slide fuse holder out from the fuse block while holding the retaining tab out of the way.
4. Gently pry out the fuses.



**V. TROUBLESHOOTING**

Symptom	Cause	Solution
Oven does not turn on.	Blown fuse(s).	Replace fuse(s) on back of unit, beneath power cord receptacle.
Door does not close properly or is difficult to open.	Latch is improperly adjusted or needs replacement.	Adjust threaded rod on inside of latch or contact SciGene or your local distributor to replace the latch if necessary.
Controller is not responding when buttons are pressed.	Controller is faulty or is program settings have been lost.	Cycle oven on and off. Contact SciGene or your local distributor to reset or replace the controller.

**VI. SPECIFICATIONS**

Electrical	
Cat. #1040-60-1	115V AC; 50/60 Hz; 6A
Cat. #1040-60-2	230V AC; 50/60 Hz; 3A
Dimensions and Weight	
Outside H x W x D	22 x 18 x 17 inches (55 x 45 x 42 cm)
Weight	70 lbs (32 kg)
Performance and Controls	
Temperature Range	Ambient +5.0°C to 99.0°C
Temperature Regulation	± 0.1°C
Rotation Speed	Up to 20 RPM
Digital Thermometer Output	T-type Thermocouple

**VII. RELATED ACCESSORIES**

Cat. #	Description	UoM
1040-01-0	Hybridization tube, 35x300mm with screw cap	EA
1040-02-0	Hybridization tube, 35x150mm with screw cap	EA
1040-21-0	Removable Rocking Platform	EA
1040-21-1	Standard Rotator for ten 35x300mm or twenty 35x150mm tubes	EA
1040-21-2	Maxi-80 Rotator for 80x50ml conical tubes	EA
1040-21-3	Maxi-200 Rotator for 200x15ml tubes	EA
1040-21-4	Maxi-400 Rotator for 400x1.5ml centrifuge tubes	EA
1040-21-5	Maxi-140 Rotator for 40x50mL & 100x15mL plastic tubes.	EA
1040-21-6	Maxi-240 Rotator for 200x1.5mL and 40x50mL tubes.	EA
1040-21-7	Maxi-300 Rotator for 100x15ml tubes & 200x1.5 ml tubes.	EA
1040-95-0	Packaging Set for Model 400 Oven (includes box and foam inserts).	EA
1051-52-0	Digital thermometer, T-type. Includes cable and NIST certificate.	EA



**VIII. DECLARATION OF CONFORMITY**

**Model 400 Hybridization Incubator**

SciGene  
 1287 Reamwood Avenue  
 Sunnyvale, CA 94089 USA



Declares that the above referenced product(s) meets the essential requirements of the following European Union Directives by using the relevant standards shown below to indicate compliance.

**EMC Directive 2004/108/EC**

**Standard:**

<b>IEC 61326-1</b>	<b>2005</b>	<b>Electrical equipment for measurement, control and laboratory use</b>
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**LVD Directive 2006/95/EC**

**Standards:**

<b>IEC 61010-1</b>	<b>2010</b>	<b>Electrical Equipment for Measurement, Control and Laboratory use</b>
		<b>3rd Edition Part 1: General requirements</b>

<b>IEC 60204-1</b>	<b>2006</b>	<b>Electrical equipment of machines</b>
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**RoHS Directive 2011/65/EC**

Terry Gill  
 \_\_\_\_\_  
 Name of Authorized Representative

Sunnyvale, California, USA  
 \_\_\_\_\_  
 Place of Issue

Director of Product Manufacturing  
 \_\_\_\_\_  
 Title of Authorized Representative

January 02, 2015  
 \_\_\_\_\_  
 Date of Issue

  
 \_\_\_\_\_  
 Signature of Authorized Representative