

# Owner's Manual for Stovall Hybridization Oven



206-G S. Westgate Drive • Greensboro, NC 27407 • USA  
(800) 852-0102  
[www.slscience.com](http://www.slscience.com)

## **Table of Contents**

Unpacking and Setting Up the Stovall Hybridization Oven . . . . .	2
Control Panel of the Stovall Hybridization Oven . . . . .	2
Operating the Stovall Hybridization Oven . . . . .	3
Hybridizing in the Stovall Hybridization Oven . . . . .	4
Bottle Hints . . . . .	6
Stovall Hybridization Oven Accessories . . . . .	8

## **Unpacking and Setting Up the Stovall Hybridization Oven**

Carefully remove the oven from the shipping container. If there are any signs of damage during shipping, immediately notify Stovall Life Science or your local distributor. If possible, save the shipping container for future transit requirements.

Locate the oven on a stable, level surface. Once the oven is in place, it should be levelled using the adjustable feet. **TECH TIP: The Stovall Hybridization Oven features a seamless stainless steel chamber for easy cleaning and decontamination in the event of leakage. To prevent leakage out of the chamber, the front of the oven should be slightly elevated.**

The unit is supplied with a three-prong electrical plug, and should be plugged into a properly grounded electrical outlet.

**NOTE: As an added safety feature, the heater in this oven has a built-in thermal safety fuse. If the temperature of the heater rises to an unsafe level because of a failure of the temperature controller or other malfunction, the thermal fuse will blow, thus turning off the heater. If this happens, call Stovall Life Science or your local distributor for servicing.**

## **Control Panel of the Stovall Hybridization Oven**

The control panel of the instrument contains 5 items:

1. **SPEED CONTROL** knob (controls speed of rotation of carousel between 0 and 22 RPM).
2. **JOG** button (moves carousel from one bottle position to the next to facilitate adding and removing bottles). **NOTE: JOG function will not operate if SPEED CONTROL is set at "0".**
3. **POWER** switch (turns on main power and starts rotation of the carousel; must be in ON [I] position for HEAT switch to be activated; however, JOG button can be activated with power switch in the OFF [O] position).
4. **HEAT** switch turns on heat as controlled by TEMP CONTROL.
5. **TEMP CONTROL** controls temperature when HEAT switch is in ON (I) position.

The TEMP CONTROL is extremely easy to operate. There are 2 displays and 2 temp control buttons. The bottom green display is the "set" temperature

and the top red display is the actual temperature. The 2 buttons control the "set" temperature, one button to increase and one button to decrease. The temperature can be set anywhere between 000.0°C and 75.0°C. If the set temperature is higher than the actual temperature, the heater will immediately come on and the temperature will rapidly rise to the set temperature with virtually no overshoot. The practical temperature range is ambient to 70°C. Since there is no refrigeration mechanism in this instrument, the chamber cannot be cooled below ambient temperature. While the chamber temperature can not be heated to 75.0°C, we recommend that the oven be set no higher than 70°C because of pressure buildup within bottles at higher temperatures (see **BOTTLE HINTS** section below). However, if dictated by protocol, (e.g. stripping protocols) the oven can be run at higher temperatures if extreme care is taken to release the pressure as it rises above 70°C (see **BOTTLE HINTS** section).

## **Operating the Stovall Hybridization Oven**

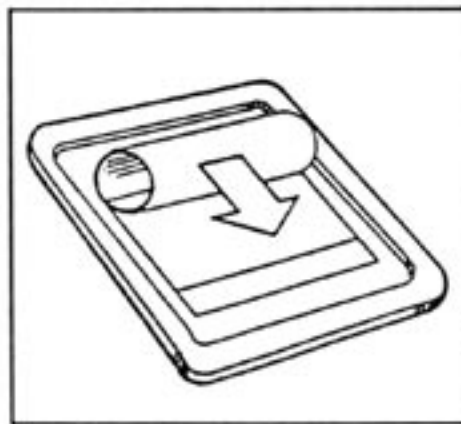
1. Load hybridization bottles on the carousel in even numbers, one balanced against the other on the opposite side of the carousel. A maximum of 10 large (300mm) or 20 small (150mm) hybridization bottles can be loaded. Each large bottle is held in place by two bottle clips; each small bottle is held in place by a single bottle clip. (See Figure 4 on page 4.) Use the **JOG** button to rotate carousel as desired when loading bottles. **TECH TIP: The carousel must be balanced as you would a centrifuge. Always make sure that bottles of equal size and approximately equal volume are lined up opposite one another.**
2. Turn the **POWER** switch to the ON (I) position. This will begin rotation of the carousel. The **POWER** switch must be on before the **HEAT** switch can be activated.
3. Use the **SPEED CONTROL** knob to set the rotation speed of the carousel as desired. The range is 0-22 RPM. **TECH TIP: For hybridization, a rotation speed of 6-8 RPM is commonly used. Higher speeds can be used for greater agitation if required during washing steps.**
4. Turn the **HEAT** switch to the ON (I) position. You can now set the

temperature as required using the **TEMP CONTROL** as described in the **CONTROL PANEL** section above. If the "set" temperature is higher than the chamber temperature, the oven will heat rapidly to the "set" temperature. The controller has been programmed to slow down the rate of heating as the chamber temperature approaches the "set" temperature, so there is very little overshoot (typically 0.3°C). **TECH TIP: When cooling the oven to a lower temperature, you may open the oven door to speed the rate of cooling.**

## ***Hybridizing in the Stovall Hybridization Oven***

1. Cut a piece of nylon mesh slightly larger than your membrane. Lay the membrane over the mesh and pre-wet in appropriate buffer (e.g., 2xSSC) in a shallow tray. Multiple membranes can be hybridized together by layering a second sheet of mesh over the first membrane, followed by a second membrane, etc. Up to 5 membranes can be hybridized in this way, alternating sheets of mesh and membrane. Actual number of membranes which can be hybridized together in the same hybridization bottle is probe dependent, and must be established for a particular probe and set of blotting conditions. **TECH TIP: The nylon mesh acts as a separator, preventing direct membrane to membrane contact in areas of overlap and improving accessibility to hybridization solutions.**

2. Roll mesh and membrane stack into a tight spiral (see Figure 1).



**Figure 1**

3. Insert rolled membrane/mesh into a hybridization bottle containing a small volume of buffer, and secure leak-proof cap (see Figure 2). **TECH TIP: Do not overtighten the cap! For the best seal, the caps should be hand-tight: tighten just until firm resistance is felt. Overtightening will distort the cap and result in leaking bottles.**

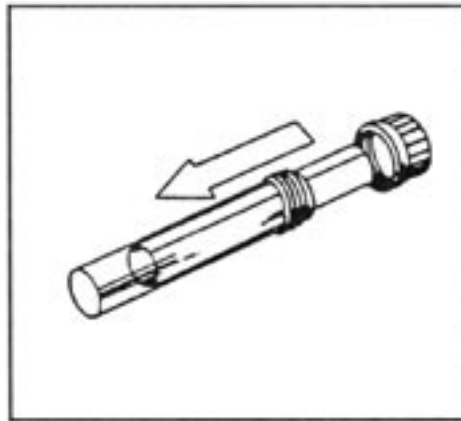


Figure 2

4. Place the hybridization bottle on a flat surface and roll gently in the direction opposite to that used to roll up the membrane/mesh. This will cause the membrane/mesh to uncoil and adhere to the inside wall of the bottle (see Figure 3). **TECH TIP: Examine to make sure there are no bubbles between the mesh and the wall of the bottle. If there are bubbles, they can usually be removed by prodding with a 10ml pipette. If bubbles persist, membrane must be removed and re-rolled.**

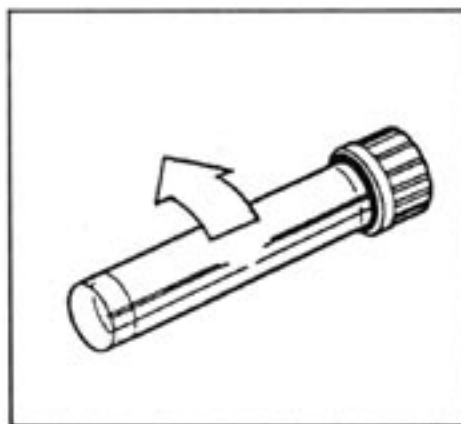


Figure 3

5. Pour off buffer and add pre-hybridization solution (10-15 ml for large bottles, 5-7ml for small bottles). Secure leak-proof cap as described above and place bottle in carousel inside the oven. Incubate for appropriate length of time at appropriate temperature and appropriate speed of rotation (see Figure 4). **TECH TIP: Always orient the hybridization bottles in the carousel so that the direction of rotation is the same direction as that used to uncoil the membrane in step 4 above. If the bottles are rotated in the opposite direction, the membrane/mesh may roll up again and come off the bottle wall. If this happens, simply change the orientation of the bottles on the carousel.**

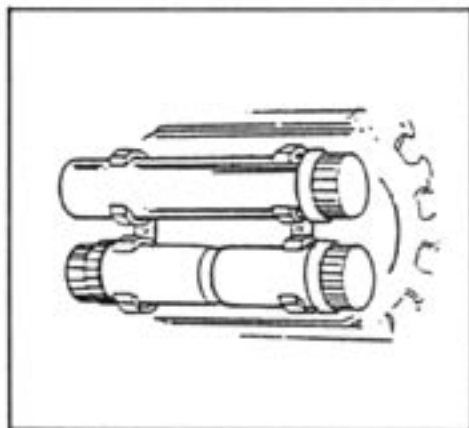


Figure 4

6. When incubation is complete, pour off pre-hybridization solution with membrane/mesh in place (see Figure 5), and replace with hybridization solution. Continue all incubation and washing steps in this manner.

**TECH TIP: Use 10-15ml of pre-hybridization and hybridization solutions in large (300mm length) bottles and 5-7ml in small (150mm length) bottles. More membranes generally require higher volumes. Use approximately 100ml of wash solutions in large bottles and 50ml in small bottles.**

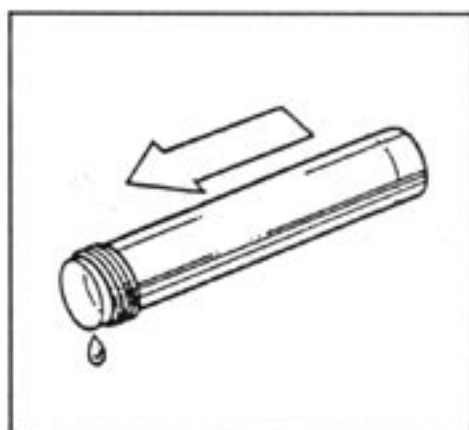


Figure 5

## **Bottle Hints**

A common problem associated with hybridization ovens is leaking bottles. This can be avoided by proper handling of the bottles and tightening of the caps.

1. Pressure builds up in sealed bottles during heating and can cause leaking. To prevent this, always release pressure in bottles after bottles have reached incubation temperature within the oven by loosening the

caps momentarily. Alternatively, bottles and solutions can be preheated to incubation temperature before sealing cap and placing in the oven.

2. Do not overtighten caps! For the best seal, caps should be hand-tight: tighten just until firm resistance is felt. Overtightening will distort the cap and result in leaking bottles.
3. Do not heat glass bottles above 70°C. Due to pressure buildup, glass bottles may crack at temperatures higher than 70°C. If it is necessary to heat bottle above 70°C, take extreme care to release pressure as temperature rises above 70°C.
4. After incubation, loosen cap while bottle is still warm. If bottles are allowed to cool with cap tightly sealed, a vacuum will form which can unseat the cap liner.