

**ProBlot  
Hybridization Systems  
Models 6, 12, 12S and 24  
Instruction Manual**



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## GRAPHIC SYMBOLS

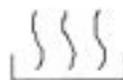
Your Labnet Problot hybridization incubator uses internationally accepted graphic symbols to help convey information to the user and to call the users attention to important safety precautions and guides for using this equipment. **Use of this product in any manner not specified by the manufacturer may impair the safety protection provided by the equipment and may result in physical damage and/or personal injury. Please read all operating instructions in this manual prior to use of this equipment.**



indicates that user should consult manual further description or discussion.



Indicates AC "Power On"



Indicates "Heating"



Indicates "Degrees Centigrade"



Indicates "Temperature"



Indicates Potential "Shock Hazard"



Indicates Protective "Earthground"

## SAFETY PRECAUTIONS

1. Although the Problot Hybridization system has been designed to minimize user exposure to radioactive materials, proper precautions must be taken when using radioactive material.
2. **Always inspect the hybridization bottles, caps and seals before use.** Do not use bottles, caps or seals that are cracked or chipped. Cap seals should be replaced if they are severely deformed or discolored. Special attention should be paid to inspecting bottle rims / threads.
3. **DO NOT take bottles to temperatures higher than 70C** without opening and retightening the cap to relieve pressure build-up. Temperatures above 70C can cause breakage of hybridization bottles. If chamber temperatures rise above 70C when bottles are in use, **DO NOT OPEN THE OVEN DOOR.** Reduce the temperature setting to below 70C or turn the power off and allow sufficient time for the bottles to cool below 70C before opening the door.

## INTRODUCTION

This manual covers the specifications, operation and use of the Labnet series of Problot Hybridization Ovens including Problot 6, Problot 12, Problot 12S and Problot 24. Please pay special attention to the **Safety Precautions** section in this manual.

Problot Hybridization Ovens from Labnet International provide extremely stable temperature environments and smooth variable speed rotation that are ideal for blot hybridization and blot washing activities.

Labnet's Problot Hybridization Ovens use microprocessor controls and mechanical convection to maintain a stable temperature environment and to achieve fast chamber temperature recovery after a door opening. The oven interior is constructed from stainless steel for corrosion resistance and the oven includes a drip pan for easy clean-up of accidental spills.

Problot rotisseries are easily removed from the oven and are adjustable for either horizontal or more vigorous angled blot washing. All oven doors have an integral glass window to allow observation of samples without opening the door and each door is fully thermal gasketed.

An optional rocking platform is available for each oven and the Problot Model 12S includes an integral orbital shaking platform (10mm orbit) with optional flask platform.

Labnet Hybridization Bottles are recommended for optimum Problot Oven performance. These bottles are made of high quality borosilicate glass, which provides a high level of protection from the 32P beta emissions.

## SPECIFICATIONS

Chamber temperature range	Ambient +5C to 80C
Accuracy / Uniformity	+/-0.1C / +/-0.5C
Rotisserie Speed	4 to 20 rpm
Optional rocker speed	8 to 40 rocks per minute
Shaker speed (Problot 12S only)	10 to 300 rpm at a maximum load of 4kg, 10mm orbit
Shaker timer (Problot 12S only)	Continuous (RUN) or 0 to 120 minutes timed
Interior electrical outlet	1 amp (on 120V Problot 6, 12 and 24 models only)
Electrical Ratings and Unit Size	Exterior (WxDxH) Chamber (WxDxH)
Problot 6&12	120V, 50/60Hz, 6 amps      483x445x495mm    368x279x343mm 220V, 50/60Hz, 3 amps
Problot 12S	120V, 50/60Hz, 6 amps      483x445x495mm    368x279x343mm 220V, 50/60Hz, 3 amps
Problot 24	120V, 50/60Hz, 7 amps      627x422x826mm    2 x 368x279x343mm

## UNPACKING

Upon receipt of your Problot Hybridization Oven, examine the carton and unit for damages. If shipping damage has occurred, a claim must be filed with the carrier. The carrier is responsible

for correcting shipping damages. Save all packaging until the unit has been shown to operate properly to your satisfaction. Carefully remove the unit from the carton and shipping pallet.

The package should include:

Problot Hybridization Oven	Rotisserie (2 rotisseries on Problot 24 models)
4 adjustable feet	Drip pan (part of shaker platform on 12S models)
Rotisserie brass locking pin	2 bottles
1 package of mesh	Warranty Card and Instruction Manual

Complete and return the warranty card to register your new Problot Hybridization Oven.

## **INSTALLATION**

Remove the drip tray (if separate), adjustable feet and rotisserie from the chamber (refer to page 5 for Rotisserie Removal and Installation).

Install the four adjustable feet and locate the Hybridization Oven on a stable, flat surface near a grounded electrical outlet. The location selected should be out of direct sunlight and away from heat producing sources or hot or cold air drafts. At least 5cm ventilation clearance is required around all sides of the oven. Level the incubator using the four adjustable feet. Clockwise rotation of a foot raises the oven. You may wish to use a level placed in the chamber for optimum leveling. Check the rotisserie and set it for horizontal or angled use by adjusting the screws in the rotisserie hub (page 5, Setting Rotisserie Angle). Plug in the unit to a properly rated and grounded electrical outlet and the unit will be ready for use.

## **STACKING PROBLLOT OVENS**

The Problot 6 and Problot 12 models MAY BE stacked up to two high. Problot 12S and 24 models CAN NOT be stacked. When stacking, it is advisable to use either rubber furniture cups under the feet of the upper unit or flat rubber matting at each corner of the upper unit or across the entire upper surface. You may wish to remove the adjustable feet from the upper unit when stacking. The adjustable feet can slide off the top of the lower unit and/or scratching can occur if rubber cups or matting are not used.

To stack a unit, place the upper oven on top of the lower oven slightly toward the back such that the upper oven does not prevent the lower oven door from moving freely.

## **CONTROLS & CALIBRATION**

The controls for Problot ovens include power to the oven, temperature setting and display and rotisserie power and speed. The Problot 12S also has controls for shaker speed and shaking time. The controls are located at the bottom front of each oven or on the right hand side of the Problot 24. A safety electrical circuit breaker is also supplied on the back of each oven.

**- Main Power Switch** - This switch (illuminated green when on) turns the power to the unit Off and On. The Problot 24 has two power switches, one for each chamber.

**-Temperature Controller and Temperature Set** – The controller has a 3-digit display for displaying chamber temperature or set point information. UP and Down arrow pads are used to change the set point and controller mode of operation. To enter the set point mode of operation on the controller, press either the UP or DOWN arrow pad one time. The display will start to blink, going from bright to dim. While blinking, the display is showing the set point. To change the set point, use the UP and DOWN arrow pads. If the arrow pads are not pressed for five (5) seconds, the display will stop blinking and will read the chamber temperature. Allow at least one hour for the chamber temperature to stabilize and 24 hours for optimum stabilization.

**-Calibration-** The oven is calibrated at 65C at the factory. The oven can be re-calibrated after the chamber temperature has stabilized at the set point for several hours. Suspend a certified reference thermometer in a hybridization bottle such that it does not touch the glass bottle sides or (less accurate) tape the reference thermometer to the outside wall of a hybridization bottle. Mount the bottle on the rotisserie (and a second bottle for balance) and run the unit at the desired temperature for 2 hours. Compare the oven display to the reference thermometer. If there is an unacceptable difference, put the controller into calibration mode by pressing both the UP and DOWN arrow pads at the same time until the two outside decimal points begin to flash. While the decimal points are flashing, the display can be calibrated to match the reference thermometer by pressing the UP or DOWN arrow pads until the display reads the correct value. Allow the incubator to stabilize again, and recalibrate if necessary.

**-Heating Indicator-**This indicator will illuminate green when the controller is calling for heat from the heater. This indicator will be on continuously while the oven heats up to the set temperature and will then cycle on and off at the set temperature.

**-Rotisserie Power Switch** – This switch turns on the power to the rotisserie and is used to start and stop the rotisserie.

**-Rotisserie Speed** - This knob controls the rotisserie speed. Clockwise rotation increases speed. The oven has a nominal speed range of 4 to 20 rpm.

**-Shaker Timer (Problot 12S only)** – The timer controls the power to the shaker mechanism.

Turning the knob counter clockwise to the RUN position sets the shaker for continuous operation. Turning the knob clockwise sets the shaker for timed operation in a timed cycle from 0 to 120 minutes. The knob can be rotated counter clockwise to the 0 or RUN position any time.

**-Shaker Speed (Problot 12S only)** – This knob controls the shaker speed. Turning the knob clockwise increases the speed from 10 to 300 rpm.

## **OPERATING FEATURES**

**-Rotisserie** – The rotisserie is stainless steel and has clips to hold hybridization bottles. The standard rotisserie will hold either six or twelve large (300mm) bottles and double the number of small (150mm) bottles. The clips may be squeezed inward to also hold 50ml tubes. Optional rotisseries that hold other styles of bottles or vertical 50ml tubes are available. **Always load the rotisserie with an even number of bottles in a balanced pattern.**

**-Setting Rotisserie Offset Angle-** The rotisserie can be adjusted to hold bottles either horizontally or at a slight angle for more vigorous wetting action. To adjust the angle, first loosen the screws on one hub then rotate the hub to create an angle offset between the two hubs, then retighten the screws. Additional angle can be obtained by loosening the screws and rotating the second hub in the opposite direction from the first hub.

**-Rotisserie Removal and Installation- Caution ! Rotisserie and oven sides may be hot !** The rotisserie is held and driven by a two-prong fork drive on one side and locked in a cradle on the other side by a brass locking pin. To remove the rotisserie, first remove the brass locking pin, then lift the rotisserie up from the cradle while simultaneously moving the rotisserie away from and off the two-prong fork drive. Rotisserie installation is the reverse. Bottles may need to be removed before attempting to remove or install the rotisserie.

**-Drip Tray-** Each oven comes with a removable drip tray. The Problot 24 has one tray for each chamber. On the Problot 12S, the shaker platform serves as the drip tray. You may wish to remove the rubber mat or cover the platform with aluminum foil on the 12S.

**-Electrical Outlet-** The 115 volt versions of the Problot 6, Problot 12 and Problot 24 models have an electrical outlet inside the chamber for small equipment such as a rocker or shaker. This outlet is rated for 1 amp draw maximum.

**SHAKER (Problot 12S only)-** The Problot 12S provides an orbital shaking platform with rubber mat. The platform can be removed by lifting up and pulling it free from the four rubber grommets that hold the platform to the shaker mechanism. The platform is re-installed by lining up the pins on the bottom of the platform to the rubber grommet holes and pushing downward.

An optional flask platform is available for the shaker.

**ROCKING PLATFORM / INSTALLATION-** An optional rocker platform is available for all Problot 6, 12, 12S and 24 models. Before installing the rocker platform, the rotisserie must first be removed (see page 5, Rotisserie Removal and Installation). To install the rocking platform, first install the fork adapter (rectangular bar with holes) on the rotisserie drive fork by pressing the adapter over the two prongs and tighten the Allen screw in the end of the adapter with the wrench provided. Do not over tighten.

Next, use the rotisserie speed control to bring the fork drive and adapter to a horizontal position. If the rocking platform is being installed on a model Problot 12S, remove the 1" (25mm) hexagonal arm extension using a small adjustable wrench.

Place the Rocking Platform in the oven and connect the platform drive arm to the fork drive adapter using the thumbscrew. Two positions are available on the adapter. Select the position that allows the platform to sit horizontal (or close to horizontal) when the fork drive and adapter are horizontal.

The platform drive arm can be adjusted and the second hole in the adapter used to obtain more or less rocking angle or to achieve a perfectly horizontal platform at mid-rock. If the length of the arm is adjusted, be sure to retighten the locking nuts on the arm.

To operate the rocking platform, turn the rotisserie power switch to the ON position and adjust the speed using the rotisserie speed knob.

## CARE & MAINTENANCE

No routine maintenance is required for the electrical or mechanical components of the unit. The incubator exterior, interior, rotisserie and shaking or rocking platform (if present) should be wiped down periodically with a soft damp cloth with mild soap. Do not use chlorine-based bleach or abrasives. Any spills in the incubator and/or on the rotisserie, shaking or rocking platforms should be cleaned up immediately (see Decontamination). **Be sure to disconnect the power cord before cleaning or decontaminating the oven.**

## DECONTAMINATION

Should a spill occur in the oven, it is easily cleaned by wiping the affected area first with a dilute detergent solution of IsoClean or CountOff. The area should then be cleaned with distilled water. This method works on the oven interior, drip tray, shaker or rocker platform and the rotisserie. Bottles and caps may also be soaked in a dilute decontaminating detergent such as IsoClean or CountOff and then rinsed in distilled water.

## TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE SOLUTION
Oven will not power up or not heat	Check power cord, outlet and unit circuit breaker
Rotisserie will not turn	Check rotisserie On/Off switch and speed setting
Rotisserie speed erratic, jumps	Check for balanced load on rotisserie. Even number of bottles loaded in opposing positions
Shaking platform will not operate	Check timer set to RUN or a time setting Check that nothing is blocking shaker platform sides
Temperature too high	Check set point and readjust if necessary Check calibration
Chamber temperature goes above set point and settles back to set point	Normal operation in initial heat up or if door opened for a long period
Temperature will not remain stable or display shows "LO"	Check that set point is at least 5C above ambient which is minimum set and operating point
Indicated temperature is unstable	A slight variation of +/-0.1C is normal. Larger fluctuations may be ambient variations from drafts, door opening and closing, a fan obstruction or failure or electrical noise from RFI (motors, etc.)

## TROUBLESHOOTING GUIDE (continued)

PROBLEM	POSSIBLE SOLUTION
Temperature is too low	If door has opened, unit may not have recovered yet. Confirm temperature set point.
Unit will not heat above temperature that is below set point	Confirm set point. Check temperature of chamber with a thermometer and recalibrate if needed.
Temperature display and reference thermometer do not match	Be sure that unit has been allowed to stabilize for 1 hour. Thermometer should be suspended in rotating bottle and not touching bottle surface. Only certified reference thermometers should be used.
Can not adjust set point or calibration	Turn unit off for 5 seconds to reset. If problem persists call service
Unit calibrated at one temperature load not at another	This can be a normal condition if temperatures vary widely. For best accuracy, calibrate at set point

## TECHNICAL SUPPORT / SERVICE

Should your ProBlot hybridization oven require service, call Labnet International's Service Department at 732-417-0700 between the hours of 9:00am and 5:00pm EST. If service necessitates the return of the unit to Labnet's Service Department, a return authorization (RA) number must first be obtained and a decontamination certificate completed. The unit must be thoroughly decontaminated before shipping. The unit must then be sufficiently packed for shipment. Any shipping damage on returned units will be the customer's responsibility.

## ACCESSORIES

B3003	Large 300x35mm bottle w/cap	B1500-CAP	Cap for 35mm bottles
B3003-PC	as above with safety coating	B2500-SEAL	Seal for all 35mm bottles
B3003-DC	Large bottle with caps on both ends	B1124	Rack for 6 35mm bottles
B2503	Medium 250x35mm bottle	H9088	Mesh 23x23cm (pack of 5)
B1503	Small 150x35mm bottle w/cap	H9089	Mesh 10x15cm (pack of 5)
B1503-PC	as above with safety coating	B0753	Small 75x35mm bottle
B2753	Small bottle with 2 x75mm chambers	B1507	150x70mm bottle, vented
H1200-RA	Rocking platform	B3007	300x70mm bottle, vented
H1200-250A	Clamp platform 6 x 250ml flasks	H1204-80A	Rotisserie 4 x 70mm bottles
H1212-40VA	Rotisserie 12 x 50ml tubes, vertical		