

**Hybridizer** | Handbook





# Hybridizer | Handbook

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For In Vitro Diagnostic Use



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Dako Hybridizer (120 V) - Code No. S2450  
Dako Hybridizer (240 V) - Code No. S2451  
Dako Hybridizer Control Strips - Code No. S2452

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### **User Resources**

For the latest information on Dako products and services, please visit the Dako website at:

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### **Customer Support**

Contact your local Dako representative for customer support. Visit the Dako website for the most current support information.

### **Scope**

This document contains basic information on the use and operation of the Hybridizer and assumes you have received basic training on the instrument. Please contact your Dako representative for information not provided in this manual.

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## How to use this handbook

This handbook along with information contained on product labels should provide all the information needed to operate and maintain the Hybridizer.

Notes appear in italics to highlight information. When the information requires special attention, a caution symbol appears next to the italicized text:



Please pay close attention to the instructions that accompany the notes and symbols as well as the standard laboratory practices outlined by your facility and local regulatory agencies. The table below lists all the CAUTIONS / WARNINGS for the Hybridizer.

	<p><b>WARNING - North American Installation:</b> <i>Line cord should be plugged into a properly grounded AC outlet.</i></p>
	<p><b>WARNING - Outside of North America:</b> <i>Inspect that the supplied Line Cord has local electrical compatibility.</i></p> <p><b>EU Installation:</b>  <i>Use power cord with an IEC320/CEE22 female connector and male connector suitable for the power outlet to be used. Cord must meet  standards.</i></p>
	<p><b>CAUTION –</b> <i>Unplug the Hybridizer from the wall outlet before performing maintenance.</i></p>
	<p><b>WARNING –</b> <i>Do not expose Hybridizer to strong or concentrated acids, bases, esters, aromatic or halogenated hydrocarbons, ketones or strong oxidizing agents.</i></p>
	<p><b>BIOHAZARD -</b> <i>Universal Precautions should be followed on all specimens, regardless of whether a specimen is known to contain an infectious agent.</i></p>
	<p><b>CAUTION –Risk of electric shock:</b> <i>The instrument contains no user serviceable parts. Removal of housing will expose potentially lethal voltage. Refer service to qualified Dako service personal.</i></p>
	<p><b>CAUTION – Hot Surface:</b> <i>The interior surface of the instrument may be HOT, use caution to avoid potential burn.</i></p>

Please use the system as intended. Improper use of the Hybridizer may cause damage to the system, inaccurate results, or potentially nullify warranties.

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## Section 1 | Unpacking and Installation

### Inspect Packaging

The Hybridizer and its accessories are delivered in one carton. If the instrument or accessories have suffered any damage in transport, please inform your carrier immediately.

**Note:** Save shipping carton and components to simplify return should service be required.

### Verify Contents

<b>The package contains:</b>
One Hybridizer, code No. S 2450 (120V) or S 2451 (240V)
One Line Cord
One Handbook 30195
One CD (Handbook and Humidity Control Strips package insert) 30196
One Package Humidity Control Strips, code No. S 2452

### Installation of the Hybridizer

1. Place the Hybridizer on a level surface suitable for laboratory instrumentation.
2. Hybridizer has an intake fan located on bottom and fan outlet in rear; assure no obstructions exist on intake or outlet.
3. Position the Hybridizer away from direct sunlight and sources of heat or cold.
4. Verify voltage requirements located on serial number label, rear of instrument.

### Connect Power

Plug the instrument into the appropriate outlet supplying the voltage and frequency indicated on the serial number label. Main power switch is located on the rear of the instrument, next to the line cord power entry module.



**WARNING - North American Installation.** Line cord should be plugged into a properly grounded AC outlet.



**WARNING - Outside of North America.** Inspect that the supplied Line Cord got local electrical compatibility.

**EU Installation** - Use power cord with an IEC320/CEE22 female connector and male connector suitable for the power outlet to be used. Cord must meet **CE** standards.



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
## Section 2 | System Overview

### Principle and Intended Use

**IVD** For in vitro diagnostic use to co-denature and hybridize probes to targets in specimens on glass microscope slides.

The Hybridizer is a microprocessor controlled small bench top hot plate with lid. The Hybridizer allows storage of 40 programs, of 3 operating options; Denaturing and Hybridization, Hybridization Only or Fixed Temperature. Capacity for 12 slides and maximum temperature of 99°C. The instrument is UL / CUL listed and CE marked.

### Symbols and Definitions







	Up	Move cursor up; Enter character A-Z for program name
	Down	Move cursor down; Enter character A-Z for program name
	Enter	Accept or Enter
	Backspace	Move cursor back to previous screen
	Stop	End a program in process
	0-9	Enter numeric values for time and temperature or for program name

### Keyboard and Main Menu Screen



## Symbols and Definitions (cont.)

Display Abbreviations	
PGM	Program
Denat & Hyb	Denaturation & Hybridization
Denat Temp	Denaturation Temperature
Denat Time	Denaturation Time
Hyb Temp	Hybridization Temperature
Hyb Time	Hybridization Time
Hyb Only	Hybridization Only
Fixed Temp	Fixed Temperature
Heating to Fxd	Heating to Fixed temperature

<b>REF</b>	Product/Reference Number	Indicates the product/catalog number
	Caution	Statement of caution/warning, read instruction carefully
	Temperature limitation	Indicates storage requirements range
<b>EC REP</b>	EC Representative	European Community Authorized Representative
<b>IVD</b>	For in vitro diagnostic use	Clarifies for use as <i>in vitro</i> diagnostic only
	Non sterile	Indicates non-sterile product
<b>S N</b>	Serial Number	Indicates instrument serial number code
	Consult Instructions	Consult instruction manual for further explanation
	Manufactured By	Indicates manufacturer of the device
	WEEE	Correct Disposal of this Product – (according to Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) applicable in the European Union and other European countries with separate collection systems). Contact a Dako representative for disposal of the equipment at the end of its working life. This product should not be mixed with other commercial waste for disposal.

## Audible Indicators

Single beep – on all legal keystrokes.

Two quick beeps – upon accepting a field and cursor has moved to the next field.

Five beeps at 0.5 second interval – completion of process.

## Audible Error Indicators

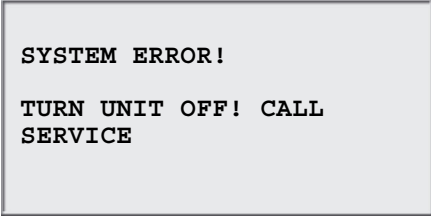
Three short beeps – Entering of illegal or non-functioning keystrokes.

Low tone beep – Attempt to enter a value out of acceptable range.

Continuous beep – Instrument is not performing within acceptable range or program condition. Turn off main power and restart. If beep persists discontinue use and contact Dako Customer Service.

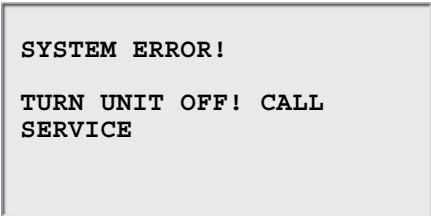
## Error Messages

Instrument cannot achieve a set temperature by heating within 10 minutes an error message appears to inform user to turn unit off and call service. A constant beep will sound.



**SYSTEM ERROR!**  
**TURN UNIT OFF! CALL**  
**SERVICE**

If the instrument cannot measure the temperature, the software will automatically turn off the heating. An error message will appear to inform the user to turn off the unit and call service. A constant beep will sound.



**SYSTEM ERROR!**  
**TURN UNIT OFF! CALL**  
**SERVICE**

High ambient temperature condition:

The instrument will attempt to achieve process set temperatures. However, if the cooling fan cannot achieve the set temperature within 10 minutes, an error message will appear to inform the user that the ambient temperature is high. A constant beep will sound. The counter will continue to count. The present temperature will be displayed. Hitting the **“Stop”** button will allow the user to abort the process. A new screen will be displayed asking user if they are sure they want to abort.

For Hyb only:

```
Please Wait  
  
Cooling to Hyb --°C  
Present Temp: --°C
```

“Ambient Temp High!” flashes alternately on “Present Temp” line.

For Fixed Temp:

```
Please Wait  
  
Cooling to Fxd --°C  
Present Temp: --°C
```

“Ambient Temp High!” flashes alternately on “Present Temp” line.

Abort Screen Message:

```
ABORTING!!  
Are You Sure?  
No  
Yes - Main Menu
```

If the ambient temperature changes during a process and causes the instrument process set temperature to change beyond the +/- 1°C specification for more than 2 minutes, a message will appear to inform the user that the ambient temperature is “high”. A constant beep will sound. The counter will continue to count. The present temperature will be displayed. Hitting the “**Stop**” button will allow user to abort the process. A new screen will be displayed asking user if they are sure they want to abort.

Hyb only:

```
PGM -- Name
Hyb in Process
Hyb --°C --:--
Present Temp: --°C
```

“Ambient Temp High!” flashes alternately on “Hyb in Process” line.

Fixed Temp:

```
PGM - Name
Fixed Temp --°C
Reset Timer 00:00:00
End PGM/Main Menu
```

“Ambient Temp High!” flashes alternately on “Fixed Temp” line.

Abort Screen Message:

```
ABORTING!!
Are You Sure?
No
Yes - Main Menu
```

If the ambient temperature changes after a process is completed, but before the user removes the slides and causes the instrument process set temperature to change beyond the +/- 1°C specification for more than 2 minutes a message will appear to inform the user that the ambient temperature is “high”. A constant beep will sound. The counter will continue to count. The present temperature will be displayed. Hitting the “**Stop**” button will allow user to abort the process. A new screen will be displayed asking user if they are sure they want to abort.

Hyb only:

```
PGM - Name  
PROCESS COMPLETE Total  
Hyb Time --:-- End  
PGM/Main Menu
```

“Ambient Temp High!” flashes alternately on “PROCESS COMPLETE” line.

Abort Screen Message:

```
ABORTING!!  
Are You Sure?  
No  
Yes - Main Menu
```

If 40 programs have been created or edited the software will blank out the “**Create**” mode on the main menu screen. This will only allow users to edit existing programs.

```
Run a PGM  
Edit a PGM  
  
Present Temp: --°C
```

## Section 3 | Programming

### Opening and Closing the Lid



*The plate may be hot. Use caution and check temperature on display before handling slides. Improper precaution can cause a burn.*



*Depressions located on either side of the lid allow user to lift lid into position. The lid should offer some resistance when opening. To close reverse process, assure front is completely down and no obstructions prevent gasket seal from sealing on housing base.*

### Turn Unit On

The Hybridizer main power switch is located on the rear panel. Assure unit is plugged into the appropriate outlet. Move switch to “**ON**” position. Instrument will beep to announce power has been turned on, fan and heating will start and the Main Menu will be displayed when the instrument has reached the default temperature of 37°C.

I = ON   O=OFF

```
Run a PGM
Edit a PGM
Create a PGM
Present Temp: 37°C
```

### Overview

Hybridizer is capable of storing 40 different programs. Each program can be one of three program types:

- Denaturation and Hybridization (Denat & Hyb),
- Hybridization Only (Hyb Only) or
- Fixed Temperature (Fixed Temp).

```
Select PGM Type
Denat & Hyb
Hyb Only
Fixed Temp
```

Programming is simple. Select program type, and follow screen prompts to enter run times and set temperatures. Hybridizer maintains set temperatures for duration of the processing.

**Note:** *At the end of the program the display will show “**Process Complete**”. Temperature will be maintained and timer will continue to run until End PGM/Main Menu is accepted by pressing “**Enter**” button.*



**Note:** If all 40 program numbers have been used, the “**Create a PGM**” line in the Main Menu will no longer appear. An existing program must be edited. See section 5.

## Create a Denaturation and Hybridization Program (Denat & Hyb)

Turn unit on and wait for the Main Menu screen. Use the arrow keys to move cursor to “**Create a PGM**” and press “**Enter**” button to accept.

Cursor highlights “**Denat & Hyb**” line; press “**Enter**” button to accept.

Hybridizer will advance to the next available program number.

```
PGM 01   Name
Enter:   Temp   Time
Denat:   50°C   :00
Hyb:     30°C   00:00
```

Hybridizer allows creating a program name. Cursor highlights the first name character position. Use the arrow keys to move through character set and press “**Enter**” button to accept the characters. All 10 character positions must be filled. Press “**Enter**” button to accept blank characters. For numeric characters use keypad 0-9.

Character set: A-Z; 0-9; period, - and blank (“**Enter**” button or move arrow)

Cursor will advance to “**Denat Temp**”. With numeric keypad enter a two-digit temperature value in degrees Celsius (50-99°C).

Cursor advances to “**Denat Time**”. With numeric keypad enter a two-digit time value in minutes (0 – 30).

Cursor advances to “**Hyb Temp**”. With numeric keypad enter a two-digit temperature value in degrees Celsius (30-70°C). The instrument allows a temperature of 30°C or ambient temp + 5°C (whichever is higher) for the lowest hybridization temperature. For room temperature hybridization (ambient temp + 5°C) enter the two-digit value 00.

Cursor advances to “**Hyb Time**”. With numeric keypad enter a two-digit time value in hours (0 – 99) followed by a two-digit value in minutes (0-59).

Display will now show entered program values. Cursor highlights “**Enter to Accept**” line.

```
Denat:   82°C   :05
Hyb:     45°C  20:00
ENTER to Accept
STOP to Abort
```

Press “**Enter**” button to accept the program values; or press “**Backspace**” button to return to previous screen to modify program values; or press the “**Stop**” button to abort.

**Note:** Accepting the program saves the program by its assigned program number and name.

## Create a Hybridization Only Program (Hyb Only)

Turn unit on and wait for the Main Menu screen. Use the arrows keys to move the cursor to “**Create a PGM**” and press “**Enter**” button to accept. With arrow keys move cursor to “**Hyb only**” line and press the “**Enter**” button to accept.

Hybridizer will advance to the next available program number.

```
PGM 02   Name
Enter:   Temp   Time
Hyb:    30°C   00:00
```

Hybridizer allows creating a program name. Cursor highlights the first name character position Use the arrow keys to move through character set and press “**Enter**” button to accept the characters. All 10 character positions must be filled. Press “**Enter**” button to accept blank characters. For numeric characters use keypad 0-9.

Character set: A-Z; 0-9; period, - and blank (“**Enter**” button or move arrow).

Cursor advances to “**Hyb Temp**”. With numeric keypad enter a two-digit temperature value in degrees Celsius (30-70°C). The instrument allows a temperature of 30°C or ambient temp + 5°C (whichever is higher) for the lowest hybridization temperature. For room temperature hybridization (ambient temp + 5°C) enter the two-digit value 00.

Cursor advances to “**Hyb Time**”. With numeric keypad enter a two-digit time value in hours (0 – 99) followed by a two-digit value in minutes (0-59).

Display will now show entered program values. Cursor highlights “**Enter to Accept**” line.

```
PGM 02   EBV
Hyb:    55°C   01:30
ENTER to Accept
STOP to Abort
```

Press “**Enter**” button to accept the program values; or press “**Backspace**” button to return to previous screen to modify program values; or press “**Stop**” button to abort.

**Note:** Accepting the program saves the program by its assigned program number and name.

## Create a Fixed Temperature Program (Fixed Temp)

Use the arrows keys to move cursor to “**Create a PGM**” line and press “**Enter**” button to accept.

With arrow keys move cursor to “**Fixed Temp**” line and press “**Enter**” button to accept.

Hybridizer will advance to the next available program number.

```
PGM 03   Name
Enter:   Temp
Fixed:   30°C
```

Hybridizer allows creating a program name. Cursor highlights the first name character position. Use the arrow keys to move through character set and press “**Enter**” button to accept the characters. All 10 character positions must be filled. Press “**Enter**” button to accept blank characters. For numeric characters, use keypad 0-9.

Character set: A-Z; 0-9; period, - and blank (“**Enter**” button or move arrow).

Cursor advances to “**Fixed Temp**”. With numeric keypad enter a two-digit temperature value in degrees Celsius (30-99°C). The instrument allows a temperature of 30°C or ambient temp + 5°C (whichever is higher) for the lowest fixed temperature. For room temperature fixed (ambient temp + 5°C) enter the two-digit value 00.

Display will now show entered program values. Cursor highlights “**Enter to Accept**” line.

```
PGM 03   Appl
Fixed:   65°C
ENTER to Accept
STOP to Abort
```

Press “**Enter**” button to accept the program values; or press “**Backspace**” button to return to previous screen to modify program values; or press “**Stop**” button to abort.

**Note:** *Accepting the program saves the program by its assigned program number and name.*

## Section 4 | Operating Instructions

### Opening and Closing the Lid



*The plate may be hot. Use caution and check temperature on display before handling slides. Improper precaution can cause a burn.*



*Depressions located on either side of the lid allow user to lift lid into position. The lid should offer some resistance when opening. To close reverse process, assure front is completely down and no obstructions prevent gasket seal from sealing on housing base.*

### Turn Unit On

The Hybridizer main power switch is located on the rear panel. Assure unit is plugged into the appropriate outlet. Move switch to “**ON**” position. Instrument will beep to announce power has been turned on, fan and heating will start and the Main Menu will be displayed when the instrument has reached the default temperature of 37°C.

I = ON   O=OFF

```
Run a PGM
Edit a PGM
Create a PGM
Present Temp: 37°C
```

### Run a Denat & Hyb Program

Turn unit on and wait for the Main Menu screen. Cursor highlights “**Run a PGM**” line.

Press “**Enter**” button to accept.

With the arrow keys scroll through program numbers 1 to 40 / program names. If no programs have been saved advance to programming section of this handbook. To accept, press “**Enter**” button.

```
Enter PGM no.
or Scroll (arrows)

PGM 01  HER2
```

Display will confirm PGM number/name and Denat & Hyb times and temperatures. Cursor highlights “Run PGM” line.

```
PGM 01  HER2
82°C :05; 45°C 20:00
Run PGM
Main Menu
```

Press “Enter” button to accept.

The display prompts to “Add Slides and Close Lid”. Before adding slides insert two Humidity Control Strips into the inside slide lid. After slides have been added saturate strips with distilled water or equivalent (approx. 13 mL for dry strips) and close lid.

Cursor highlights “Start” line. Press “Enter” button to run the program.

```
PGM 01  HER2
Add Slides - Close Lid Start
Main Menu
```

(To return to the Main Menu, move the cursor to highlight “Main Menu” line and press “Enter” button). Display indicates present temperature of the slides.

```
PGM 01  HER2
**Heating**
Denat: 82°C    :05
Present Temp: 42°C
```

Once temperature reaches denaturation set point, Hybridizer will beep twice and denaturation time will count down from the set time.

```
PGM 01  HER2
Denat in Process
Denat: 82°C    02:28
Present Temp: 82°C
```

The Hybridizer will automatically cool to hybridization set temperature once denaturation is completed.

```
Please Wait  
Cooling to Hyb 45°C  
Present Temp: 58°C
```

“Ambient Temp High!” flashes alternately on “Present Temp” line.

Hybridization time will count down from the set time once temperature reaches hybridization set point.

```
PGM 01 HER2  
Hyb in Process  
Hyb: 45°C 12:48  
Present Temp: 45°C
```

Upon program completion Hybridizer will beep five times and the display will show **“PROCESS COMPLETE”**. Hybridization temperature will be maintained until **“End PGM/Main Menu”** is accepted by pressing **“Enter”** button. Before pressing **“Enter”** button, remove slides for further processing. If **“End PGM/Main Menu”** is not accepted within the first minute of program completion, hybridization time will start counting the total time at hybridization temperature.

```
PGM 01 HER2  
PROCESS COMPLETE  
Total Hyb Time 21:05  
End PGM/Main Menu
```

## Run a Hyb Only Program

Turn unit on and wait for the Main Menu screen. Cursor highlights **“Run a PGM”** line. Press **“Enter”** button to accept.

With the arrow keys scroll through program numbers 1 to 40 / program names. If no programs have been saved advance to programming section of this handbook. To accept, press **“Enter”** button.

```
Enter PGM no.  
or Scroll (arrows)  
  
PGM 01 HER2
```

Display will confirm PGM number/name and Hyb Only times and temperatures. Cursor highlights the **“Run PGM”** line.

```
PGM 02  EBV
Hyb: 55°C 01:30
Run PGM
Main Menu
```

Press **“Enter”** button to run program.

The display prompts to **“Add Slides and Close Lid”**. Before adding slides insert two Humidity Control Strips into the inside slide lid. After slides have been added saturate strips with distilled water or equivalent (approx. 13 mL for dry strips) and close lid.

Cursor highlights **“Start”** line. Press **“Enter”** button to run the program, (To return to the Main Menu, move the cursor to highlight **“Main Menu”** line and press **“Enter”** button).

```
PGM 02  EBV
Add Slides - Close Lid
Start
Main Menu
```

Instrument will heat slides to hybridization temperature.

```
Please Wait

Heating to Hyb 55° C
Present Temp: 45° C
```

Once hybridization temperature is reached the time will count down from the set time.

```
PGM 02  EBV
Hyb in Process
Hyb 55° C 01:30
Present Temp: 55° C
```

Upon program completion Hybridizer will beep five times and the display will show “**Process Complete**”. Hybridization temperature will be maintained until “**End PGM/Main Menu**” is accepted by pressing “**Enter**” button. Before pressing “**Enter**” button, remove slides for further processing. If “**End PGM/Main Menu**” is not accepted within the first minute of program completion, hybridization time will start counting the total time at hybridization temperature.

```
PGM 02  EBV
PROCESS COMPLETE
Total Hyb Time 02:15
End PGM/Main Menu
```

## Run a Fixed Temp Program

Turn unit on and wait for the Main Menu screen. Cursor highlights “**Run a PGM**” line. Press “**Enter**” button to accept.

With the arrow keys scroll through the program numbers 1 to 40 / program names. If no programs have been saved advance to programming section of this handbook. To accept a program number/name, press the “**Enter**” button.

```
Enter PGM no.
or Scroll (arrows)

PGM 01 HER2
```

Display will confirm PGM number/name and Fixed Temp. Cursor highlights “**Run PGM**” line.

```
PGM 03  Appl
Fixed: 65°C
Run PGM
Main Menu
```

Press “**Enter**” button. Instrument will heat to fixed temperature.

```
Please Wait

Heating to Fxd 65° C
Present Temp: 47° C
```



When the fixed temp set temperature is reached the display prompts to “**Add Slides and Close Lid**”. Before adding slides insert two Humidity Control Strips into the inside slide lid. After slides have been added saturate strips with distilled water or equivalent (approx. 13 mL for dry strips) and close lid.

Cursor highlights “**Start**” line. Press “**Enter**” button again to run the program. (To return to the Main Menu, move the cursor to highlight “**Main Menu**” line and press “**Enter**” button).

```
PGM 03   Appl
Add Slides - Close Lid
Start
Main Menu
```

Display indicates present temperature of slides.

Timer counts elapsed time. (Pressing “**Enter**” button will reset timer to zero).

```
PGM 03   Appl
Fixed Temp: 65°C
Reset Timer 01:18:10
End PGM/Main Menu
```

Use Arrow keys to move to “**End PGM/Main Menu**” line and press “**Enter**” button to accept.

## Abort Program in Process

To end a program in process press “**STOP**” button, three beeps will sound. Use arrows to move cursor to “**Yes**” line and press “**Enter**” button to accept. (Program will continue to run until “**Yes**” or “**No**” has been accepted.)

**Note:** The Hybridizer prompts, “**Are You Sure?**” This measure is to prevent accidental disruption of a program in process.

```
ABORTING!!
Are You Sure?
No
Yes - Main Menu
```

Fan will turn on and cool to 37°C if the slide temperature is above the default temperature of 37°C.

## Recommended for Best Results

- Place glass coverslip over probe and sample
- Apply sealant along all coverslip edges
- Use Dako Humidity Control Strips S 2452

## Slide Location

Hybridizer accommodates up to 12 slides per run. When prompted, lift lid and load slides onto plate using slide locator for easy positioning. Frosted and/or label end of slides should be away from slide locator. Move slides across plate until they rest against slide locator.

**Note:** *If slides are not resting against slide locator, closing of lid may break slides.*

## Humidity Control Strips

Humidity Control Strips are used to minimize evaporation of assay solution. Located in the lid these strips act to prevent evaporation of probe solution from prepared slides.

Instructions for use: After locating the slides, saturate strips with distilled water or deionized water (approx. 13 mL for unused strips).

Instructions for reuse: After the run has ended, keep lid closed between runs to avoid drying out of the strips. Do not reuse strips that have been dried out after initial saturation. Resaturate the strips before starting a new run. The amount of water needed to resaturate the strip depends on the ISH procedure and the time in between runs. Strips should be replaced frequently as they will degrade over time and with use. See package insert for Hybridizer Humidity Control Strips for further instructions. Replacement strips can be purchased for use with the Hybridizer.

If the Dako Hybridizer instrument has to stand unused for more than four days, open the lid, remove strips and allow instrument to dry. It is recommended to allow the instrument to dry as described above with each strip change and that the users keep the inner surface of the instrument in a clean condition. For cleaning instructions advance to the cleaning section of this handbook.

To replace strips, lift lid and remove strips. Insert strips into slot positions; allow fingers in lid to support strips.

**Note:** *Do not use paper towels in strip positions, they must be folded and damage may result in lid fingers.*

## Predefined Limits

<b>Program Mode</b>	<b>Temperature Range</b>	<b>Timer Limits</b>
Denature	50°C to 99°C	0-30 minutes
Hybridization	Room temp, 30°C or ambient + 5°C (whichever is higher) to 70°C	0-99 hours
Fixed Temp	Room temp, 30°C or ambient +5°C (whichever is higher) to 99°C	0-99 hours

## Section 5 | Edit a Program

### Opening and Closing the Lid



*The plate may be hot. Use caution and check temperature on display before handling slides. Improper precaution can cause a burn.*



*Depressions located on either side of the lid allow user to lift lid into position. The lid should offer some resistance when opening. To close reverse process, assure front is completely down and no obstructions prevent gasket seal from sealing on housing base.*

### Turn Unit On

The Hybridizer main power switch is located on the rear panel. Assure unit is plugged into the appropriate outlet. Move switch to “**ON**” position. Instrument will beep to announce power has been turned on, fan and heating will start and the Main Menu will be displayed when the instrument has reached the default temperature of 37°C.

I = ON   O=OFF

```
Run a PGM
Edit a PGM
Create a PGM
Present Temp: 37°C
```

### Edit a Program

Turn unit on and wait for the Main Menu screen. Use the arrows keys to move cursor to “**Edit a PGM**” line and press “**Enter**” button to accept.

With the arrow keys scroll through the program numbers 1 to 40 / program names. If no programs have been saved advance to programming section of this manual. To accept, press “**Enter**” button.

```
Enter PGM no.
or Scroll (arrows)

PGM 01 HER2
```

Cursor highlights existing program type: “**Denat & Hyb**”, “**Hyb only**” or “**Fixed Temp**”. Press “**Enter**” button to accept existing program type or use arrow keys to move cursor to a different program type. Press “**Enter**” button to accept.

```
Select PGM Type
Denat & Hyb
Hyb Only
Fixed Temp
```

Use numeric keypad to enter new values for Temperatures and/or Time. Procedure and limits are the same as those for creating a program.

**Note:** Hybridizer allows 40 programs to be entered and stored. Once all program numbers have been used an existing program must be edited.

```
PGM 04 HPV
92°C :05; 37°C 16:00
Denat & Hyb
Main Menu
```

## Section 6 | Maintenance

### Overview

Dako recommends that instrument operators perform periodic inspections and preventative maintenance on Hybridizer. Contact Dako's Customer Service if the Hybridizer is not functioning properly.



**CAUTION** - Unplug Hybridizer from the wall outlet before performing maintenance.



**WARNING** - Do not expose Hybridizer to strong or concentrated acids, bases, esters, aromatic or halogenated hydrocarbons, ketones or strong oxidizing agents.

### Cleaning

The Hybridizer is supplied with a removable slide-locating bar. To remove, pull locator back releasing the top from its holder (the locator is spring loaded to hold it in position). Lift slide-locator up and remove from spring holder at bottom. Set on bench top. Clean the outside surfaces and switch overlay panel with a water-dampened cloth and mild detergent. Remove Humidity Control Strips before start of inner instrument cleaning. Clean the inner surface with a mild detergent, and if necessary, a disinfectant, wiping surfaces with a dampened cloth using 70% alcohol or 10% bleach solution.

### Service

There are no user-serviceable parts except for fuses and the rubber seal in the lid. Refer all other service to qualified Dako service personnel. Reference the Dako Warranty for further instruction.

#### **Change fuses – fuses located in rear of Hybridizer between main power plug and On/Off switch.**

Unplug the Hybridizer. Use a small flat screwdriver to carefully disengage the two snap-locks securing the fuse holder. Remove the fuse holder and inspect type and value of fuse. Replace both fuses with same type and value. Insert fuse holder and push until two snaps are heard.

#### **Change lid seal (S2453) – remove existing lid seal from the groove in the lid underside. Insert new seal. Be sure it is properly seated in the groove.**

#### **Note: Decontamination before returning for service**

Any instrument or accessory containing accumulated blood and/or other biological or chemical deposits must be cleaned prior to shipment to the manufacturer/dealer for service. This decontamination is required by Federal Law (Title 48 and 49 of the Federal Regulations) and in accordance with the Environmental Protection Agency's Regulations for Biohazard Waste Management. Dako personnel cannot perform this decontamination.

## Troubleshooting

Unit does not turn on, no power.	Check both cord ends are plugged in. Check Fuses located on rear panel next to power switch. Replace with same type and value.
Poor results on slides.	Verify selected protocol against probe manufacturer's recommendation. Ensure Humidity Control Strips are in place and moist. Ensure cover slip sealant was applied. Ensure plate is heating. Ensure lid is properly closed. Ensure air intake and outlet are not obstructed. Ensure lid gasket is intact and undamaged
Cannot read display.	Allow unit to reach room temperature before operating. Call Dako Customer Service
Can't find "Create a Program".	More than 40 programs have been stored. You can only edit a program.
Keypad not functioning properly.	Call Dako Customer Service.

## Appendix A | Specifications

<b>Code Numbers</b>	S 2450	S 2451
<b>Electrical</b>	100-120 VAC @ 3.0 A	220-240 VAC @ 1.6A
<b>Processing Time</b>	0-99 hours	
<b>Program Number</b>	40	
<b>Heating Time</b>	37°C to 95°C; 2 minutes	
<b>Cooling Time</b>	95°C to 45°C; 5 minutes	
<b>Program Types</b>	<ul style="list-style-type: none"> <li>▶ Denaturation and Hybridization</li> <li>▶ Hybridization only</li> <li>▶ Fixed temperature</li> </ul>	
<b>Temp. Uniformity</b>	Within +/- 1°C on the heat plate	
<b>Capacity</b>	Up to 12 slides	
<b>Dimensions</b>	Depth 45.1 cm/ 17 3/4 in Width 22.8 cm/ 9 in Height 14.0 cm/ 5 1/2 in Weight 8.5 kg	
<b>Environmental</b>	Indoor use Altitude up to 2000m Temperature 15°C to 40°C Maximum relative humidity 80% for temperatures up to 15°C decreasing linearly to 50% relative humidity at 40°C Main supply voltage fluctuations not to exceed +/- 10% of the nominal voltage Transient over-voltages according to installation category II Pollution degree 2	

### Dako Warranty

Dako warrants to Buyer that the Hybridizer will be free, under normal use and maintenance, from defects in material and workmanship for a period of one (1) year from the date of delivery to the end-user. As Buyer's sole and exclusive remedy for any such defects, Dako will, at its option, repair or replace without charge any unit which is found to be so defective.

### Limitation of Liability

Dako shall not be responsible under this warranty for Products found to be defective as a result of misuse, mishandling, or neglect.

DAKO MAKES NO OTHER WARRANTIES OTHER THAN THAT SPECIFIED ABOVE, OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, AND ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY DAKO AND EXCLUDED FROM THE TERMS OF SALE.