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# LYNX II

## Automated Tissue Processor for Histology and Microscopy





The most unique state-of-the-art tissue processor which not only is compatible with all plastic resins but paraffin waxes as well.

**Introduction:**

LYNX II is designed to be the successor of Lynx Tissue Processor with several enhancements including capabilities to perform optional processing of larger size samples for Histology.

The LYNX II holds 24 reagent vials for EM processing. Optional HP (Histology processing) may be done with 12 larger size reagent vials for HP processing. In both EM and HP modes, LYNX II has two, independently controlled, heating/cooling stations.

**Operational Overview of LYNX II:**

LYNX II is a batch mode, tissue processing system. The tissues may be processed for EM or HP. Tissues of either type are processed in the same manner: Samples are mounted on the sample arm and reagents are loaded on the reagent carousel. Based on the selected program by the user, the LYNX II rotates the reagent carousel until the selected reagent station is at the processing station. At the processing station the sample is lowered in the reagent. Based on the selection of agitation and vacuum, the LYNX II periodically moves the sample arm to provide agitation and applies vacuum when the agitation is not in progress. Once the programmed time in a given reagent is over, the sample is raised and the next reagent is rotated in the processing station.

The operator may select the processing for EM or HP by the program numbers. Programs 1 through 10 are used for EM processing and programs 11-20 are used for HP processing. In addition to the proper program number selection, it is the responsibility of the end user to use the proper carousel positions and the appropriate type of reagent vials based on the selection of EM vs. HP processing. Once the unit is properly configured for EM or HP processing, the operator loads the reagent carousel and the samples, selects the desired program and starts the run. At the end of the run, the sample is retained in the last reagent until the operator removes the sample.



Features	
Number of reagent vials for HP processing	12
Number reagent vials for EM processing	24
Volume of reagent in EM reagent vials	25ml
Volume of reagent in HP reagent vials	125ml
Number of Programs	20 (10 for EM and 10 for Histology)
Two independently controlled heating/cooling stations	

## Features

Easy replacement of reagent carousel

Paraffin Processing

Sample agitation

Vacuum infiltration during processing

Choice of plastic and metal containers for improved chemical compatibility and heat transfer

Optional external media based interface to a PC for ease of programming and allowing for the editing of programs on a PC and the transfer of programs between the LYNX II and the PC

Built-in fume extraction and ability to connect the discharge hose to lab exhaust system

Internal battery back-up during power fail to protect the samples

Ability to continue run after power interruption

User Friendly Operator Interface

Optional external UPS for continued processing during longer power outages



# Functional Specifications:

## System Configuration:

### 1. LYNX II is designed with the following functional modules.

- Rotary mechanism to rotate the reagents
- EM and HP reagent carousel
- Up/Down mechanism to move the sample in and out of the reagent as well as to provide the agitation
- EM and HP Sample arms
- Tight seal for all reagent containers except for the one at the processing station.
- Vacuum pump and a pressure sensor or a switch
- Two Peltier operated heating/cooling station with independent temperature sensors and controls
- Fume extraction fan and air flow sensor

### 2. Reagent Carousel:

A reagent carousel may be installed, either a 24-position carousel for holding EM reagents or a 12-position carousel for holding HP reagents. The EM carousel holds cylindrical vials that are approx. 1.2" in diameter and 2.5" tall whereas HP vials are approx. 2.2" diameter (to hold 1.75" x 1.2" cassette flat) and 2.5" tall. The carousel is approx. 12" in diameter. Each vial has a flange for ease of handling. The vials are available in either plastic or aluminum. The vials may be mixed and matched between the metal and the plastic vials on a given carousel for certain kinds of processing.

The LYNX II has a built in sensor to detect that the proper reagent vial types (EM vs. HP) are installed on the unit before starting a run. Ability to detect only one of the two vial types is sufficient.

### 3. Sample Arm:

The sample arm holds either an EM sample holder assembly or an HP sample holder assembly. Each sample holder assembly is designed to mount on the arm at a location to center the samples in its respective reagent container. The Sample Arm top may be changed to accommodate different samples.

### 4. Agitation and Vacuum:

The arm provides a gentle agitation (approx. 5 mm up and down travel at a rate of 2.5 mm per second or one up/down agitation per second) once the sample is in the reagent container. Five agitation strokes are executed in 5 seconds and repeated every 45 seconds. If vacuum infiltration is selected, the agitation will be applied for 5 seconds followed by 40 seconds of vacuum. These agitation-only or the agitation-vacuum cycles will be repeated for the duration of the station time.

The sample holder assembly has a fitting to attach the vacuum hose from the vacuum pump.

### 5. Heating-Cooling Stations:

The LYNX II provides 2 independent, identical heating-cooling stations (HCS). Each HCS is heated or cooled by a Peltier module and has its own temperature sensor. One HCS is located at the sample processing station and the second one is located one position prior to the sample processing station. This arrangement allows for the pre-heating or pre-cooling of the reagent for a program where the reagents are arranged in a sequential, contiguous manner.

Each HCS can be programmed to be between 4 deg. C and 65 deg. C. The accuracy of the actual temperature will be +/- 2 deg. C measured on the surface of the Heating – Cooling station. The set point at the HCS surface is reached within 7 minutes of the arrival of the reagent at the station.

### 6. Fume Control:

LYNX II provides a fume extraction fan to direct fumes from the reagent/ sample area to an exhaust port. An external hose may be connected to the unit and the hose may be directed to a fume hood or to laboratory exhaust system. The fume extraction is designed to ensure that the fumes are diverted away from electronics and the mechanism components.

### **7. Lid/Cover:**

An acrylic cover with a latch is part of the fume control system. Controller of the system can detect if the cover is latched or not. By default, a run cannot be started (and will pause) if the cover is not in place. However, there is a software override will allow for the running of the unit without closing the cover.

### **8. Seal for the Reagent vials:**

A tight seal is provided to cover all reagent vials except for the one under the processing station.

Materials for various components and subsystems of LYNX II is compatible with the following reagents during the processing.

#### **HP Processing**

- Formalin
- Alcohol
- Xylene
- Xylene Substitutes
- Water
- Paraffin
- 10% bleach solution  
(to wipe clean the system)

#### **EM Processing**

- Buffers
- Osmium Tetroxide
- Ethyl Alcohol
- Acetone
- Propylene Oxide
- Epoxy/acrylic resins

### **9. Operation During Power Outage:**

The LYNX II contains a small internal battery (that is capable of moving the sample from up position to down position and to move the carousel in the next reagent position at least three times without being re-charged) to preserve the sample during a power outage. When the electronics in LYNX II detects that the A/C power is about to fail, the LYNX II will shut down the power to the Peltier elements at both heating/cooling stations. Next, it will ensure that the samples are down in a reagent container. If the samples are out of a reagent vial (since LYNX II was just about to rotate the carousel to the next reagent position or was in the middle of the rotation), the carousel will be rotated by one position and then the samples will be lowered in to the reagent at the processing station. The time when the power fail warning was activated will be recorded and the unit will go in the stand by mode.

Once the power is restored and is maintained for at least 30 seconds, LYNX II will resume the run. As LYNX II resumes run, the station time count down does not resume until the heating/cooling stations have reached the desired temperatures. The station time countdown does not begin for additional 60 minutes if the temperature at the processing station or at the previous station was above 55 deg. C during an HP run. This feature ensures that the paraffin at either of the two stations completely melts before moving to the next station

## Specifications:

### Dimensions

Max Width: 22.5"  
Max Depth: 19.0"  
Max Height: 12.0" (cover closed)  
Max Weight 50lb (32 kg)

### Electrical Design:

Display: 8 lines x 20 column text only LCD  
Keypad: Membrane style keypad with tactile feed back  
Mechanism Drive: Stepper Motors

### Power Requirements:

100 - 115 volts AC, 50-60 Hz, 8 Amps Max  
230 volts AC, 50-60 Hz, 4 Amps Max  
Back-up power: NiCd Battery, 12 volts, 1 Amp-hour

### Fuse Rating:

100 – 115 volt version 8 Amps x 250 Volts AC, Time Delayed (Slo-Blo)  
230 volt version 5 Amps x 250 Volts AC, Time Delayed (Slo-Blo)  
100 – 115 volt version 8 Amps x 250 Volts AC, Time Delayed (Slo-Blo)  
230 volt version 5 Amps x 250 Volts AC, Time Delayed (Slo-Blo)

### Operating Environmental Conditions:

Ambient Temperature: 20 to 32 °C (70 to 90° F)  
Relative Humidity: 20-80% non-condensing  
Ambient Pressure: 28"-32" (70-80 mm) of Hg

### Storage/Transportation Conditions:

Temperature: 10-40 deg C (50 to 102° F)  
Humidity: 15%-80% non-condensing  
Pressure: 28"-32" (70-80 mm) of Hg

## Ordering Information:

L12600	Lynx II for Microscopy*
L12601	Lynx II for Histology**
L12610	Histology Kit (Histo Sample Holder, Histo Sample Arm, Histo Carousel, Power Cord, Operator Manual, Histo Aluminum Containers (24), Histo Plastic Containers (36), Plastic Caps (36), Exhaust Hose, Small Cassettes (100), 2 Sample Record Note Pads, Spare Fuses.
L12612	Electron Microscopy Kit (EM Sample Holder, EM Sample Arm, EM Carousel, Loading Jig, Power Cord, Operator Manual, Aluminum Containers (24), Plastic Containers (72), Plastic Caps (72), Exhaust Hose, Small Baskets (100), Large Baskets (100), Basket Lids (100), 2 Sample Record Note Pads, Spare Fuses
L12602	Lynx II for EM and HP Combined***
L12655	EM Reagent Vials, Bag of 72
L12656	EM Regent Vial Cap, Bag of 72
L12657	HP Reagent Vials, Bag of 36
L12658	HP Reagent Vial Cap, Bag of 36
L12659	EM Aluminum Container (Box of 24)
L12660	HP Aluminum Container (Box of 12)
L13154	EM Sample Holder Assembly (Basket Stem Assembly)
L12663	HP Cassette Holder Assembly
L12661	Vacuum Pump Tubing ( 1 each)
L12662	Vial Seal Assembly
L12995	EM Sample Arm Seal
L12996	HP Sample Arm Seal
L12952	EM Carousel (Without Aluminum Containers)
L12953	HP Carousel (Without Aluminum Containers)
L12664	Replacement Back-up Battery
L12665	Lynx II Operator Manual
L12667	Lynx II Service Manual

\* The Lynx II for Microscopy comes with: EM Sample Holder, EM Sample Arm, EM Carousel, Loading Jig, Power Cord, Operator Manual, Aluminum Containers (24), Plastic Containers(72), Plastic Caps (72), Exhaust Hose, Small Baskets (100), Large Baskets (100), Basket Lids (100), 2 Sample Record Note Pads, Spare Fuses.

\*\* The Lynx II for Histology comes with: Histo Sample Holder, Histo Sample Arm, Histo Carousel, Power Cord, Operator Manual, Histo Aluminum Containers (24), Histo Plastic Containers(36), Plastic Caps (36), Exhaust Hose, Small Cassettes (100), 2 Sample Record Note Pads, Spare Fuses.

\*\*\*The Lynx II for Microscopy and Histology comes with everything found in both units .

## Consumables

300.0005	Disposable Basket, Lid, 100/pk
300.0002	Disposable Basket Small, 100/pk
300.0041	Specimen Record Pad 3&4 Div., each
300.9513	Specimen Record Pad 8 Div, each
300.9123	Extra Large Basket, each
300.8041	Exhaust Hose, 3 meter, each
300.9011	Loading Jig, each
300.0196	Disposable Basket, 8 Segment, 100/pk
300.0003	Disposable Basket, Large, 100/pk

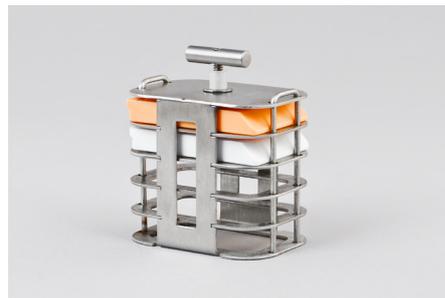
## Lynx I Accessories and Replacement Parts

300.0002	Disposable Basket Small, 100/pk
300.0003	Disposable Basket Large, 100/pk
300.0005	Disposable Basket, Lid, 100/pk
300.0196	Disposable Basket, 8 Segment, 100/pk
300.0036	Disposable Vials, 100/pk
300.9011	Loading Jig, each
300.9017	Vial Lid Assembly, each
300.9010	Basket Stem & Foot Assembly, each
306.0830	Key, each
300.0041	Specimen Record Pad 3&4 Div., each
300.8041	Exhaust Hose, 3 meter, each
300.9014	Heater/Cooler, each
300.9022	Turntable, each
300.0140	Disposable Vial Cap, 100/p
300.9023	Vial Retaining Band, each
300.9513	Specimen Record Pad 8 Div, each

## User Replaceable Parts

300.9500	Assembly Heater/Cooler, each
300.0015	Cap (TurnTable Locking), each
300.9123	Extra Large Basket, each
300.0008	Location Pin, each
300.8105	Printer Data Cable, each
300.9100	Starter Kit, each
300.0139	User Manual, each
300.9016	Vial Seal Assembly, each

All of the above accessories are available for purchase separately upon request. Please call us for more information.



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