

Revos™ Tissue Processor

Technical Specifications



EpreDia Revos™ Tissue Processor combines rapid tissue processing with simple operation, reagent management and custom programming capability.

The Revos Tissue Processor features a state-of-the-art canted chamber that rotates back and forth to enhance reagent distribution. This unique method helps decrease the time it takes to process tissue samples and does not require heat.

Up to 300 cassettes can be processed at any one time in standard baskets. Optional mega baskets allow up to 42 Super Mega Cassettes to be processed simultaneously. Revos can process various types and sizes of tissue.

Significant reagent cost savings

Alcohol quality measurement enables you to extend your reagent life and provides significant cost savings.

Automatic reagent rotation further extends reagent life using a proven system.

Triggers for reagent rotation can be based on days of the week, usage counts or alcohol quality (influenced by the total number of cassettes processed).

Product details

Revos™ Tissue Processor	A84100001	Base Unit
Revos™ Tissue Processor	A84100001ATC	*Line Conditioner included

“EpreDia recommends ensuring that EpreDia instrumentation have a line conditioner to protect equipment from power surges, correct voltage and waveform distortions, and remove external electrical noise with the intent to solve problems before they occur.”

Mechanical Specifications

Dimensions (D x W x H)	Imperial (inches)	Metric (cm)
Height to working area (with tray)	22.8 x 33.4 x 42.5	58 x 85 x 108
Height to top of monitor	22.8 x 33.4 x 54	58 x 85 x 137
Weight	Imperial (lbs.)	Metric (kg)
With no reagents	363	165
With typical reagents	529	240
Maximum working pressure	0.2 bar (g)	

Electrical Specifications

Power Supply Voltages	100 - 240 VAC
Frequency	50/60 Hz
Power	1300 VA (maximum) 300 VA (typical)
Battery Backup Power	3 hours

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Environmental Specifications

For Indoor Use Only

Temperature (operating limits)	+5°C to +40°C (+41°F to +104°F)
Temperature (recommended operation)	+15°C to +30°C (+59°F to +86°F)
Temperature (transit/storage)	-25°C to +55°C (-13°F to +131°F)
Humidity	Maximum 80% RH at 31°C (88°F) decreasing linearly to 50% RH at 40°C (104°F)
Altitude	Up to 2000 m above sea level (6500 feet)
Pollution Degree	2
Over Voltage Category	II
Noise Level	<70dBA

Interface Connections

Remote Alarm	24 V DC, 3A max, operation non-powered output, protection for overtemperature, overpressure and overeating
LIMS	Serial RS232
Remote Access	Virtual Network Computing (VNC) via RJ45

Instrument Specifications

Total cassettes on board	Max. 300 standard cassettes in the organized baskets or 42 super mega cassettes in the mega baskets
Number of reaction chamber	1
Number of baskets per chamber	6 "Organized" baskets (50 standard cassettes or 7 super mega cassettes per basket)
Basket design	Organized basket with built in space for fluid movement between cassettes
Chamber agitation	Canted rotation
Agitation mode	Constant vacuum, cycled vacuum, cycled pressure
Wax heating temperature	45°C to 65°C
Reagents heating temperature	Ambient to 55°C (Fixative 65°C, Dehydrant & Solvents 55°C)
Reagents preheat	Up to 35°C for alcohol and xylene
Cleaning reagent heating temperature	=<65°C
Chamber level sensor	Three optical IR sensors
Wax tank level sensor	3 sets Temperature sensors
Retort lid feature	Transparent lid, unique feature to visualize tissue processing
Temperature of retort lid	Ambient up to 65°C
Number of process and flush programs	10 Processes(4 preprogrammed) 6 flushes (2 preprogrammed)

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Example Protocols Actual optimized times may vary

Name	Dimensions	Duration	Cassette Type
Routine surgical	3 x 20 x 20 mm	5 hr	Standard
Rapid biopsy	1 x 1 x 20 mm & 3 x 1 x 20 mm	2 hr	Biopsy
Thick surgical	5 x 20 x 20 mm	7 hr	Standard
Large surgical	5 x 45 x 60 mm	15 hr	Mega

Paraffin Wax and Reagent Stations Specifications

Number of wax tanks	3 Wax tanks (5.6L), 1 Waste wax tray/drawer (5L) for ease of exchange and disposal
Reagent Stations	16 Reagent bottles (5L) <ul style="list-style-type: none"> - 6 Dehydrants - 3 Clearants - 2 Fixatives - 2 Exchange bottles - 3 Cleaning reagents

Reagent Management System (RMS)

Number of density meter	1 for measuring the in-process specific gravity of alcohol <i>(Note: factory default value for the A1 Quality Threshold is approximately 45%).</i>
Paraffin and reagent rotation prompts(options)	<ul style="list-style-type: none"> - A1 Alcohol Quality(Recommended) - Days of the weeks - Usage counts
RFID Reagent tracking system	Scan RFID on the Alcohol and Xylene bottles to track usage and lot number.
Discarding waste wax	Single use waste wax drawers for end user safety

Fume Control Specifications

Downdraft ventilation on the retort	U.S. Patent 6465245 European Patent 1279444
Number of onboard filters	1 Xylene Neutralizing filters (Activated Carbon) <ul style="list-style-type: none"> - Part #: 9990610 and 7411258 2 Formaldehyde Neutralizing filters (Potassium Permanganate) <ul style="list-style-type: none"> - Part #: 9990612 and B9990612CS
External ventilation: Optional	Maximum flow rate of extraction 33 m3/hr.

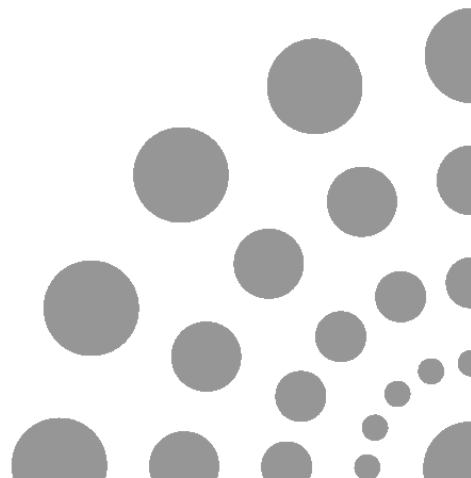
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Additional Information

Manufactured by	Shandon Diagnostics Limited, a subsidiary of Epredia														
Country of Manufacture	UK														
Compatible Consumables	<table border="1"> <thead> <tr> <th>Type</th> <th>Approved Reagents</th> </tr> </thead> <tbody> <tr> <td>Fixatives</td> <td> <ul style="list-style-type: none"> 10% neutral buffered formalin (phosphate buffers) Richard-Allan Scientific Pen-Fix </td> </tr> <tr> <td>Dehydrants</td> <td> <ul style="list-style-type: none"> Ethanol Reagent grade alcohol (RGA) / industrial methylated spirit (IMS) – up to 5% methanol in ethanol Isopropyl alcohol Richard-Allan Scientific Flex 100 (up to 40% methanol in isopropyl alcohol) </td> </tr> <tr> <td>Clearants</td> <td> <ul style="list-style-type: none"> Xylene Toluene Shandon Xylene Substitute Richard-Allan Scientific Clear-Rite 3 </td> </tr> <tr> <td>Infiltrants</td> <td> <ul style="list-style-type: none"> Shandon Histoplast Shandon Precision Cut Richard-Allan Scientific Histoplast PE Richard-Allan Scientific Histoplast LP RA Lamb VAS Richard-Allan Scientific Type 1, Type 3, Type 6, Type 9, Type L and Type H </td> </tr> <tr> <td>Flush</td> <td> <ul style="list-style-type: none"> Any of the named clearants (max 65° C) Any of the named dehydrants Water </td> </tr> <tr> <td>Surface Cleaning</td> <td> <ul style="list-style-type: none"> Sodium hypochlorite (10% in water used at ambient temperature) </td> </tr> </tbody> </table>	Type	Approved Reagents	Fixatives	<ul style="list-style-type: none"> 10% neutral buffered formalin (phosphate buffers) Richard-Allan Scientific Pen-Fix 	Dehydrants	<ul style="list-style-type: none"> Ethanol Reagent grade alcohol (RGA) / industrial methylated spirit (IMS) – up to 5% methanol in ethanol Isopropyl alcohol Richard-Allan Scientific Flex 100 (up to 40% methanol in isopropyl alcohol) 	Clearants	<ul style="list-style-type: none"> Xylene Toluene Shandon Xylene Substitute Richard-Allan Scientific Clear-Rite 3 	Infiltrants	<ul style="list-style-type: none"> Shandon Histoplast Shandon Precision Cut Richard-Allan Scientific Histoplast PE Richard-Allan Scientific Histoplast LP RA Lamb VAS Richard-Allan Scientific Type 1, Type 3, Type 6, Type 9, Type L and Type H 	Flush	<ul style="list-style-type: none"> Any of the named clearants (max 65° C) Any of the named dehydrants Water 	Surface Cleaning	<ul style="list-style-type: none"> Sodium hypochlorite (10% in water used at ambient temperature)
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Country of Consumable Manufacture	USA														



Rapid processing of fatty tissues

Tissue Processing using EpreDia™ Revos™, which does not require defatting pre-treatment, is considered to **speed up specimen preparation of fatty tissues such as breast specimens.**

Investigators examined the defatting effect of Revos, an automated tissue processor with a canted chamber, and its usefulness for the preparation of embedded samples of fatty (adipose) tissue.

High-quality FFPE specimens of fatty tissue are possible when using a **Revos tissue processor.**

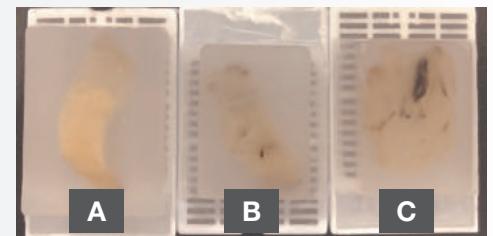


The automated tissue processor, **EpreDia Revos**, used in this study, has a canted chamber, allows sufficient penetration of the process reagent into specimens repeatedly immersed and removed from the reagent solution.

This study demonstrates that this method facilitates the penetration of reagent solutions into the tissues and promotes the replacement of reagents.

Defatting Effect of Automated Tissue Processor with Canted Chamber (Revos)

Shinya Abe and Tomohiro Yoshinaga, EpreDia Pathology Business Department, PHC Corporation; Masanobu Kitagawa, Miori Inoue, and Kohei Yamamoto, Department of Comprehensive Pathology, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University



Paraffin blocks of breast tissue specimen, prepared with:

- A Conventional tissue processor without defatting pre-treatment
- B Conventional tissue processor with defatting pre-treatment
- C Revos (without defatting pre-treatment).

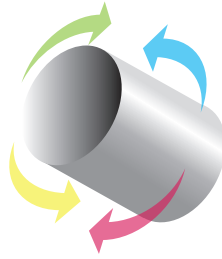
When the specimen was processed using Revos, the characteristic yellow tone of fat tissue faded and the tissue was transparent, even without defatting pre-treatment.

EpreDia Revos Tissue Processor

- Quality
- Consistency
- Ease of use



Rapid processing



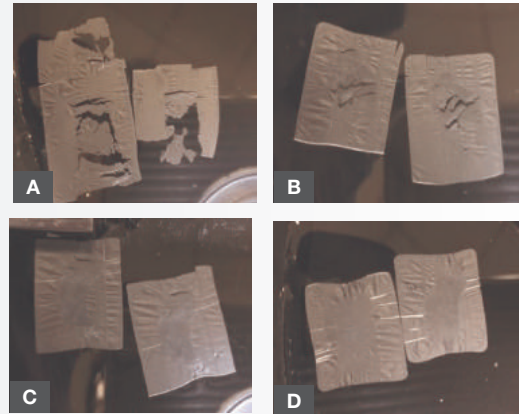
The Revos tissue processor's unique, **canted chamber enhances reagent distribution, reduces tissue processing time**, and allows for **high-quality processing results**.

The Revos processor has a canted chamber, which allows sufficient reagent penetration into specimens repeatedly immersed and removed from the reagent solution.

It is known that **this method facilitates the penetration of reagent solutions into the tissues and promotes the replacement of reagents.**

The study suggests that automated tissue processors with a canted chamber provide appropriate agitation of tissue from which water trapped in fat is replaced by a penetrating reagent and removed, resulting in adequate tissue dehydration.

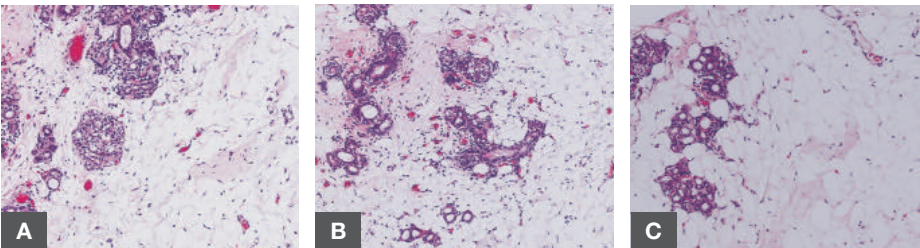
Specimens prepared using the EpreDia Revos tissue processor showed fewer cracks even without defatting pre-treatment.



This section of breast tissue prepared with:

- A, B** Conventional tissue processor (without defatting pre-treatment).
- C** Conventional tissue processor (with defatting pre-treatment).
- D** EpreDia Revos tissue processor (without defatting pre-treatment)

H&E staining was performed on each specimen. The specimen prepared using Revos had only minor cracking, resulting in better orientation of the entire specimen.



H&E staining of a breast tissue specimen prepared with:

- A** Conventional tissue processor (without defatting pre-treatment).
- B** Conventional tissue processor (with defatting pre-treatment).
- C** EpreDia Revos tissue processor (without defatting pre-treatment)

To learn more about the EpreDia Revos instrument's unique processing solution visit [epredia.com](https://www.epredia.com) or contact your sales representative for more information

 Enhancing precision cancer diagnostics

Ensure Nucleic Acid Integrity for Accurate Molecular Results

The Revos Tissue Processor prepares your samples for molecular test success

Molecular testing results, as with Next Generation Sequencing (NGS), can be inaccurate or incomplete when done on samples from tissue processors that use added-heat technologies to speed their results. The new EpreDia™ Revos™ Tissue Processor overcomes this challenge with its unique canted-chamber design – the only rapid tissue processor on the market of this kind – that allows for rotational agitation within the chamber, processing seven times faster than the traditional processor without the need for added heat.

Through a recent internal study, we demonstrate how the ambient-temperature rapid processing with Revos allows for superior quality sample preparation and molecular testing results compared to added-heat processing. In this study, we compared high heat with ambient heat, as well as length of processing time. The tissues were trisected and processed in one of three protocols:

- Using Revos with ambient temperatures for 5 hours total time
- Using a traditional processor at 45 °Celsius for 10 hours total time
- Using a traditional processor at 55 °Celsius for 10 hours total time

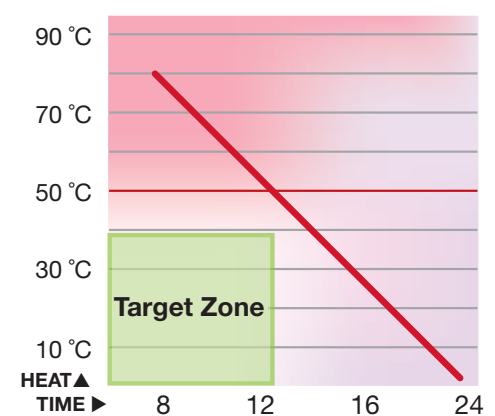
The results? On average, the lower time and lower heat process of Revos delivered better RNA and DNA yields. Reducing heat and length of reagent time contribute to nucleic acid preservation, thus enabling higher quality molecular testing results.

Discover more on the benefits of the Revos Tissue Processor at EpreDia.com/Revos



epredia
LiveLab

Experience Revos for yourself, safely and conveniently with the **EpreDia LiveLab**. If you are interested in a LiveLab session, please reach out to your EpreDia Representative.



Positively impacting tissue processing quality

Reducing heat and time is beneficial to producing high-quality results for all downstream testing.

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Enhancing precision
cancer diagnostics

Reduction in Tissue Processing Turnaround Time Without the Use of Heat



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Tissue processing is the procedure in anatomy pathology to replace the water in tissue with paraffin. This critical step in the process can preserve the tissue long-term. However, tissue processing is time-consuming and often requires more than 14 h. Revos innovative features, such as the canted retort with patented rotational agitation, enable tissues to be processed more rapidly while maintaining molecular quality.

Epredia™ Revos™, an automated tissue processor that was designed for all types of tissue processing. Revos processed a wide variety of surgical specimens with grossing thicknesses ranging from 2 mm to 8 mm in this study. The results indicated that Revos optimally processed 2 mm of non-fat-rich tissues and 3 mm of all tissues utilizing protocols ranging from two to five hours, including a 7-hour protocol with surgical specimens up to 6 mm in thickness, optimally processed with a 7-hour protocol. All tissues processed showed good H&E and Immunohistochemical stains. The protocol of rapid tissue processing using the Revos automated tissue processor has reduced turnaround time by approximately 50%.

Heat is commonly used to process tissues at a faster rate. However, heating over 35 °C could adversely damage the protein (Horobin et al., 1998), DNA, and RNA of tissues (Srinivasan et al., 2022). Interestingly, unlike other conventional rapid tissue processors, which apply heat to 90 °C, the Revos automated tissue processor did not solely depend on heat to achieve rapid processing.

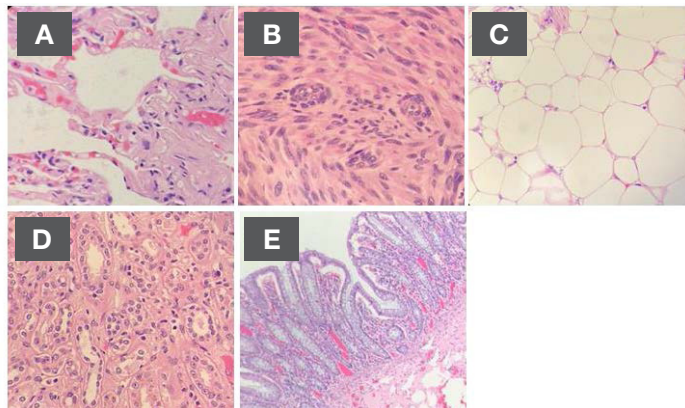
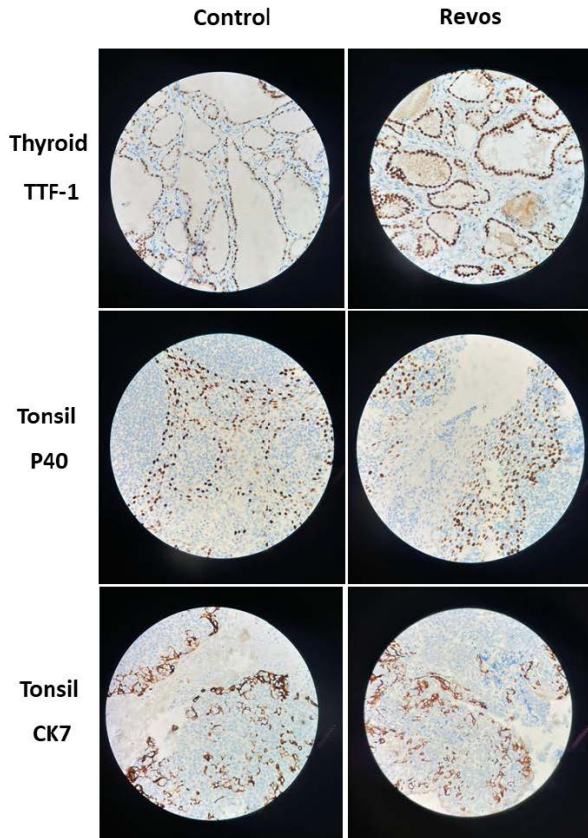


Figure 1. H&E staining of tissues that were processed with 7h protocol. The tissues were (A) lungs, (B) fibroid, (C) lipoma, (D) kidney and (E) colon. All tissues were stained well and shown good microscopic structures.

Rapid processing



The Revos tissue processor's unique, **canted chamber** enhances reagent distribution, reduces tissue processing time, and allows for **high-quality processing results**.



The Revos tissue processor's design is optimized for both routine and rapid processing.

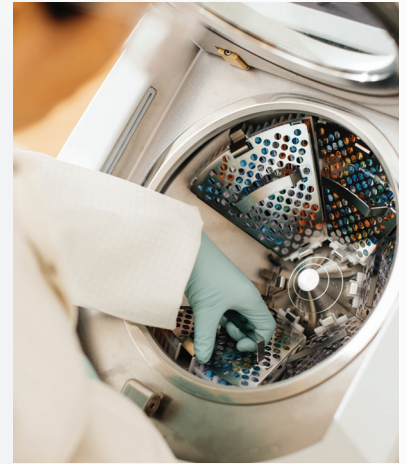


Figure 2. The IHC staining of control tissues that were routinely used by the IHC team at Sunway Medical Centre Laboratory (namely Control) and IHC staining of tissues processed using the EpreDia Revos tissue processor (namely Revos). The IHC staining location and intensity were insignificantly different between Control and Revos. The IHC result indicated that the effectiveness of EpreDia Revos automated tissue processor in preserving the protein structure and antigenicity of specimens.

EpreDia Revos Tissue Processor

- Quality
- Consistency
- Ease of use

To learn more about the EpreDia Revos instrument's unique processing solution visit [epredia.com](https://www.epredia.com) or contact your sales representative for more information

