

G E H E A L T H C A R E

SE 1200 Easy Breeze™

Air Gel Drying System

User Manual



GE imagination at work

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English

Important User Information

Please read this entire manual to fully understand the safe and effective use of this product.



The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the instrument.

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Pour une bonne compréhension et une utilisation en sécurité maximale, il convient de lire entièrement ce manuel.



Dans la documentation qui accompagne l'instrument un point d'exclamation dans un triangle équilatéral a pour but d'attirer l'attention de l'utilisateur sur des instructions importantes de fonctionnement ou de maintenance.

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Français

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Deutsch

Información importante para el usuario

Para comprender el producto y utilizarlo con seguridad es necesario leer este manual en su totalidad.



El signo de admiración en un triángulo equilátero en el manual, advierte al usuario sobre la presencia de instrucciones importantes de operación y mantenimiento del aparato.

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Español

Informazioni importanti per l'operatore

Per un utilizzo sicuro del prodotto, leggere attentamente l'intero contenuto del presente manuale.



Il punto esclamativo all'interno di un triangolo equilatero indica all'operatore la presenza di importanti istruzioni di funzionamento e manutenzione nella documentazione allegata al prodotto.

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Italiano

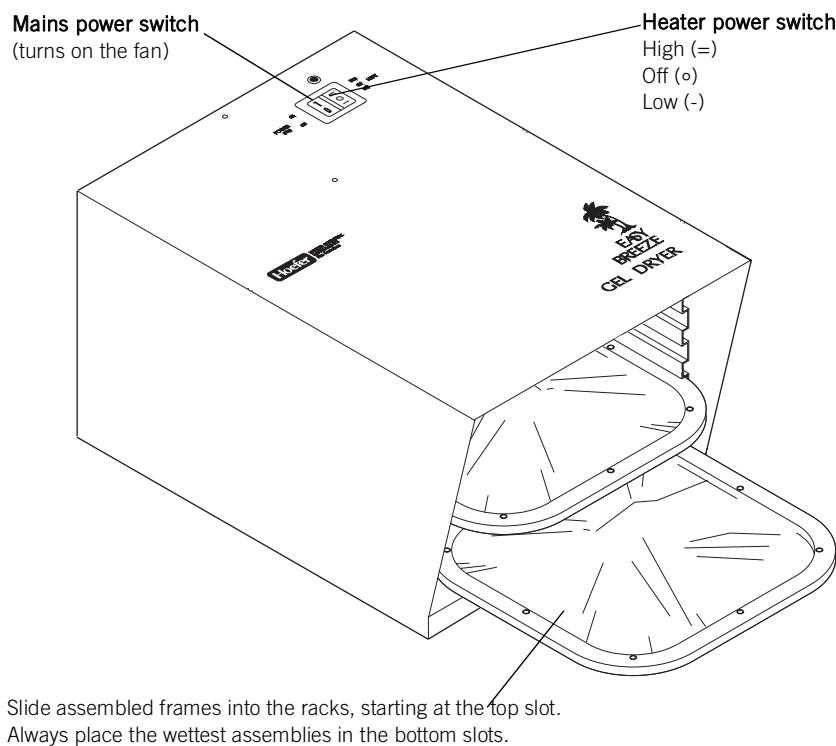
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Air Dryer Function and Description

The SE 1200 Easy Breeze Air Gel Dryer dries polyacrylamide gels by circulating air around gels that are supported on at least one side by semi-permeable cellophane. The dryer circulates air that is either at ambient temperature, or heated to ≤ 43 °C (low setting) or ≤ 54 °C (high setting). Two 20 cm x 20 cm drying frames and a loading platform (20 cm x 20 cm) are included. The dryer can hold up to six frames, and when fully loaded, the dryer can accommodate up to six 20 x 20 cm or twenty-four 8 x 10 cm gels. With the 20 cm x 25 cm accessory frames, the dryer can accommodate up to six 20 cm x 25 cm or thirty-six 8 cm x 10 cm gels.

Figure 1 Main components of the SE1200 Easy Breeze™



Unpacking

Unwrap all packages carefully and compare contents with the packing list, making sure all items arrived. If any part is missing, contact your local sales office. Inspect all components for damage that may have occurred while the unit was in transit. If any part appears damaged, contact the carrier immediately. Be sure to keep all packing material for damage claims or for repacking should it become necessary to return the unit.

Specifications

115 V~ model

Max. wattage	1325 W
Max. voltage	105 - 125 V ~
Frequency	57 -63 Hz

230 V~ model

Max. wattage	1325 W
Max. voltage	210 - 250 V ~
Frequency	47 -63 Hz
Environmental operating conditions	Indoor use 4 – 40 °C Humidity up to 80% Altitude up to 2000 m
Installation category	II
Pollution degree	2
Dimensions	width x depth x height 32 x 51 x 27 cm (12.5 x 20 x 10.5 in.)
Product certifications	EN61010-1, UL3101-1, CSA C22.2 1010.1, CE

This declaration of conformity is only valid for the instrument when it is:

- used in laboratory locations, and
- used as delivered from GE Healthcare, except for alterations described in the User Manual.

Important information

Dryer Placement

- To ensure enough air flow, position the dryer so that both the front of the dryer and air vents in the back are completely unobstructed.
- It is advisable to run the dryer under a fume hood when drying gels treated with organic solvents or any other potentially hazardous material.
- Do not place the dryer near flammable liquids.

Dryer Safety

- The dryer's internal safety switch shuts off the heating element (and the heater indicator lamp) when the dryer overheats. Dryer operation will resume once the unit cools to operating temperature.

If the safety switch is tripped, that is, the heater indicator lamp is not lit when the dryer is set to the low or high setting, make sure both the front and back of the dryer are completely unobstructed. If this occurs more than once in the same day, call the GE Healthcare Technical Service Department.

- **The electric components in the power section must be kept dry.** Do not immerse any part of the dryer in water. Wipe away all residue from the dryer after each use. (Refer to the Care and Maintenance, page 11, for cleaning instructions.)
- If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Only accessories and parts approved or supplied by GE Healthcare may be used for operating, maintaining, and servicing this product.

Informations Importantes

Mise en Place du Sécheur

- Afin d'assurer une bonne circulation d'air, placer le sécheur de façon à ce que la partie frontale du sécheur et les orifices d'aération à l'arrière ne soient pas obstrués.
- Il est recommandé d'utiliser le sécheur sous une hotte aspirante durant le séchage de gels traités avec des solvants organiques ou tout autre produits potentiellement dangereux.
- Ne pas placer le sécheur près de liquides inflammables.

Sécurité

- L'interrupteur interne de sécurité éteint l'élément de chauffage et la lampe indicatrice de température lorsque le sécheur surchauffe. Le séchage continuera lorsque l'instrument refroidi à un niveau opérationnel.
Si l'interrupteur de sécurité est fautif, c'est à dire que l'indicateur de température ne s'allume pas lorsque le sécheur est réglé au minimum ou au maximum, vérifier que l'avant et l'arrière du sécheur ne sont pas obstrués. Si cela se produit plus d'une fois par jour, veuillez contacter le Service Technique à GE Healthcare.
- Les pièces électriques du générateur ne doivent jamais être mouillées. Ne submerger aucune pièce du sécheur. Essuyer tous les résidus dans le sécheur après usage. (Voir la section Care and Maintenance, page 11, pour l'entretien).
- Si l'instrument n'est pas utilisé en conformité avec les recommandations du fabricant, les protections de sécurité qui équipent cet appareil peuvent être rendues inéfficaces.
- Seulement les accessoires et pièces détachées approuvés ou fournis par GE Healthcare sont recommandés pour l'utilisation, l'entretien et la réparation de cet appareil.

Operating Instructions

Setting up the Dryer

1. Place the dryer in a well ventilated area such as under a fume hood.
2. Plug the mains power cord into a properly grounded receptacle. The mains power switch operates the fan, which circulates air that is either at ambient temperature or heated if the heater is switched on. The three heat settings are:
 - = high setting $\cong 54$ °C
 - o ambient temperature
 - low setting $\cong 43$ °C

The indicator lamp, located next to the heater switch, lights up when the low or high setting is chosen.

Preparing the Gel for Drying

Listed below are recommended procedures to ensure optimum drying results for gels of different thicknesses and acrylamide concentrations. Thin gels (0.75 mm or less) are recommended for best results.

This drying method is not recommended for:

- Agarose gels, which are generally too thick.
- Polyacrylamide gels attached to GelBond® film.

Thin Gels (Gel thickness ≤0.75 mm—or—gel thickness >0.75 mm and acrylamide ≤10% T)

1. Fix and stain the gels according to your preferred protocol.
2. Final soak solution.

Coomassie Blue. The final destaining solution should consist of 7% acetic acid, 5% methanol, and 0.5–2% glycerol. (Glycerol maintains the flexibility of the gel, making it less likely to crack.) Equilibrate the gel in this solution for a minimum of 2 hours, but preferably overnight. After destaining, rinse the gel with distilled water for 1–2 minutes to remove excess acetic acid.

Silver stain. Add 0.5–2% glycerol to the final water rinse.

Fluorography. We recommend the fluorography agent Resolution®. (Follow the manufacturer's instructions.) Other fluorography agents include EN³HANCE® and sodium salicylate. For these, add 0.5–2% glycerol to the final cold water precipitation step.

3. Load the gel onto the drying frame as described on page 8.

Thick Gels (Gel thickness >0.75 mm and acrylamide >10% T)

1. Fix, stain and destain the gel according to your preferred protocol. Use a final destaining solution of 7% acetic acid and 5% methanol.
2. Final soak solution.

Coomassie Blue. After the final destain, soak the gel in a solution of 35% ethanol and 0.5–2% glycerol for 1–2 hours. (Ethanol dehydrates the gel, which minimizes cracking during drying. Do not place the gel in the ethanol solution longer than 2 hours, as ethanol will begin destaining the gel.)

Silver stain. Add 0.5–2% glycerol to the final water rinse.

NOTE If you soak gels in a solution of ethanol and glycerol, such as the preserve solution in the PlusOne Protein Silver Staining Kit sold by GE Healthcare, you can dry the gels after a 2-hour soak.

Fluorography. We recommend the fluorographic agent Resolution. Follow the manufacturer's instructions with the following exception: for the final water soak, use a 35% ethanol and 2% glycerol cold water soak instead. Other fluorography

Note Unless gel cracking is a recurring problem, prevent gels from becoming tacky by using 2% glycerol or less in the gel soaking solution.

agents include EN3HANCE™ and sodium salicylate. For these, use 1% glycerol in the final cold water soak to minimize gel cracking.

3. Load the gel onto the drying frame as described below.

Assembling the Gel Drying Stack

Gel frames that are delivered in the same package as the Easy Breeze are preassembled. When you order additional SE 1210 Series gel frames, you must install the eight knobs that lock the inner frame in place before they can be used.

Working with Gel Frames That are Not Preassembled

- Screw the eight black knobs into the outer gel frame until they fit just short of snug. (See Figure 2.) Continue with step 1 of the assembly instructions.

Working with Preassembled Gel Frames

- Turn each black knob a one-quarter turn to release the inner frame. (See Figure 3.) Gently pop the inner frame out of the outer frame and continue with step 1 of the assembly instructions.
1. Place the inner frame on the loading platform with the side labeled UP facing up.
 2. Immerse a sheet of porous cellophane in distilled water and soak for several minutes. Place the fully hydrated sheet over the inner frame on the loading platform. Pour 5–10 ml of distilled water onto the sheet.
 3. Place the gel(s) on the cellophane. Remove all bubbles by carefully pushing them toward the edge of the gel with your gloved finger.
 4. Pour 5–10 ml of distilled water around the edges of and onto the gel. Cover the gel with a fully hydrated sheet of either cellophane or mylar:

Cellophane. Use for fluorography, thick gels, or to preserve a gel. Fully hydrate a sheet of porous cellophane in distilled water and place it over the gel. (Cellophane does not quench the signal of fluor-treated gels.)

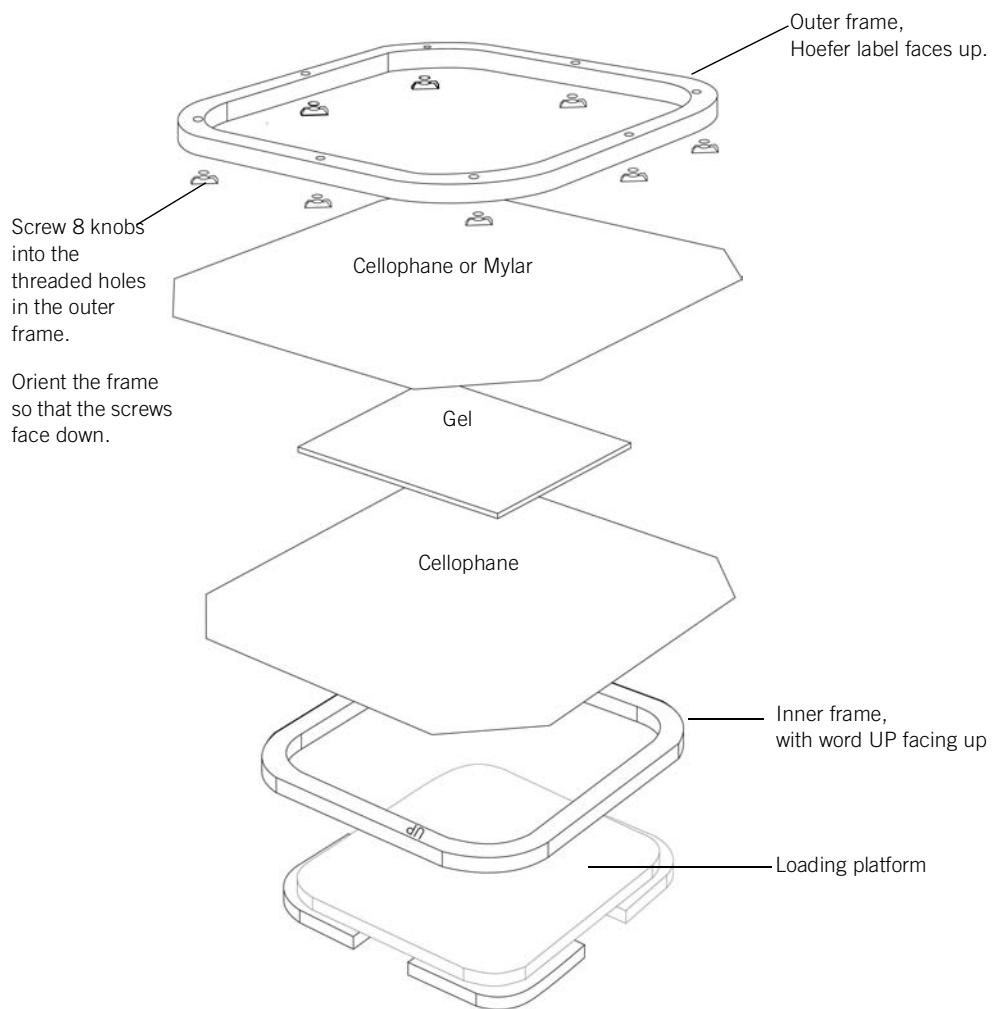
Mylar. Use for contact autoradiography for gels \leq 1 mm. Fully hydrate a sheet of Mylar in distilled water and place it over the gel. Once the gel is dried, the Mylar peels off. Place the uncovered side against the X-ray film.

IMPORTANT Remove all bubbles trapped under the top sheet by displacing them with distilled water and pushing them to the edge of the gel with your gloved finger. Work from the center of a single gel or, if several gels are on the platform, work from the center of the frame toward the edge.

5. Position the outer frame—with the Hoefer label facing up and the locking knobs facing down—over the cellophane sheets and around the inner frame. Press down to engage the two frames. Applying pressure to opposite corners of the frame usually causes the frames to slip easily into place.

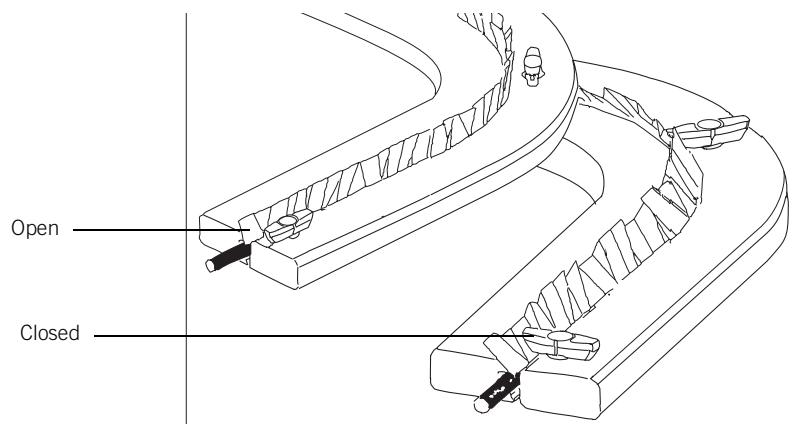
Operating Instructions

Figure 2 Frame parts and gel drying stack assembly (frame size 20 cm x 20 cm or 20 cm x 25 cm)



6. Turn the frame assembly over. Turn each knob $\frac{1}{4}$ turn so that the long edge is perpendicular to both frames. (See Figure 3.) This "locks" the two frames together, preventing slippage as the gel shrinks during drying.

Figure 3 Lock the frame
Flip the assembly over
and turn the knobs
perpendicular to the
frames.



Drying the Gels

1. Slide each frame assembly into the Easy Breeze dryer, driest assembly on top, knobs facing up. Turn on the power switch (-) and then set the heater temperature switch to the high (=), low (-), or fan only (o) setting.

Care and Maintenance

Cleaning

NOTE Never autoclave or heat any component above 55 °C.

After each use, wipe the dryer with a damp cloth. Clean each frame with mild soap and water, rinse thoroughly with water and distilled water, and allow to air dry. Never use abrasive cleansers on any part. Do not expose the frame to solutions or vapors of aromatic or halogenated hydrocarbons, ketones, esters, alcohols (over 30%), or concentrated acids (over 25%).

Changing the gasket

If the gasket on the inner frame becomes inflexible or no longer holds the gel stack tautly, remove it and install a new gasket, stretching it *slightly* around three sides and then rolling it into place on the fourth.

Changing fuses

NOTE Fuses protect equipment by disconnecting loads too large for the instrument's circuit design. Replace fuses only with identical fuse values.

115 V~ model: one F 12A 250V 3AG

230 V~ model: two T 6.3A 250V, 5 x 20 mm

1. **Caution!** Set the power switch to off and unplug the power cord before replacing the fuse.
2. Insert a small flat-blade screwdriver into the slot on the fuse module, depress slightly, and turn it $\frac{1}{4}$ -turn counterclockwise. The spring-loaded module cap will loosen and you can then pull the cap/fuse holder out.
3. Pull the fuse out of its holder and inspect. If the fuse element is burned or broken, replace the fuse with an identical type. If the fuse appears to be intact, check it with a multi-meter. (A reading of 1 Ω or less indicates the fuse is still usable.)
4. Insert the fuse into the holder and then insert this assembly back into the unit. Seat the module by inserting the screwdriver into the slot, pressing gently, and turning the cap $\frac{1}{4}$ -turn clockwise.
5. 230 V~ model: Repeat steps 2 to 4 for the second fuse.

Troubleshooting

Gel or cellophane cracks

All gels

- Handle the gel and cellophane with care. Fully hydrate the cellophane with distilled water just before use and avoid stretching it during assembly.
- If the cellophane is drying too quickly, instead of hydrating it in distilled water, soak it in the same glycerol solution used for the gel.
- Always remove all air bubbles before drying.
- Lower the heat setting.
- Load frame assemblies into the dryer from the top down. Avoid dripping onto a partially dried gel.

Gradient gels or gels ≥ 0.75 mm thick with acrylamide $\geq 10\%$ T

- Dehydrate the gel in 35% ethanol and 2% glycerol before drying. If gels still crack, increase the percentage of glycerol up to 5%.
- Note:** With a higher percentage of glycerol, a longer drying period is required. The gels may also be flexible and feel tacky when dry.

Fluor-treated gel

- Use cellophane instead of mylar.
- Use a thinner gel (≤ 0.75 mm)

Gel dries too slowly or not at all

Gel dries unevenly

- Rotate each frame 180 ° (front-to-back) every half hour.

Check the gel or stack

- Reduce the amount of glycerol to 0.5 to 2%
- Check that you are not using two sheets of Mylar. At least one sheet must be cellophane.

Check the heater

- Make sure the indicator lamp lights at the low heat or high heat settings. If it doesn't light or the heater does not heat, the safety switch may be tripped. Check that the front and back of the dryer are unobstructed and wait a few minutes for the dryer to cool, then resume heating.

Gel turns cloudy or white

Gels ≥ 0.75 mm thick with acrylamide $\geq 10\%$ T

- Reduce the percentage of ethanol to 30%.
- Do not soak the gel for more than 2 hours in the ethanol/glycerol dehydration solution.
- After Coomasie Blue staining, be sure to use final destain of 7% acetic acid and 5% methanol.

Dryer does not function

- Check that the power switch is on.
- Check that the power receptacle is properly grounded and in working condition.
- Check the fuses and replace, if necessary
- If the dryer overheats, make sure air can flow freely by checking that both the front and back are not obstructed. If the dryer overheats more than once in the same day, call the GE Healthcare Technical Service Department.

Visualization Notes

Direct Autoradiography

Prepare the gel in the usual manner and expose to film as directed with the instructions accompanying the film. Exposure times, especially for medium energy beta-emitters such as ^{14}C and ^{35}S can be quite long. For maximum sensitivity of these types of labels, use fluorography.

Fluorography

Fluorography intensifies a weak beta emission signal by impregnating the gel with a suitable fluor that converts beta emission from ^{35}S , ^{14}C , and ^3H into light. Drying the gel in cellophane does not quench this signal, but for ^3H , a very weak beta-emitter, up to 20% of the signal may be lost.

If using EN 3 HANCE or sodium salicylate as fluorography agents, include 0.5% to 2% glycerol in the cold water treatment prior to drying. Dehydration steps are not required for thinner, lower percentage gels, which are far less prone to cracking. If exposed to the maximum drying temperature ($\approx 54^\circ\text{C}$), these gels may form longer fluor crystals, resulting in higher background on X-ray exposures.

NOTE Certain fluorographic agent manufacturers specify temperatures higher than those reached in the Hoefer Easy Breeze (e.g. AutofluorTM [National Diagnostics] and Fluoro-HanceTM [Research Products International], which require up to 80°C to produce an optimum signal). This dryer is not recommended for such agents.

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Customer Service Information

Technical Service and Repair

GE Healthcare offers complete technical support for all our products. If you have any questions about how to use this product, or would like to arrange to repair it, please call or fax your local GE Healthcare representative.

NOTE Request a copy of the GE Healthcare "Health and Safety Declaration"

Form before returning the item. No items can be accepted for servicing or return unless this form is properly completed.

Ordering Information

	Qty	Code No.
Easy Breeze Air Gel Dryer		
Includes two 20 cm x 20 cm gel frames, one 20 cm x 20 cm loading platform, and 50 cellophane sheets.		
115 V~	1	80-6121-61
230 V~	1	80-6121-80
Replacement Parts: 20 cm x 20 cm frames and platform		
Cellophane sheets, 33 cm x 33 cm	50	80-6121-99
Mylar sheets, 33 cm x 33 cm	25	80-6122-18
Gel drying frame, 20 cm x 20 cm. Includes inner and outer frames, 8 black knobs and one O-ring sealing gasket. (Order loading platform separately.)	1	80-6122-37
O-ring sealing gasket, 20 cm x 20 cm frame	1	80-6122-56
Knobs, black	10	80-6122-75
Gel loading platform, 20 cm x 20 cm	1	80-6122-94
Outer gel drying frame and 8 knobs, 20 cm x 20 cm	1	80-6123-13
Inner gel drying frame, 20 cm x 20 cm, and one O-ring sealing gasket	1	80-6123-32
Replacement Parts: 20 cm x 25 cm frames and platform		
Cellophane sheets, 33 cm x 38 cm	50	80-6430-17
Mylar sheets, 33 cm x 38 cm	25	80-6429-98
Gel drying frame, 20 cm x 25 cm. Includes inner and outer frames, 8 black knobs and one O-ring sealing gasket. (Order loading platform separately)	1	80-6429-22
O-ring sealing gasket, 20 cm x 25 cm frame	1	80-6430-36
Knobs, black	10	80-6122-75
Gel loading platform, 20 cm x 25 cm	1	80-6429-41
Outer gel drying frame and 8 knobs, 20 cm x 25 cm	1	80-6430-74
Inner gel drying frame, 20 cm x 25 cm, and one O-ring sealing gasket	1	80-6430-55
Fuses		
115 V~ model, F 12A 250 V, 3 AC	5	80-6109-26
230 V~ model, T 6.3A, 250 V, 5 X 20 mm	5	80-6112-68