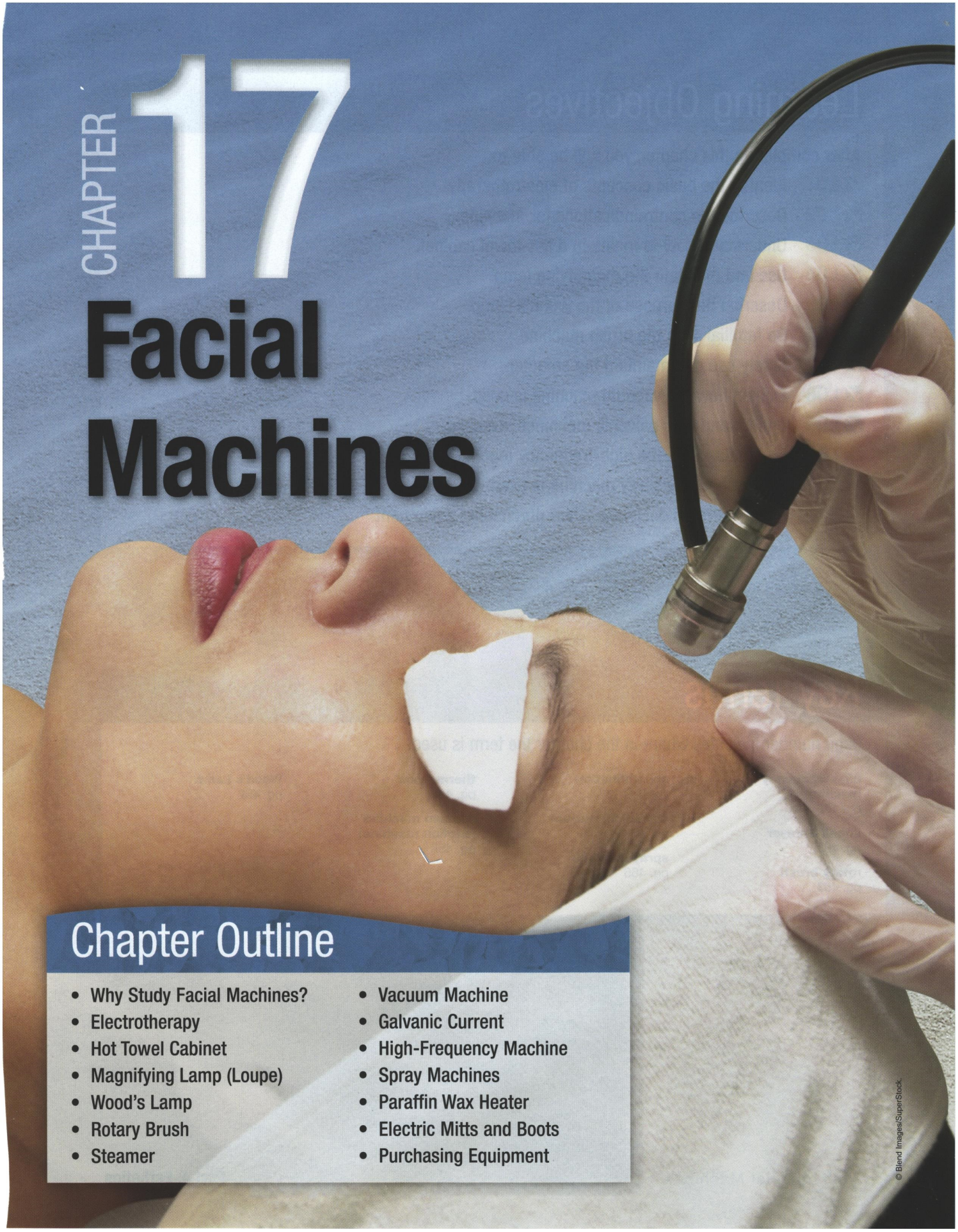
CHAPTER 17

Facial Machines



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Chapter Outline

- Why Study Facial Machines?
- Electrotherapy
- Hot Towel Cabinet
- Magnifying Lamp (Loupe)
- Wood's Lamp
- Rotary Brush
- Steamer
- Vacuum Machine
- Galvanic Current
- High-Frequency Machine
- Spray Machines
- Paraffin Wax Heater
- Electric Mitts and Boots
- Purchasing Equipment

Learning Objectives

After completing this chapter, you will be able to:

- ☑ **L01** Identify the basic concepts of electrotherapy.
- ☑ **L02** Describe the contraindications for machines.
- ☑ **L03** Understand how to maintain a hot-towel cabinet.
- ☑ **L04** Use and maintain the magnifying lamp.
- ☑ **L05** Describe the purpose of the Wood's Lamp.
- ☑ **L06** Be familiar with the brush machine.
- ☑ **L07** Safely use and maintain the steamer.
- ☑ **L08** Explain how the vacuum machine is used.
- ☑ **L09** Understand how galvanic machines are used.
- ☑ **L010** Be familiar with the high-frequency machine.
- ☑ **L011** Explain how the spray machine is used.
- ☑ **L012** Make informed decisions when purchasing equipment.

Key Terms

Page number indicates where in the chapter the term is used.

high-frequency machine
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Lucas Sprayer
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rotary brush
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saponification
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sinusoidal current
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spray machine
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thermolysis
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vacuum machine (suction machine)
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Wood's Lamp
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There are a variety of useful machines that will enhance the esthetician's services. Each machine has a specific benefit for the skin and makes clients feel as though they are receiving a specialized service. In this chapter you will learn how these tools are integrated into the facial experience. Although facial treatments can be performed effectively without electrical devices, even better results can be achieved with electrical tools and electrotherapy.

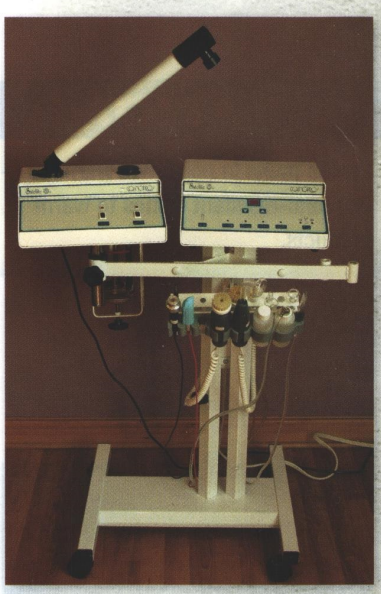
Why Study Facial Machines?

Estheticians should study and have a thorough understanding of facial machines so that they can operate the machines safely, provide the best results for their clients, and enhance their service menu.

- It is vital to understand how to safely use each machine and the potential contraindications in using machines.
- There are a variety of useful machines and new high-performance tools that will enhance the esthetician's services and it is important to be able to explain the benefits of each machine.
- To maintain professional credibility, estheticians must continue to be educated about the latest methods in skin care as new machines and technology emerge each year.
- Investing in high-quality machines will increase both your credibility and potential business revenue.

Electrotherapy

Electrotherapy is the use of electrical devices for therapeutic benefits. It is important to be familiar with machines even if you choose not to work with them. Electrical devices enhance the facial by making it easier to give a skin analysis, achieve better product penetration, or by exfoliating the skin. These tools are especially effective for more challenging skin conditions. Machines can be purchased separately or as multifunctional units with many of the modalities (machines) all on one unit (Figure 17–1).



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▲ Figure 17–1
Multifunctional machines.

Estheticians must continue to be educated about the latest methods in skin care, while being cautious of expensive, trendy machines. Lasers, light therapy, microdermabrasion, and microcurrent are some of the advanced machines discussed later in Chapter 19, Advanced Topics and Treatments. Today's clients are well educated and have greater access to information, and they will expect you to be knowledgeable about all skin care topics, trends, and tools. To maintain professional credibility, it is important that you are aware of current technology. ☑ L01

Contraindications

There are several contraindications for electrotherapy. These include the standard facial contraindications discussed in previous chapters. (See Chapter 12, Skin Analysis and Chapter 15, Facial Treatments.)

To prevent physical harm, some electrotherapy machines should never be used on: heart patients, clients with pacemakers, metal implants, or braces; pregnant clients; clients with epilepsy or seizure disorders; clients who are afraid of electric current; or those with open or broken skin.

If you ever have any doubts about whether the client can have electrotherapy safely, request that the client get a note from her or his physician approving electrotherapy treatment. Additionally, have clients remove jewelry and piercings before using electrical devices such as the galvanic machine. Use all machines as directed by the manufacturer, because similar machines may have different mechanisms and work differently. Most machines are used for approximately 5 to 10 minutes in a service. ☑ L02

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▲ Figure 17–2
The towel warmer.

Hot Towel Cabinet

Towel warmers, called *hot-towel cabinets* or *hot cabbies*, are commonly used in the treatment room (Figure 17–2). Hot towels are used for both face and body treatments. Towels provide a warm, soothing, and softening benefit to the skin and are utilized for removing facial masks and softening the skin before doing extractions. Cotton pads and products can also be warmed in a towel warmer or specialized product warmer. Some towel warmers are equipped with ultraviolet lamps. UV lamps in towel warmers may reduce bacteria but are not effective for disinfection.

CAUTION!

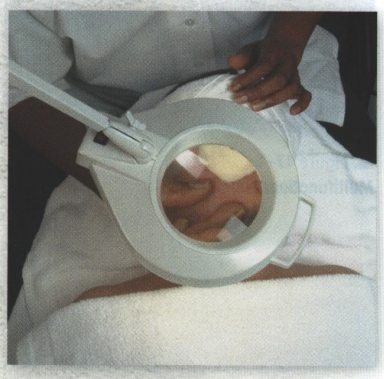
Plastic melts in hot-towel warmers—use heat-resistant dishes to warm products.

Hot Cabinet Maintenance

It is important to keep the hot-towel cabinet clean and free from mold or mildew. After each client session, clean the inside of the cabinet with a topical disinfectant. Give towel warmers a thorough cleansing at the end of the day. Leave the door open at night to allow the cabinet and rubber seals to dry thoroughly. Also empty and clean and disinfect the water catchment tray underneath the cabbie daily. ☑ L03

Magnifying Lamp (Loupe)

The magnifying lamp (also referred to as a *loupe*; pronounced "loop") magnifies the face to help the esthetician treat and analyze the skin (Figure 17–3). The lamp uses a cool fluorescent light bulb. The magnifying lamp has various powers of magnification known as *diopters*. Most lamps in the industry come in values of 3, 5, or 10 diopters which means 30 times the power magnification, 50 times the power magnification, or 100 times the power magnification respectively.



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▲ Figure 17–3
The magnifying lamp is used to analyze the skin.

Five diopters is the most common magnification. A good-quality light should have a clear lens, free of distortion. Since you are using this light often, any distortion will add strain to your eyes and make it more difficult to see the skin.

Lamps are designed to sit on a floor base or attach directly to a facial cart. The base that it sits on may be sold separately from the lamp itself. Carts are not as mobile, so floor stands are preferred. It is worth getting a quality lamp that has good knobs that stay tight instead of one that hinges, as it will last longer due to all of the constant adjustments that are used in positioning the lamp correctly for each client and treatment.

It is important to loosen the adjustment knobs before moving the lamp arms up or down. If you force the lamp into positions without loosening the knobs first, you will wear out the light and then it will not stay in position at all. To avoid overreaching and hurting your back or wrists, you may need to stand up to move and adjust the lamp.

CAUTION!

Loosen the adjustment knobs on the lamp before moving the lamp arms up or down. If you force the lamp into positions without loosening the knobs first, you will wear out the light and then it will not stay in position at all.

Other skin analysis devices include handheld magnification tools, head visors, and cameras that view the skin at up to 200X magnification. Other tools are available to read the skin's hydration level. These can be hooked up to a computer and the data can be stored and viewed on the screen. These devices are especially useful to track treatment progress in medical aesthetics or when performing advanced treatments such as peels or microdermabrasion.

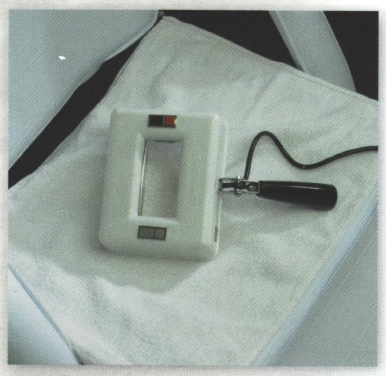
Magnifying Lamp Procedure

The procedure for using a magnifying lamp is as follows:

1. Place eye pads over the eyes to protect the eyes from the bright light. Make sure your eye pads are not too large, or they may block the eye area you need to analyze or treat.
2. Position the lamp where you want it during the room setup. Turn on the light and carefully bring it back over the face. If necessary, move it away from the face and loosen the adjustment knob to change the light's angle so you can see through it comfortably.
3. Once the lamp is adjusted, bring it back over the face. Avoid startling the client by suddenly shining the light directly into the eyes, or by losing control of the lamp.
4. Gently move the client's head back and forth to examine the sides of the face.

Magnifying Lamp Maintenance

Magnifying lamps can last up to 10 years if they are well constructed and maintained. Conversely, if they are abused and roughly handled, their longevity is compromised. If problems do occur, they typically involve the adjustment arm. The spring on the arm can wear out and may break if not used with care. Some less expensive magnifying lights have hinges rather than knobs that adjust, but these usually wear out



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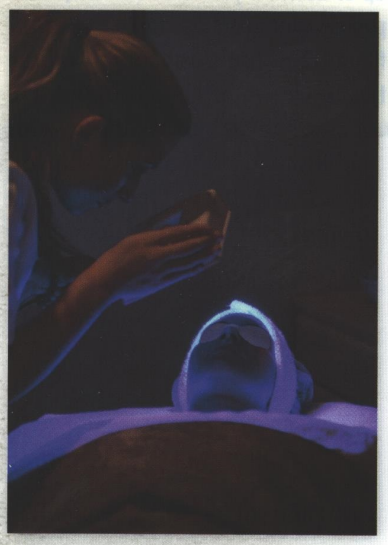
▲ Figure 17–4
The Wood's Lamp illuminates skin care problems that are ordinarily invisible to the naked eye.



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▲ Figure 17–5
Using the Wood's Lamp for skin analysis.

fyi

Pigmentation that shows up under the Wood's Lamp cannot be completely lightened with regular exfoliation treatments, because it is in the dermis. Only pigmentation on the surface of the skin can be potentially lightened by exfoliation treatments and lightening products.

faster. Periodically check the screws around the light to ensure that they are not loose. The arm and bolt underneath the base may also need tightening. A simple tool box with screw drivers and wrenches is handy to have in the facility.

- To clean the lens, turn off the lamp and spray it with a disinfectant and wipe with a soft cloth. Avoid using paper products because paper towels or tissues will scratch the lens.
- Clean and disinfect the entire lamp and base with a disinfectant.

☑ L04

Wood's Lamp

The **Wood's Lamp**, developed by American Physicist Robert Williams Wood, is a filtered black light that is used to illuminate fungi, bacterial disorders, pigmentation problems, and other skin problems (**Figure 17–4**). The Wood's Lamp allows the esthetician to conduct a more in-depth skin analysis, illuminating skin problems that are ordinarily invisible to the naked eye. Under the lamp, different conditions show up in various shades of color. For instance, the thicker the skin, the whiter the fluorescence will be. Pigmentation that shows up under the Wood's Lamp cannot be completely lightened with products or treatments, because the pigmentation is in the dermis.

Following are some examples of skin conditions and how they appear under the Wood's Lamp:

- Thick corneum layer—white fluorescence
- Horny layer of dead skin cells—white spots
- Normal, healthy skin—blue-white
- Thin or dehydrated skin—light violet/purple
- Acne or bacteria—yellow or orange
- Oily areas of the face/comedones—yellow or sometimes pink or orange
- Hyperpigmentation or sun damage—brown
- Hypopigmentation—blue-white or yellow-green

When using the Wood's Lamp, the room must be totally dark. Put small eye pads on the client, making sure the area around the eye is still visible. Turn on the light and hold it 4 to 5 inches (10 to 12.5 centimeters) above the client's face (**Figure 17–5**). The bulbs can get hot, so be careful not to touch the skin or have the lamp turned on too long. Note the corresponding skin conditions to the area of the face on the client's chart.

Treat the Wood's Lamp carefully, as you would a magnifying lamp. Follow the manufacturer's directions for cleaning. To protect the bulbs, store the lamp in a safe place where it is protected from breakage. A small covered plastic tub and protective wrapping is helpful in storing the glass parts of various tools and machines.

Skin scopes are similar to a Wood's Lamp. These larger skin analysis tools use a UV light with an interior mirror. A client can look at their face on one side of the scope while the esthetician looks through the scope and examines them from the other side. These scanners use a magnifying lamp and black light to analyze skin features such as hydration and pigmentation. ✓ L05

Rotary Brush

The main purpose of the **rotary brush** is to lightly exfoliate the skin (**Figure 17–6**). The brush machine also assists in the cleansing process. Brushes stimulate the skin and help soften excess oil, dirt, and cell buildup. Do not use brushes on acne, couperose, or inflamed skin. Brushes come in smaller sizes for the face and larger sizes for body areas, such as the back.

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▲ **Figure 17–6**
Using the brush machine.

Mini Procedure

The Brush Machine

The following steps describe the safe and effective use of a rotary brush.

1. Before using the brush, lightly cleanse the client's skin.
2. Insert the appropriate size brush into the handheld device.
3. Apply more cleanser or water to the skin. Do not let water or cleanser drip down the face or into the eyes. Use a piece of cotton or a towel to catch any excess water.
4. Use the brush approximately three times on each area, or for approximately 3 to 5 seconds, unless directed otherwise. Keep the brush moving across the face without stopping.
5. Dip the head of the brush into water, adjust the speed, and begin a horizontal pattern across the forehead. The brush should be damp, not drippy. Wipe excess water on a towel if necessary.
6. Continue the rotation down to the cheeks, nose, upper lip, chin, jaw, and neck areas.
7. Do not apply pressure. Allow the rotating brush to do the work. The bristles of the brush should remain straight.
8. Lift the brush from the skin and turn off the machine.

Here's a Tip

Using the brush machine while cleansing the skin saves time for both you and your client.

Brush machines vary. Typically they have two or three small brushes with different textures ranging from soft to firm. The brushes can be rotated at different speeds and directions. Moisten the brush before each use to soften the bristles. More sensitive skin requires a slow, steady rotation and soft brushes. Thicker, oily skin can tolerate a faster speed and firmer brushes.

Brush Maintenance

Rotary brush machines come with detachable brushes for cleaning. Here are some guidelines for maintaining the brushes:

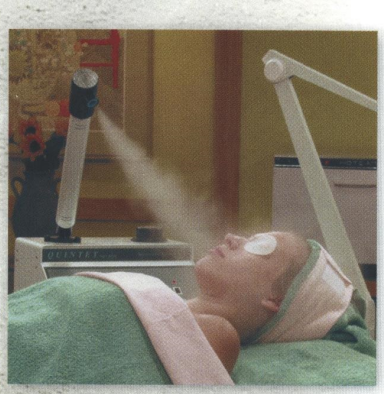
- Remove the brushes after each use and wash them thoroughly with soap and water.
- After manual cleansing, immerse the brushes in a disinfectant for the time recommended in the manufacturer's instructions.
- It is important to clean, rinse, dry, and store the brushes so that they do not lose their shape when drying. If the bristles become bent or lose their shape, they will not rotate properly.
- Although they can be stored temporarily in a dry ultraviolet sanitizer, the brushes will break down if left in the light box too long. When they are completely dry, transfer them to a closed container. **L06**

CAUTION!

To avoid damaging or further irritating the skin, do not use brushes or suction devices on acne, couperose, or inflamed skin.

Steamer

Many estheticians consider the steamer to be the most important machine used in esthetics. There are many benefits to steaming the skin (Figure 17–7). Steam helps to stimulate circulation, as well as softening sebum and other debris. The warmth relaxes the skin and tissues, making it easier for the esthetician to extract comedones. Steam can also be beneficial for the sinuses and congestion. Steamers with ozone (O_3) may have an antiseptic effect on the skin that is beneficial for acne and problematic skin. Do not use too much steam on couperose or inflamed skin, because it dilates the capillaries and follicles, causing more redness and irritation.



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▲ Figure 17–7
The steamer provides many benefits during the facial treatment.

Professional steamers come in various sizes and models. Use only distilled or filtered water in the steamer, because the mineral and calcium deposits in tap water can damage the machinery. The vapor is directed onto the skin's surface by a nozzle at the end of the steamer's arm. Steamers usually have a place for an aromatherapy ring on the inside of the nozzle head, and they may have a special feature for using essential oils. A quality steamer will last for years, as inexpensive models break down quickly. It is worth the extra money to buy a good quality steamer that will last and be reliable.

Mini Procedure

USING THE STEAMER

When using a steamer, or any equipment, always read and follow the manufacturer's directions. Steam treatments are timed according to the client's specific needs and the type of facial procedure. Ordinarily, treatment time is between 8 and 10 minutes.

1. Place distilled water into the designated container through the fill opening in the top. Check that it is not too full and is level with the fill line.
2. Before giving the facial, position the steamer where you want it. Adjust the height.
3. Preheat the steamer before the facial. Do not let water steam or boil for more than a minute while preheating. If all of the water evaporates, the glass may break.
4. Place a towel under the client's neck and over the shoulders to protect these areas from the steam or dripping water and keep the nozzle completely away from the body.
5. Turn the machine away from the client, and flip the power switch to "on." Do not turn on the second switch, the ozone or vaporizer, until steam is visible.
6. When the water is boiling and steam is visible, flip on the second switch and slowly adjust the steamer arm close to the client. This will activate the generator inside the machine. You may hear the sound of a small motor. If the noise is too loud and the steam amount does not increase, turn the vaporizer switch back to "off" because the steamer is not ready yet.
7. Keep the steam approximately 15 to 18 inches (37.5 to 45 centimeters) from the face. Place the steamer farther away, if necessary, so that it is warm but not too hot on the face. If placed too close, steam can cause overheating of the skin, possible irritation, or burning. Always check the client's comfort level and ensure even distribution of the steam on the face. Never leave the client unattended while steaming as the water can spray out and burn the client.
8. When you are ready to discontinue the steam, move the steamer away from the client. Turn off the ozone/vaporizer switch first. Then turn off the power switch.
9. Clean and disinfect the steamer after each use. Do not spray the hot glass jar reservoir with disinfectant before it has cooled off, as this may cause it to shatter.

CAUTION!

To avoid burning yourself, never touch the glass jar on the steamer when it is hot—it takes a long time to cool down. Ask your instructor for a demonstration on how to safely remove and replace the glass jar.

Here's a Tip

If the steamer is positioned with the steam directed from below the nose and is too close for the client, try steaming from above the head. Reposition it a few times if necessary to get an even placement of steam across the face.

CAUTION!

- Do not use too much steam on couperose or inflamed skin because it dilates the capillaries and follicles, causing more redness and irritation.
- Do not leave the room while steaming the client in case the steamer starts spraying water—this may burn the client.
- Do not overfill the steamer because the steamer may spray excess water and burn the client.
- Clean the steamer regularly to avoid mineral buildup that causes water to spray and burn the client.
- Do not let the water-level run low in the steamer—the glass may break.

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Steamer Maintenance

To ensure proper usage, always read and follow the manufacturer's directions for the steamer. Following these guidelines will keep your machine in peak working condition for years.

- After each use, wipe down the outside of the steamer with a disinfectant.
- At night, unscrew and empty the jar to let it dry. Make sure that the rubber seal along the rim of the jar is clean.
- Refill the steamer machine with fresh distilled water each morning. Do not overfill. Turn it on to give it a chance to warm up. This will save valuable time when treating your first client of the day.
- Water used inside the steamer should be as free of chemicals and minerals as possible; therefore, it is always recommended that distilled, not tap, water be used. Most tap water contains chlorine, other chemicals, and mineral deposits.
- Do not leave water in the steamer overnight or on weekends. If the steamer is not emptied regularly, deposits can collect on the heater element. Empty the jar and lightly clean with vinegar and then with soap and water. Allow the coils to dry.
- Neglected steamers tend to spit hot water due to the buildup of mineral deposits that occur with daily use. Mineral deposits may appear as a white or yellow crusty film on the heating element. The hot water can land on the client's face and may cause a serious burn.
- Some steamer models have solid tanks, preventing you from seeing the element; therefore, they need to be cleaned at least two times a month. Use a cleaning solution of plain vinegar and water.
- Never put essential oils or herbs directly into the water. Essential oils are highly active. When dropped directly into a closed jar with boiling water, they can cause excessive spitting of water or, even worse, clog the steamer or cause the glass to break from pressure. Some steamers are equipped with a wick-type apparatus that fits at the mouth of the nozzle. A couple of drops of essential oil can be placed here before the steamer is preheated. The steam picks up the aroma as it vaporizes out into the room.
- Other steamer models make use of a special container for herbs. These specialized steamers are normally more expensive; however, they provide the esthetician with the added benefit of incorporating therapeutic herbs into the steaming process. You can also put a few drops of essential oil on your hands or a cotton pad or swab and hold it close to the steam for aromatherapy.

- Do not leave the room when preheating the steamer or you may forget about it and run the water down too low and shatter the glass. Water levels must be kept above the safety line marked above the element on the glass jar. Not all steamers have automatic shutoffs.
  - Some machines may have automatic regulators that detect the water level. When it becomes too low or empty, a safety switch is triggered, turning off the machine.
  - Some machines have timers that shut off after the set time. Timers are useful but some may tick and then ding when the timer goes off, which can be a loud and distracting noise. Try before you buy. ☑ L07

Mini Procedure

CLEANING THE STEAMER

The steamer should be trouble-free if you follow these general cleaning guidelines.

1. Add two tablespoons (10 milliliters) of white vinegar, and fill jar to the top fill line with water.
2. Turn on the steamer and let it heat to steaming. Do not turn on the ozone.
3. Let the machine steam for 20 minutes or until the water level is low, but make sure it stays above the bottom low-level line to avoid jar breakage.
4. Turn off the steamer and let the vinegar solution rest in the unit for 15 minutes. Because vinegar has a pungent smell, clean the steamer in your utility room or in an area away from the treatment rooms. Open a window, if possible, when performing maintenance to keep fumes from traveling to other areas of the salon.
5. After it cools, drain the steamer jar completely and then refill with water. Again let the steamer heat to steaming and operate for approximately 10 minutes. If there is still an odor, drain the unit and repeat the process.
   a. Do not allow the caustic vinegar and water solution to sit on the heating coil without steaming immediately. If left overnight, it will corrode the copper coils.
   b. Note that there is usually a reset button on steamers for additional safety in the event the steamer runs out of water. If the steamer is not running, check the reset button before you call for help. The reset button is ordinarily found on the back of the machine.

FOCUS ON

Ozone

Ordinary oxygen in the atmosphere consists of two oxygen atoms (O_2). Ozone consists of three oxygen atoms (O_3). Ozone is what is created after a lightning storm and has a distinct smell. Ozone also has antiseptic qualities. These molecules have the power to kill bacteria and other microorganisms; that being stated, ozone is also a strong oxidizer that creates free radicals. The third atom can detach from the O_3 molecule and reattach to other molecules.

Some steamers have ozone mechanisms. High-frequency machines also create ozone. According to the EPA, exposure to ozone affects the respiratory system, can irritate the eyes, and may cause shortness of breath and coughing. OSHA standards for normal exposure should not exceed .1 part per million (ppm). Ozone air purifiers are ineffectual and may exceed safe levels of O_3. Check the ozone output for machines before purchasing or using one to make sure they are under the maximum exposure limits.

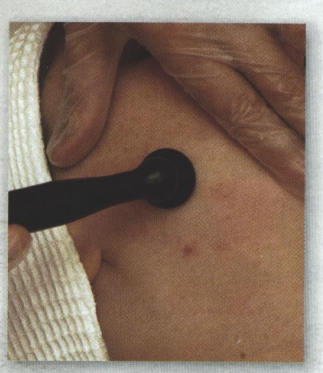
Here's a Tip

You can place 1 to 2 drops of an essential oil onto two hot stones and place them beside the client's ears while steaming. Before choosing oils, check for client product allergies and preferences.

Vacuum Machine

The **vacuum machine**, also known as **suction machine**, serves two main functions. One is to suction dirt and impurities from the skin. The other is to stimulate the dermal layer and lymphatic and blood circulation. This function is thought to help reduce the appearance of creases, such as laugh lines, and improve the overall appearance of the skin (**Figure 17–8**).

This machine can be used after desincrustation and before extractions. It can also be used in place of massage. It should not be used on couperose skin with distended or dilated capillaries or on open lesions. Glass and metal suction cups come in different sizes and shapes, depending on their use.



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▲ Figure 17–8
The vacuum apparatus.

Mini Procedure

THE VACUUM PROCEDURE

Use the vacuum to remove impurities by following these guidelines.

1. Cleanse the face.
2. Attach the appropriate glass or metal tip to the hose after inserting a piece of cotton into the hand piece as a filter (without blocking the suction pressure).
3. Turn on the power and adjust the suction.
4. With the index finger, cover the finger hole on the hand piece when moving the suction across the skin starting at either the top or bottom of the face. Usually three to five passes on each area are enough.
5. Slowly move the device horizontally on moistened or damp skin. Keep moving across the face without stopping. Hold the skin taut with the other hand on each area of the face.
6. Switch to the small tip for the nose. Be sure to include the vertical creases near the nose.
7. To avoid pulling on the skin, lift the finger off the hole before lifting the device off the face.
8. Continue with the next step in the facial such as extractions or a mask.

CAUTION!

To avoid harming the client's skin, do not use suction on inflamed, rosacea, or couperose skin. Never suction liquids or oils into the suction device. Avoid using strong suction because it may cause tissue damage or bruising.

Vacuum Machine Maintenance

To clean and maintain the vacuum machine, follow these guidelines.

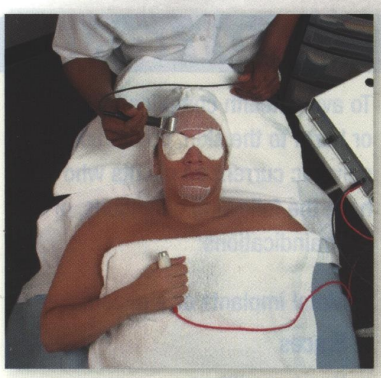
- Clean all glass devices with soap and water and soak them in a hospital-strength disinfectant.
- Follow manufacturer's directions to clean the hand pieces and hoses.
- Normally a filter is located at the end of the hose where the hose attaches to an orifice connected to the machine. The filter may have to be changed frequently, depending on use.
- Store the tips in a covered storage area to protect from breakage.

☑ LO8

Galvanic Current

Galvanic current is used to create two significant reactions in esthetics: chemical desincrustation (des-in-krus-TAY-shun) and ionic iontophoresis (eye-ahn-toh-foh-REE-sus). Desincrustation causes an alkaline reaction to soften the follicles for deep cleansing. Iontophoresis is used for introducing a water-soluble product into the skin (**Figure 17–9**).

The galvanic machine converts the alternating current received from an electrical outlet into a direct current. Electrons are then allowed to flow continuously in the same direction. This creates a relaxation response that can be regulated to target specific nerve endings in the epidermis. The machine can leave a metallic taste in the mouth, which is normal. To avoid harm to the skin, desincrustation should not be used on couperose skin, pustular acne, or inflamed areas. To avoid potential health complications, do not use galvanic current on clients who are pregnant or on those who have pacemakers, heart problems, high blood pressure, braces, or epilepsy.



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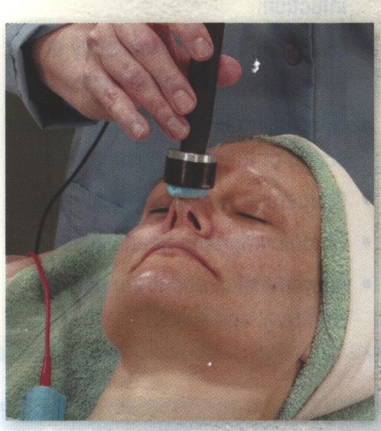
▲ **Figure 17–9**
The galvanic machine is used to create two significant reactions in esthetics: chemical (desincrustation) and ionic (iontophoresis).

Desincrustation

Estheticians use desincrustation, the infusion of a product that has a negative pH, to facilitate deep cleansing (**Figure 17–10**). During this process, galvanic current is used to create a chemical reaction that emulsifies or liquefies sebum and debris. This treatment is beneficial for oily or acne skin because it helps soften and relax the debris in the follicle before extractions.



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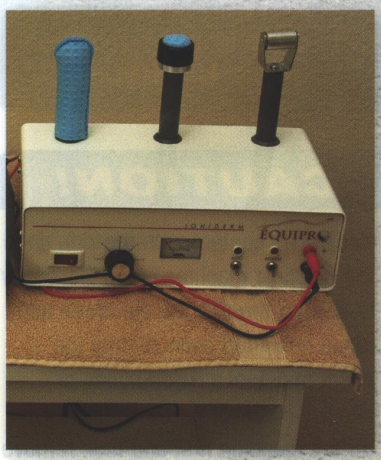
▲ **Figure 17–10**
The desincrustation process.

To perform desincrustation an alkaline-based, electronegative solution is placed onto the skin's surface. This product helps soften sebum and follicles for deep cleansing. The solution is formulated to remain on the surface of the skin rather than being absorbed. When the esthetician is conducting desincrustation, the client holds the positive electrode, the positive polarity. The esthetician uses the negative electrode, set on negative polarity, on the face. This creates a chemical reaction that transforms the sebum of the skin into soap—a process known as **saponification** (sah-pahn-ih-fih-KAY-shun). Soap is made from fat and lye (sodium hydroxide). When the electrical current interacts with the salts (sodium chloride) in the skin, it creates the chemical known as sodium hydroxide—or lye. This soapy substance helps dissolve excess oil, clogged follicles, comedones, and other debris on the skin, while softening it at the same time.

Various types of electrodes are available for the galvanic machine (**Figure 17–11**). The most common are the flat electrode and the roller. To make proper contact, each electrode must be covered with cotton, and the client must hold the electrode whose charge (either positive or negative) is the opposite of the electrode on the skin.



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▲ **Figure 17–11**
A selection of electrodes for the galvanic machine.

CAUTION!

To avoid health complications or harm to the skin, do not use galvanic current on clients who have the following conditions, or contraindications:

- Metal implants or a pacemaker
- Braces
- Heart conditions
- Epilepsy
- Pregnancy
- High blood pressure, fever, or any infection
- Diminished nerve sensibility due to diseases such as diabetes
- Open or broken skin (wounds, new scars) or inflamed pustular acne
- Couperose skin or rosacea
- Chronic migraine headaches
- Apprehension about the use of electrical appliances

fyi

Baking soda in water can be used as a desincrustation fluid for anaphoresis.

Most water-based serums can be used as iontophoresis products for cataphoresis.

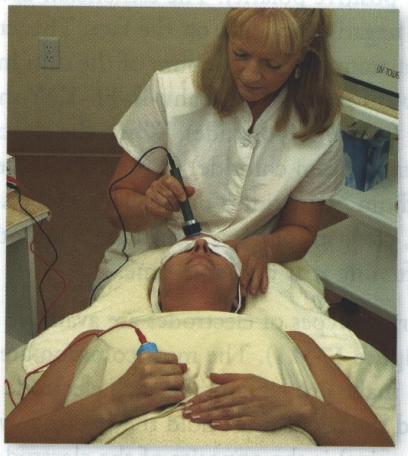
CAUTION!

Keep even contact with the skin once the galvanic machine is on. Electricity is flowing through the electrode and when it is lifted even slightly the client may feel a mild tingling or shock. To avoid this sensation, turn off the machine first and then remove the electrode from the skin.

Mini Procedure

DESINCRUSTATION

1. Gently cleanse the skin before treatment. Instruct the client to remove any jewelry and piercings, especially from the hand that will be used to hold the electrode.
2. Cover the entire positive electrode to be held by the client with a moistened sponge, or place a piece of dampened 4" × 4" (10 cm × 10 cm) cotton gauze around the electrode. Give this to the client to hold. This electrode is connected to the red wire (the positive wire).
3. Prepare the handheld flat electrode by placing a small, dampened sponge or round cotton pad over the electrode. Slide the ring back onto the electrode.
4. Apply product and gauze to the face as directed. Dip the electrode into the desincrustation solution. Apply the electrode to the client's forehead. Make sure the electrode is directly on the skin before turning on the galvanic current (Figure 17–12).
5. Turn the switch to negative and set at the appropriate level for the client.
6. Beginning on the forehead, gently rotate the electrode while gliding it over the client's forehead. Do not lift the electrode or break contact once the machine is on the skin, or it will be uncomfortable to the client. Keep the electrode as flat as possible and parallel to the skin's surface at all times.
7. Continue in the T-zone area down the nose and onto the chin area (or onto any area that is oily or needs desincrustation). Use desincrustation only in congested areas that need it, and avoid areas with dry skin conditions.
8. Keep the electrode constantly moving to avoid over-stimulating an area. Keep the skin moist and the pads wet. Add water to the pad or face if it gets too dry to glide over the skin.
9. When you are finished, turn off the machine first and then remove the electrode. Rinse the skin thoroughly with warm 4" × 4" (10 cm × 10 cm) cotton pads. Discard the pads.
10. Proceed with extractions or the next step in the treatment.



▶ Figure 17–12
Do not let the galvanic electrode break contact with the skin.

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Iontophoresis

Iontophoresis is the process of using electric current to introduce water-soluble solutions into the skin. This process allows estheticians to transfer, or penetrate, ions of an applied solution into the deeper layers of the skin (Figure 17–13). Ions (EYE-ahns) are atoms or molecules that carry an electrical charge. Current flows through conductive solutions from both the positive and negative polarities. This process is known as ionization (eye-ahn-ih-ZAY-shun), the separating of a substance into ions.

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▲ Figure 17–13
Iontophoresis can be relaxing.

Theoretically, iontophoresis is based on universal laws of attraction. For example, negative attracts positive, and vice versa. Similar to a magnetic response, iontophoresis creates an exchange of negative and positive ions or charges (Figure 17–14).

The process of ionic penetration takes two forms: cataphoresis (kat-uh-fuh-REE-sus), which refers to the infusion of a positive product; and anaphoresis (an-uh-for-EES-sus), which refers to the infusion of a negative product, such as a desincrustation fluid.

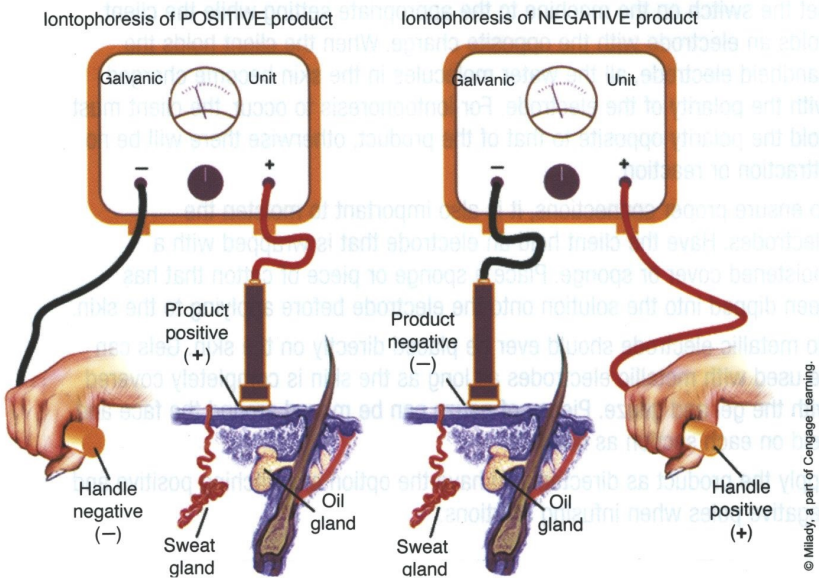
fyi

Some machines have a switch on the panel that controls the positive and negative modes so that you do not have to manually switch the red and black wires but instead move only the switch.

Polarity of Solutions

It is important to identify the polarity of an ampoule (AM-pyool) or solution. Products that have a slightly acidic pH are considered positive. Products with an alkaline (or base) pH are considered negative and are used for desincrustation. If the manufacturer indicates that the product is negative, the esthetician infuses the solution with the electrode set at negative and the esthetician holds the negative electrode. The client holds the positive electrode.

If the product were positive, the client and esthetician would use the opposite electrodes. The technician holds the positive and the client



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◀ Figure 17–14
Iontophoresis infuses positive and negative products.

holds the negative. Some manufacturers may include ingredients in the same vial that are simultaneously positive and negative. In that case, the product should be ionized for 3 to 5 minutes on negative followed by 3 to 5 minutes on positive. If neither a negative nor positive polarity is indicated for an ampoule, as a general rule the esthetician should first use the negative and then the positive pole. This way you are stimulating and softening the skin first and preparing it for the treatment with anaphoresis, and then ending with the product penetration, skin tightening, and soothing with cataphoresis.

The molecular weight of a product is also a factor in permeability. Smaller molecules have greater penetration ability, while larger molecules cannot penetrate into the skin. Water-based products will also penetrate better than oil-based products. Several possible skin reactions can occur during ionization (**Table 17–1**).

▶ **Table 17–1**
Effects from the Galvanic Current: Iontophoresis.

EFFECTS FROM THE GALVANIC CURRENT: IONTOPHORESIS	
NEGATIVE POLE (CATHODE): ANAPHORESIS	POSITIVE POLE (ANODE): CATAPHORESIS
Negative Solutions:	***Positive Solutions:***
Causes an alkaline reaction	Causes an acidic reaction
Softens and relaxes tissue	Tightens the skin
Stimulates nerve endings	Calms or soothes nerve endings
Increases blood circulation	Decreases blood circulation

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Mini Procedure

IONTOPHORESIS

The steps in iontophoresis are the same as those used for the desincrustation procedure.

1. Set the switch on the machine to the appropriate setting while the client holds an electrode with the opposite charge. When the client holds the handheld electrode, all the water molecules in the skin become charged with the polarity of the electrode. For iontophoresis to occur, the client must hold the polarity opposite to that of the product, otherwise there will be no attraction or reaction.
2. To ensure proper connections, it is also important to moisten the electrodes. Have the client hold an electrode that is wrapped with a moistened cover or sponge. Place a sponge or piece of cotton that has been dipped into the solution onto the electrode before applying to the skin.
3. No metallic electrode should ever be placed directly on the skin. Gels can be used with metallic electrodes as long as the skin is completely covered with the gel and gauze. Pieces of gauze can be moved around the face and held on each section as needed.
4. Apply the product as directed. You have the option of switching positive and negative poles when infusing solutions.

Galvanic Maintenance

Before attempting to clean the electrodes, always read and follow the manufacturer's directions for cleaning and disinfecting the equipment. Detach the electrode cord from the electrode. Remove any soiled sponge or cotton cover from the electrode and discard. Do not soak the electrode unless directed otherwise. Never place the metal electrode in an autoclave. The black plastic ring can be cleaned and then soaked in a disinfectant for the required time. In general, when cleaning rollers, detach the metal tip and then clean and soak it for 20 minutes in a disinfectant solution. Carefully spray and wipe the electrode attachment piece and machine with a disinfectant. ✓ L09

fyi

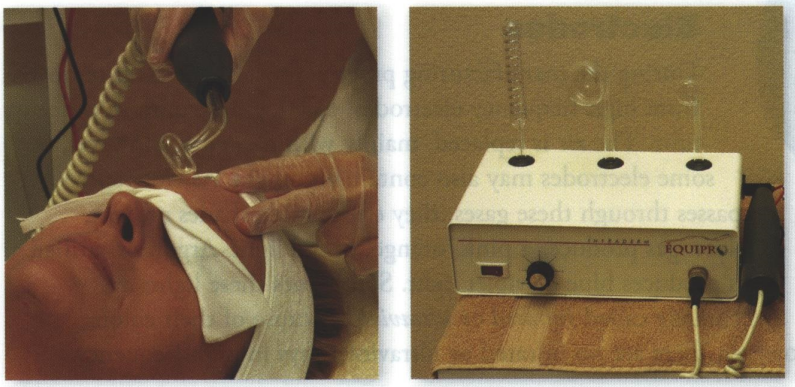
Galvanic treatments can actually be relaxing when using slow movements across the face.

Ionto Mask

The ionto mask works with galvanic current and can be used to facilitate either desincrustation (deep follicle cleansing) or ionization (penetration of product). Depending on treatment goals, different solutions can be used to target specific skin conditions. The face is first covered with moistened gauze. Water helps direct the current to the underlying tissue. The mask is then applied to the face and timed according to treatment parameters. Instead of the client holding an electrode, a wet pad is placed under the shoulder. The mask is then plugged into the source of the galvanic current. This mask is rarely used any more.

High-Frequency Machine

The **high-frequency machine** is an apparatus that utilizes an alternating or **sinusoidal current** (sy-nuh-SOYD-ul KUR-unt)— which is a smooth, repetitive alternating current and produces a heat effect. The high-frequency machine is a useful and versatile esthetic tool (**Figure 17–15a and b**).



▲ **Figure 17–15a and b**
The high-frequency machine produces a heat effect that stimulates circulation and has an antiseptic effect on the skin.

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It may be applied after extractions or used over a product. The machine also creates ozone and this has a germicidal action on the skin.

High frequency should not be used on couperose skin, inflamed areas, or on clients who are pregnant, epileptic, or have pacemakers or high blood pressure.

The high-frequency machine benefits the skin in the following ways:

- It has an antiseptic and healing effect on the skin.
- It stimulates circulation.
- It helps oxygenate the skin.
- It increases cell metabolism.
- It helps coagulate and heal any open lesion after extraction by sparking it with the mushroom electrode.
- It generates a warm feeling that has a relaxing effect on the skin.

fyi

The high-frequency machine creates noise and the ozone has a distinctive smell to it. Let clients know what to expect when using machines and that this is normal.

The high-frequency oscillating circuit passes through a device that allows for the selection of a *Tesla* pulse current. This current can produce a frequency of 60,000 to 200,000 hertz, depending on how it is regulated. The frequency indicates the repetition of the current per second. Because high-frequency current is capable of changing polarity thousands of times per second, it basically has no polarity and in effect does not produce chemical changes. This makes product penetration physically impossible. Product penetration is achieved instead by using the galvanic current.

The rapid oscillation created by the high-frequency machine vibrates water molecules in the skin. This can produce a mild to strong heat effect. It is important to note that esthetic high-frequency devices have a mild effect. An example of a stronger heat reaction is seen in **thermolysis** (thur-MAHL-uh-sus), which is used for electrolysis (permanent hair removal).

Electrodes

During the manufacturing process, most of the air is removed from high-frequency electrodes, creating a vacuum in the tube. The air is replaced, mainly with neon gas. However, some electrodes may also contain argon gas. As electricity passes through these gases, they emit visible shades of light. Neon gas produces a pink, orange, or red light. Argon or rarified gas produces blue or violet light. Sometimes these lights are inaccurately called *infrared* or *ultraviolet* because of their colors; however, there are no infrared or ultraviolet rays in high frequency.

Several types of direct or indirect electrodes are available with high frequency. Each of these electrodes has unique benefits and features that produce specific physiological reactions in esthetic treatments. If you use the high-frequency machine,

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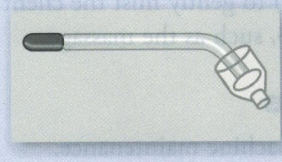
HIGH-FREQUENCY PROCEDURES AND ELECTRODES

PRIOR TO USING HIGH FREQUENCY, APPLY DRY GAUZE TO THE SKIN AND HAVE CLIENTS REMOVE THEIR METAL JEWELRY.

ELECTRODE	GENERAL APPLICATION
Small mushroom	(Pink/orange light) for sensitive skin or (violet light) for normal to oily skin. 1. Place electrode into the handheld device. Twist it gently into place. 2. Adjust the rheostat to the proper setting if the machine is not automatic. 3. Place an index finger on the glass electrode to ground it until it touches the skin, then remove. 4. Apply the electrode directly onto dry skin beginning at the forehead. Glide the electrode over the skin in circular movements (across the forehead area) and then to the nose, cheeks, and chin areas. Sometimes when skin is very clean, the electrode drags. In this case, place gauze between the skin and the electrode. 5. To remove from the skin, place an index finger on the electrode to ground it and then remove it. Turn the power switch off.
Large mushroom	(Violet light) normal to oily or (pink/orange) sensitive. 1. The large mushroom is used in the same way as the small mushroom. 2. Another effective way to use this apparatus is to open a piece of cotton gauze and glide the mushroom electrode over the gauze. This produces a small spray of sparks onto the skin. This treatment is ideal for acne or problematic skin. 3. Facial finish: High frequency may be used at the end of a treatment over cream. Place cotton gauze between the cream and the electrode. Glide in circular motions over the entire area.
Indirect electrode (spiral)	Used indirectly to stimulate the skin during massage. This treatment is ideal for sallow and aging skin. 1. Apply cream to the client's face. 2. Give the wire glass electrode to the client, who then holds it with both hands. 3. The operator places the fingers of one hand to the forehead. 4. With the opposite hand, turn the high frequency on and move to a low setting. 5. Using both hands, perform a piano finger motion, gently tapping the skin. Move around in a systematic manner over the entire face. 6. To discontinue, remove one hand from the skin and turn the power switch off. 7. Do not lose contact with the skin during this procedure in order to keep the current flowing.
Sparking (glass tip) 	A glass tip electrode is used to direct sparking to a specific area such as an acne lesion. It helps disinfect and heal the lesion. Sparking is visible and creates an interesting zapping noise. 1. Place the electrode into the handheld device. 2. Place the glass electrode over the lesion area, removing the finger so that the area is sparked for a few seconds. Touch the electrode to the blemish for a few seconds and remove. Repeat this a few times. 3. Remove the electrode from the skin by placing the finger once more on the glass. Turn the power switch off.
Comb electrode (rake)	To apply, follow the directions for the mushroom electrode. It may also be used in a scalp treatment.

▲ Table 17–2 **High-Frequency Procedures and Electrodes.**

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CAUTION!

High frequency should not be used on clients with the following conditions:

- Couperose skin
- Inflamed areas
- Pacemakers
- Heart problems
- High blood pressure
- Braces
- Epilepsy
- Clients who are pregnant

Be sure to know all the contraindications of using a machine before implementing it in treatments. To avoid being burned, the client should avoid contact with metal during electrical machine treatments. Clients should remove all jewelry and piercings prior to the treatment.

you will need to be trained in the procedure and on how to use the different electrodes (Table 17–2 on page 465).

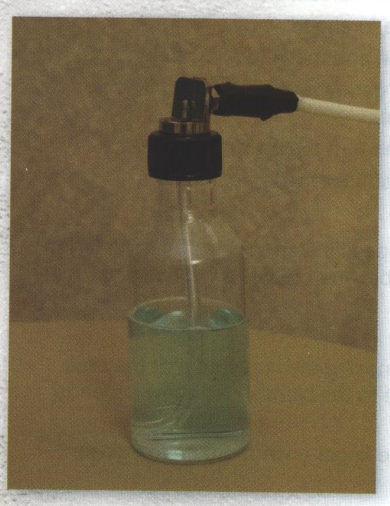
High-Frequency Maintenance

Follow these maintenance guidelines for the high-frequency machine.

- After each use, clean the glass electrode by wiping it with a solution of soap and water. Do not use alcohol on electrodes.
- Do not immerse the electrode directly in water. Place only the glass end (not the metal) into a disinfectant solution for 20 minutes.
- Do not place electrodes in an ultraviolet machine or in an autoclave.
- Rinse the electrodes. Do not get the metal end wet. Dry with a clean towel and store in a covered container.
- Unless they break or are damaged, most electrodes do not need replacing, but keep in mind that the electrodes are very fragile. Take extra care to wrap them in a soft material and then store them in a drawer where they will not be knocked around or damaged. Some of the newer machines offer inserts for storing the electrodes right on the machine. Be sure to cover the electrodes so they remain clean and undamaged.
- The high-frequency coil should be replaced after a few years of use if it is losing power. Check with the manufacturer for additional service requirements. ☑ L010

Spray Machines

Spray mists are beneficial in calming and hydrating the skin (Figure 17–16). The **spray machine** is part of the vacuum machine and is attached via a hose that is connected to a small plastic bottle with a spray nozzle. This bottle can be filled with a freshener solution or toner (1 part toner; 2 parts distilled water) to gently mist the client's face after cleansing or another treatment step, such as the massage.



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▲ Figure 17–16
The spray machine.

Spray Machine Maintenance

Here are some general guidelines for spray machine maintenance.

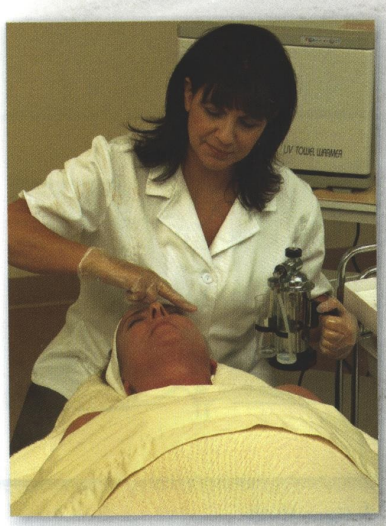
- Follow the cleaning directions supplied by the manufacturer.
- Empty the bottle of fluid regularly to keep it fresh.
- Flush with distilled water regularly.
- Mineral buildup in the nozzle of the sprayer should be cleaned monthly or more often. ☑ L011

Mini Procedure

THE SPRAY PROCEDURE

To mist the skin, use the following steps.

1. Place a towel under the client's chin to stop the mist from dripping down the neck. Remind the client to keep the eyes and mouth closed during the misting.
2. Turn on the power and adjust the velocity of the spray.
3. Hold the spray approximately 12 to 15 inches (30 to 37.5 centimeters) away from the face and mist for approximately 5 to 20 seconds. If necessary, pause and make sure the client can take a breath between the misting.
4. Turn off the power.
5. Gently pat or wipe off the product remaining on the skin with esthetic wipes/pads.



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▲ Figure 17–17
The Lucas Sprayer.

The Lucas Sprayer

The **Lucas Sprayer** was invented by Dr. Lucas Championniere (1843–1913). It is the most unique of all atomizers and sprays. The Lucas Sprayer is used to apply a very fine mist of plant extracts, herb teas, fresheners, or astringents (**Figure 17–17**). The mist is excellent for treating dehydrated, mature, and couperose skins. The mist can be used warm to increase the blood flow to the skin's surface, or it can be used cool to calm couperose skin. While not common, it is still in use today.

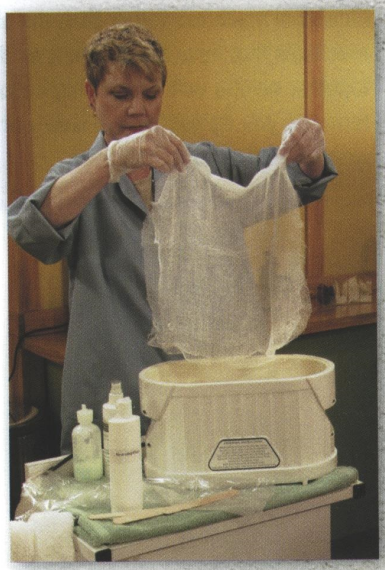
CAUTION!

To avoid burning the client's skin, never heat paraffin in anything other than an approved paraffin heater.

Paraffin Wax Heater

The paraffin wax heater is used to create a warm paraffin mask for hydrating dry skin (**Figure 17–18**). This device allows the esthetician to provide a treatment that offers quick results, but it lasts only for a limited period of time. Heated paraffin is applied to the face, creating an occlusive mask to hold in body heat and promote penetration of underlying products. The result is a hydrating and relaxing treatment that gives clients a glowing complexion. This is popular with women who want to look their best instantly, especially for special occasions. The paraffin mask procedure is in Chapter 15, Facial Treatments.

Paraffin wax heaters stay warm at a safe, low level of heat. They must be replenished as you discard the used wax. These heaters



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▲ Figure 17–18
The paraffin wax treatment.

tend to take a long time to heat up in the morning. Always use a professional wax bath machine that emits low heat. A substitute heater, such as an electric cooking pot, regulates heat differently and is not recommended.

Courtesy of Equipro.

▲ Figure 17–19
Electric mitts and boots.

Electric Mitts and Boots

Boots and mitts heat the hands and feet to increase circulation and to promote overall relaxation (Figure 17–19). Often promoted as an add-on to a service, boots and mitts actually perform an important function. The heat helps lotion penetrate, and it soothes aching feet and hands. Paraffin wax is also used over lotion to warm and moisturize the skin.

To use these products, put lotion on the hands and/or feet and cover with plastic single-use liners before inserting into the warmers. Warm the mitts and/or boots for approximately 10 minutes. Make sure the warmers do not get too hot. If the client feels sweaty, then the lotion cannot penetrate. To clean the electric mitts and boots, wipe them with a disinfectant after each use.

Here's a Tip

It may be more affordable to purchase individual machines rather than the all-in-one machines that have the different modalities together on one unit. If anything needs to be repaired, you do not have to ship—or be left without—all of your machines.

Purchasing Equipment

Do your research before purchasing equipment. Regulations define what devices can be used within an esthetician's scope of practice. Another purchasing consideration is insurance coverage for the devices. Make sure the manufacturer claims are accurate and there is clinical evidence to support the claims. It is advisable to go slowly when considering purchasing expensive machines. Warranties and training provided from the manufacturer and distributor are two important considerations when purchasing equipment. Education and training are required for many high-tech machines.

Advances in science and technology have generated many new high-performance tools that enhance the esthetician's work. Estheticians must continue their education to keep abreast of the latest developments in therapeutic skin care. In this chapter, we have presented an overview of specialized tools and equipment designed to help the esthetician

obtain the best results possible in skin care treatments. While some machines are not used on a regular basis, it is good to be familiar with them. See Chapter 19, Advanced Topics and Treatments, for additional information on the more advanced equipment.

Study and review the suggested guidelines for operating machinery, and practice your skills until you are comfortable working with equipment. Always be conscientious about safety issues and contraindications in using machines. Clients want instant results, so make sure you can deliver what you promise. Invest in high-quality machines and your investment will increase your credibility and revenue as an esthetician. What machines would you like to incorporate into your services? High-tech equipment just may be the wave of the future. ☑ L012

ACTIVITY

Choose two machines that interest you. Think about what would be important in purchasing these machines. What should you look for in purchasing a machine? Compare at least three different manufacturers, the selling points of each machine, the prices, and the quality. Which machines would you purchase? Why?

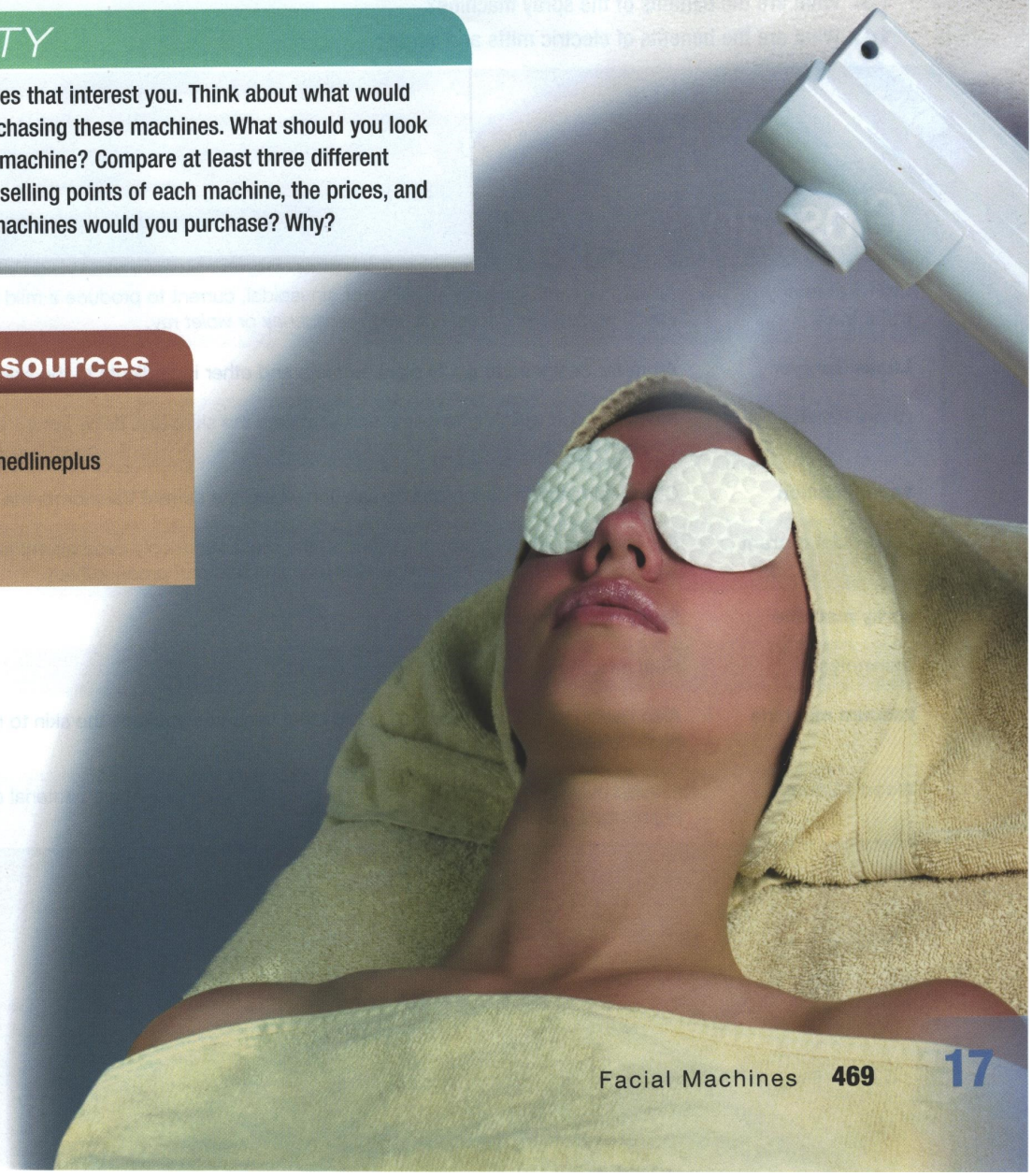
Web Resources

www.epa.gov

www.nlm.nih.gov/medlineplus

www.osha.gov

www.skininc.com



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Review Questions

1. What are five of the contraindications for electrotherapy?
2. What skin conditions does a Wood's Lamp reveal?
3. What is the purpose of a brush machine?
4. What are the benefits of using a steamer?
5. What are the benefits of the vacuum device?
6. List and define the two main reactions of the galvanic current.
7. What are the contraindications for using a galvanic machine?
8. What are the effects on the skin from anaphoresis?
9. How does the negative pole of the galvanic current affect the skin?
10. Define cataphoresis.
11. How does the positive pole of the galvanic current affect the skin?
12. What is high frequency used for?
13. What are the benefits of the spray machine?
14. What are the benefits of electric mitts and boots?

Glossary

high-frequency machine	Apparatus that utilizes alternating, or sinusoidal, current to produce a mild to strong heat effect; sometimes called *Tesla high-frequency* or *violet ray*.
Lucas Sprayer	Atomizer designed to apply plant extracts and other ingredients to the skin.
rotary brush	Machine used to lightly exfoliate and stimulate the skin; also helps soften excess oil, dirt, and cell buildup.
saponification	Chemical reaction during desincrustation where the current transforms the sebum into soap.
sinusoidal current	A smooth, repetitive alternating current; the most commonly used alternating current waveform, used in the high frequency machine and can produce heat.
spray machine	Spray misting device.
thermolysis	Heat effect; used for permanent hair removal.
vacuum machine	Also known as *suction machine*; device that vacuums/suctions the skin to remove impurities and stimulate circulation.
Wood's Lamp	Filtered black light that is used to illuminate skin disorders, fungi, bacterial disorders, and pigmentation.