

A close-up, grayscale photograph of a KitchenAid espresso machine, showing the portafilter and the body of the machine. The image is slightly blurred, focusing on the text overlay.

KitchenAid®
PRO LINE™ SERIES

MODEL
KPES100
ESPRESSO MACHINE

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Great espresso is a dance of artistry and technique that is intimately tied to the performance of the espresso machine. The **KitchenAid® PRO LINE™ Series Espresso Machine** blends commercial quality with innovative design to bring a new experience of espresso into the home.

Dual boilers generate an optimal brewing temperature and abundant steam for frothing without the wait single-boiler machines require when switching tasks. The commercial-size brew group is chrome-plated brass for exceptional temperature stability, and the self-priming water pump easily supplies the 9 bars of pressure perfect espresso demands. A 3-way solenoid valve instantly vents pressure after brewing, preventing a messy spray of coffee grounds when the portafilter is removed.

Of course, a new experience of espresso is also a new experience of convenience.

Separate stations for brewing and frothing provide an immense workspace. Instead of simple indicator lights, dial gauges provide a continuous readout of boiler temperatures. The frothing arm swivels horizontally and vertically for convenient use, and the volume of steam is fully adjustable.

The outstanding style and performance of the PRO LINE™ Series Espresso Machine is matched by a rugged die-cast metal construction that will last for years.

The KitchenAid® PRO LINE™ Series: commercial quality for the discriminating home chef. From the company distinguished by its legendary craftsmanship.

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ESPRESSO MACHINE SAFETY

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

You can be killed or seriously injured if you don't immediately follow instructions.

 **DANGER**

You can be killed or seriously injured if you don't follow instructions.

 **WARNING**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

IMPORTANT SAFEGUARDS

When using electrical appliances, basic safety precautions should always be followed, including the following:

1. Read all instructions.
2. Do not touch hot surfaces. Use handles or knobs.
3. To protect against fire, electric shock and personal injury do not immerse cord, plugs, or appliance in water or other liquids.
4. Close supervision is necessary when any appliance is used by or near children.
5. Unplug from outlet when not in use and before cleaning. Allow to cool before putting on or taking off parts, and before cleaning.
6. Do not operate any appliance with a damaged cord or plug, or after appliance malfunctions or has been damaged in any manner. Return the appliance to the nearest authorized service center for examination, repair or adjustment.
7. The use of accessory attachments not recommended by the appliance manufacturer may result in fire, electric shock, or personal injury.
8. Do not use outdoors.
9. Do not let cord hang over edge of table or counter, or touch hot surfaces.
10. Do not place on or near a hot gas or electric burner, or in a heated oven.
11. Always switch the appliance off, then plug cord into the wall outlet. To disconnect, turn the appliance off, then remove plug from wall outlet.
12. Do not use appliance for other than intended household use.
13. Use extreme caution when using hot steam.

SAVE THESE INSTRUCTIONS

PROOF OF PURCHASE

& PRODUCT REGISTRATION

Always keep a copy of the sales receipt showing the date of purchase of your Espresso Machine. Proof of purchase will assure you of in-warranty service.

Before you use your Espresso Machine, please fill out and mail your product registration card packed with the unit. This card will enable us to contact you in the unlikely event of a product safety notification and assist us in complying with the provisions of the Consumer Product Safety Act. This card does not verify your warranty.

Please complete the following for your personal records:

Model Number: KPES100

Serial Number _____

Date Purchased _____

Store Name _____

ELECTRICAL REQUIREMENTS



Volts: 120 V.A.C. only.
Hertz: 60 Hz

NOTE: This Espresso Machine has a 3 prong grounded plug. To reduce the risk of electrical shock, this plug will fit in an outlet only one way. If the plug does not fit in the outlet, contact a

qualified electrician. Do not modify the plug in any way.

A short power-supply cord is provided to reduce the risk resulting from becoming entangled in or tripping over a longer cord. Do not use an extension cord. If the power supply cord is too short, have a qualified electrician or serviceman install an outlet near the appliance.

WARNING



Electrical Shock Hazard

Plug into a grounded 3 prong outlet.

Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

**FEATURES
AND
OPERATION**

**Features and Operation
Section Contents**

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MODEL KPES100 ESPRESSO MACHINE FEATURES



Model KPES100
Espresso Machine

On/Off Power Switch

Press once to turn the espresso machine on, press again to turn off. When on, the dual boilers begin heating and the espresso and hot water buttons will function.

Power-On Indicator

When the espresso machine is on, the indicator light will be illuminated.

Espresso Button

Press the espresso button to activate the water pump for brewing espresso. To stop brewing, press the espresso button a second time.

Hot Water Button

When the steam dial is open, press and hold the hot water button to activate the water pump and dispense hot water from the frothing arm. Pump shuts off automatically when the button is released.

Steam Dial

To dispense steam or hot water through the frothing arm, open the steam dial by turning it counter-clockwise. The volume of steam is controlled by the dial position: rotate the dial counter-clockwise for more steam, clockwise for less. To turn off steam, close the steam dial by rotating it clockwise until it stops.



Brew Head

Commercial-size brew head is chrome-plated brass for exceptional durability and brew temperature stability. Brewing boiler is bolted directly to group head, so brew group heats quickly and thoroughly.



Frothing Arm & Nozzle

Dispense steam or hot water through the frothing arm. Arm pivots horizontally and vertically to provide a convenient position. Nozzle enhances frothing and is removable for cleaning.



Drip Tray

Large, removable drip tray catches spills and is dishwasher-safe if placed in the top rack. Tray features a removable stainless steel drip plate.



Drip Tray Full Indicator

The indicator tip rises above the drip plate when the drip tray is nearly full.



Water Reservoir

The removable 2 liter (67 oz.) water reservoir slides left or right for easy filling, and features easy-to-see "max" and "min" fill lines. Translucent reservoir shows the water level at a glance. Reservoir can be washed in the top rack of a dishwasher.



Cup Rail

Top of unit accommodates 4 to 6 espresso cups for warming. Stainless steel cup rail helps prevent breakage.



Espresso Boiler Temperature Gauge

Dial gauge indicates when espresso boiler has reached optimum brewing temperature.



Frothing Boiler Temperature Gauge

Dial gauge indicates when frothing boiler has reached optimum steaming temperature.

Continued...

MODEL KPES100

ESPRESSO MACHINE FEATURES



Portafilter

Commercial-size portafilter features chrome-plated brass construction and an easy-to-grip flared handle. Attaches to the brew head with a firm twist to the right.



Filter Baskets

Stainless steel filter baskets snap into portafilter. Use the small capacity basket for a single shot (1 oz.) of espresso, and the large capacity basket for double shots (2 oz.). The small basket also accommodates paper coffee pods.



Frothing Pitcher

The 8½ oz. capacity stainless steel pitcher is invaluable for frothing.



Tamper

Evenly tamps coffee into the filter basket.



Coffee Scoop and Shower-Screen Brush

Use one level scoop of coffee for each shot (ounce) of espresso. The shower-screen brush will help keep the brew head and shower screen free of grounds.

Not Shown:

Dual Boilers

Separate boilers eliminate the wait single-boiler machines require when switching between frothing and brewing. Boiler heating elements never touch water: they are located on the outside of the boiler for superb brew temperature consistency and burnout-resistance. Quick heating boilers reach operating temperatures in less than 6 minutes.

Drip-Free System with 3-Way Solenoid Valve

A 3-way solenoid valve virtually eliminates drips by instantly reducing pressure in the brew group when the pump is switched off. The portafilter can be removed immediately after brewing without a messy spray of coffee grounds.

15 Bar Pump

Self-priming water pump comfortably supplies the 9 bars (130 psi) of pressure that perfect espresso demands.

PREPARING THE ESPRESSO MACHINE FOR USE

Attach the Cup Rail

Align the three rail posts with the holes on top of the espresso machine. Then press the rail posts firmly into the holes.



Remove & Wash the Water Reservoir

1. Lift the reservoir slightly, then remove by pulling the bottom of the reservoir from the espresso machine.



2. Wash the reservoir in hot, soapy water and rinse with clean water. The reservoir can also be washed in the top rack of the dishwasher.
3. Place the reservoir back into the espresso machine, making sure the water tubes are placed inside the reservoir. The ribs on the bottom of the reservoir fit into the grooves on the base of the housing.

Fill & Rinse the Boilers

The boilers need to be filled and rinsed before the espresso machine is used for the first time. The boilers will also need to be filled when:

- the espresso machine is not used for a prolonged period
- the water reservoir runs dry during use (this can damage the espresso machine)
- multiple beverages are steamed without brewing espresso or dispensing hot water

1. Slide the water reservoir left or right to expose the top, and fill with fresh cold water to the max fill line.

NOTE: Distilled water or mineral water can damage the espresso machine. Do not use either to brew espresso.

Continued...

PREPARING THE ESPRESSO MACHINE FOR USE

WARNING



Electrical Shock Hazard

Plug into a grounded 3 prong outlet.

Do not remove ground prong.

Do not use an adapter.

Do not use an extension cord.

Failure to follow these instructions can result in death, fire, or electrical shock.

4. Make certain the Steam Dial is closed by rotating it clockwise as far as possible.



5. Press the On/Off Power Switch to turn the espresso machine on. When the espresso machine is on, the power-on indicator will illuminate, the dual boilers will begin heating, and the Espresso and Hot Water functions will operate.



6. Place a coffee cup underneath the brew head. Do not attach the portafilter to the brew head.
7. Press the Espresso Button – it is not necessary to wait for the boiler to heat. This activates the water pump and fills the brewing boiler with water. After a few seconds, water will flow from the brew head. When the cup is full, press the Espresso Button again to stop the water pump. The brewing boiler is now ready for use.



8. Place the frothing pitcher under the nozzle of the frothing arm.
9. Slowly open the Steam Dial by turning it counter-clockwise, then press and hold the Hot Water Button. This activates the water pump and fills the frothing boiler with water. After a few seconds, water will start flowing from the nozzle.



10. When the pitcher is about half full, release the Hot Water Button and close the Steam Dial by rotating it clockwise until it stops. The frothing boiler is now ready for use.
11. If no espresso is desired at this time, press the On/Off Power Switch to turn the espresso machine off.

NOTE: Do not press the Espresso or Hot Water Buttons without water in the reservoir. Damage to the water pump may occur.

BREWING ESPRESSO

For the finest results when brewing espresso, see “Techniques of A Barista” on page 28.

1. Make certain the water reservoir has an adequate supply of water (the water level should be between the “max” and “min” fill lines).
2. Select the small or large capacity filter basket. Use the small capacity basket for a single shot of espresso (1 oz.), and the large capacity basket for a double shot (2 oz.). The small capacity basket can be used with paper coffee pods.
3. Press the filter basket into the portafilter until it snaps into place. Do not fill the portafilter with coffee at this time.



4. Position the portafilter underneath the brew head and align the portafilter handle with the arrow located on the left side of brew group housing. Raise the portafilter into the brew head and tighten it with a firm twist to the right. When in place, the portafilter handle will point forward or slightly to the right.



5. Press the On/Off Power Switch to turn the espresso machine on.



6. Wait until the espresso machine has reached operating temperature; this will take approximately 6 minutes. When the espresso boiler temperature gauge needle climbs into the "ready" zone, the espresso machine is ready to brew.
7. Remove the portafilter from the brew head by moving the handle to the left. Place one level measure of ground coffee (or a paper coffee pod) in the small filter basket, or two measures of ground coffee in the large basket. Be sure to use a fine espresso-style grind for your coffee.
8. Using the tamper, tamp the coffee down firmly with a twisting motion. Make sure the surface of the coffee is as level as possible. See "Leveling" and "Tamping" on page 32 and 33 for details.

9. Sweep any excess grinds from the rim of the portafilter, and insert the portafilter into the brew head.

10. Place one or two espresso cups on the drip plate under the spouts of the portafilter. Press the Espresso Button, and espresso will start to flow into cups. When the desired amount of espresso has been brewed (usually 1 oz. using the small filter basket and 2 oz. using the large filter basket), press the Espresso Button to stop brewing.



NOTE: Do not remove the portafilter when brewing.

11. The espresso machine is equipped with a 3-way solenoid valve that instantly releases pressure in the brew group when the water pump is switched off, so the portafilter can be removed immediately after brewing. Remove the portafilter by moving the handle to the left. When knocking coffee grounds from the filter basket, avoid striking the portafilter handle.

BREWING ESPRESSO

12. After removing the portafilter, place a cup under the brew head and press the Espresso Button for a second or two. This cleans the shower screen and flushes any coffee oils and grounds that have migrated into the brew head.



13. To brew more espresso, repeat steps 6 through 12, but see the barista tips to the right.

Barista Tips

When brewing multiple shots:

1. Use a towel to clean and dry the filter basket before filling with coffee. This will help insure even coffee extraction.
2. To maintain the proper brewing temperature, it is important to keep the brew group warm, so:
 - Do not rinse the portafilter with tap water – doing so will cool the filter. It's best to wipe leftover grounds from the filter with a towel.
 - When you're busy with other tasks, like grinding coffee or frothing milk, keep the empty portafilter warm by attaching it to the brew head.

FROTHING & STEAMING MILK

Frothing and steaming milk requires a bit of practice, but you'll be surprised how quickly your skills will develop. The PRO LINE™ Series Espresso Machine gives you all the tools you need: an 8½ ounce stainless steel pitcher shaped especially for frothing, a frothing arm that adjusts horizontally and vertically for a comfortable working position, a frothing nozzle designed to enhance frothing, and a Steam Dial that lets you precisely control the volume of frothing steam.

1. Press the On/Off Power Switch to turn the espresso machine on.
2. Wait until the espresso machine has reached operating temperature; this will take approximately 6 minutes. When the frothing boiler temperature gauge needle climbs into the "ready" zone, the espresso machine is ready to froth.
3. Fill the frothing pitcher ½ full with cold milk.

4. With the frothing arm pointed into an empty cup, open the Steam Dial for a moment to purge excess water from the line. To open the Steam Dial, turn it slowly counter-clockwise; to close the Steam Dial, rotate it clockwise until it stops.



5. With the Steam Dial closed, adjust the frothing arm so it's in a comfortable working position, and submerge the tip of the frothing nozzle just below the surface of the milk in the frothing pitcher.



Continued...

FROTHING & STEAMING MILK

6. Slowly open the Steam Dial by turning it counter-clockwise. The farther the Steam Dial is rotated, the greater the volume of steam that will be released. Tilt the pitcher to one side to create a whirling motion in the milk, keeping the tip of the frothing nozzle about ¼ inch below the milk's surface. If large bubbles are being created or if the milk spatters, the nozzle is being held too high.
7. As the froth expands, it will be necessary to lower the pitcher. This is called the *stretching* phase of frothing.
8. When the frothed milk has expanded to about ¾ the volume of the pitcher, lower the frothing nozzle into the pitcher to finish steaming (heating) the milk. Keep the pitcher tilted to maintain a whirling motion in the milk. Steam the milk until it's between 140 and 165 degrees Fahrenheit. (At these temperatures, the pitcher will be very warm to the touch.) Avoid scalding the milk, which occurs at 175 degrees.
9. Before removing the frothing arm from the milk, close the Steam Dial by turning it clockwise until it stops. This prevents splattering.



Barista Tips

- Clean the frothing arm and nozzle immediately after use. See “Care and Cleaning” beginning on page 23.
- Lower fat milks are generally easier to froth. Skim milk can be tricky because it froths very easily, with a tendency to form large bubbles and dry peaks that mar its texture. Ultimately, the choice of milk is a matter of experimentation and taste. The most important factors in producing a superior froth are experience and good refrigeration: the colder the milk you use, the better.

Preparing Cappuccino

The Italian word *cappuccino* is derived from *Capuchin*, an order of monks who wear garments the color of this most popular espresso drink. A standard cappuccino is a combination of steamed milk and espresso that's capped with a layer of frothed milk; it's usually served in a bowl-shaped cup of 6 to 7 ounce volume.

To prepare cappuccino, froth and steam the milk before brewing the espresso. This allows the froth to jell slightly and fully separate from the milk. Once the milk is prepared, brew a single shot (1 oz.) of espresso into a cappuccino cup, then pour the frothed and steamed milk into the cup with a gentle shaking motion. For a show-stopping flourish, top your cappuccino with nutmeg, cinnamon, chocolate powder, or chocolate shavings.

Preparing Café Latte

A basic **Café Latte** is a single shot (1 oz.) of espresso topped with 8 to 10 ounces of steamed milk and about ¼-inch of foamed milk. Lattes are often flavored with 1 to 2 ounces of syrup, the most popular being almond and hazelnut. If you use chocolate syrup and garnish the drink with whipped cream and chocolate shavings, you'll have that chocolate and coffee lover's dream, the Café Mocha.

To prepare a Café Latte, you will need a pitcher larger than the one supplied with the espresso machine. A 16 ounce capacity pitcher is perfect. Fill the pitcher ½ full with cold milk. The steaming technique for lattes is almost the same as cappuccino, except the goal is to impart a velvety texture to the milk while minimizing froth. Keep the frothing nozzle deeper in the milk so the milk volume expands more slowly. No large bubbles or froth should form.

Once the milk is prepared, brew the espresso into a latte mug, add the syrup if any, and gently fill with steamed milk.

DISPENSING HOT WATER

Hot water can also be dispensed from the frothing arm. This provides a convenient way to make Americanos, tea, or hot chocolate. Filling a demitasse with hot water is also a great way to warm it before brewing espresso.

NOTE: Always dispense hot water into an empty container – dispensing into a cup or pitcher containing other ingredients may cause splattering.

1. Press the On/Off Power Switch to turn the espresso machine on.
2. Wait until the espresso machine has reached operating temperature; this will take about 6 minutes. When the frothing boiler temperature gauge needle climbs into the “ready” zone, the espresso machine is ready to dispense hot water.

3. With the frothing arm pointed into an empty cup, open the Steam Dial by turning it slowly counter-clockwise. Then press and hold the Hot Water Button to dispense water.



NOTE: Residual frothing steam may exit the nozzle before water dispenses. It may take several seconds for water to begin flowing from the nozzle.

4. When the desired amount of water has been dispensed, release the Hot Water Button and close the Steam Dial by turning it clockwise until it stops.

CARE AND CLEANING

Keeping the PRO LINE™ Series Espresso Machine clean is vital to brewing the best espresso possible. Stale coffee oils on the portafilter, filter baskets, and shower screen will ruin the flavor of the most expertly prepared coffee, and any milk left on the frothing arm should be removed.

Before Cleaning the Espresso Machine

1. Turn off the espresso machine.
2. Unplug the espresso machine from the wall outlet, or disconnect power.
3. Let the espresso machine, and any attached parts or accessories, cool.

Cleaning the Frothing Arm and Nozzle

The frothing arm and nozzle should always be cleaned after milk is frothed.

1. Remove the frothing sleeve from the frothing nozzle by pulling it downward. The frothing sleeve can be washed in warm, soapy water. Make sure any openings in the sleeve are free of residue.



2. Wipe the frothing arm and nozzle with a clean damp cloth. Do not use an abrasive scouring pad.
3. Plug into a grounded 3 prong outlet.
4. Turn the espresso machine on, and let the boilers reach operating temperature. Point the frothing arm into an empty cup and open the steam dial momentarily to run steam through the frothing nozzle. This will clean the nozzle tip.

Cleaning the Housing, Filters, Drip Tray, Drip Plate, Reservoir, and Pitcher

Do not use abrasive cleansers or scouring pads when cleaning the espresso machine, or any espresso machine part or accessory.

- Wipe the espresso machine housing with a clean damp cloth and dry with a soft cloth.

Continued...

CARE AND CLEANING

- Wash the portafilter in warm, soapy water and rinse with clean water. Dry with a soft cloth. Do not wash the portafilter in a dishwasher.
- The filter baskets, drip tray, drip plate, water reservoir, and frothing pitcher can be washed in the top rack of a dishwasher, or by hand in warm, soapy water. If washing by hand, be sure to rinse with clean water and dry with a soft cloth.
- Use the shower screen brush or a damp cloth to brush or wipe coffee grounds from the brew head gasket and shower screen.



Cleaning the Shower Screen

Once every 75 to 100 shots of espresso, the shower screen should be removed from the brew head to clean thoroughly.

1. Using a short Phillips screwdriver, remove the screw at the center of the shower screen by turning it counter-clockwise. Once the screw is free, the shower screen should drop from the brew head.



2. Wash the shower screen in warm, soapy water, and rinse with clean water.
3. Place the shower screen into the brew head with the smooth side facing down, and attach with the shower screen screw. Turn the screw clockwise until snug.

NOTE: When the shower screen is attached, the center screw should be flush with the surface of the screen. If it is not, remove the screen, turn it over, and re-attach.

Priming After Long Periods of Non-Use

For the best tasting espresso, prime the espresso machine with fresh water after a long period of non-use. Priming will also ensure that the boilers are filled and the espresso machine is ready to operate.

1. Remove the reservoir, empty any stale water, replace, and fill the reservoir with fresh water to the max fill line.
2. Fill the boilers with the fresh water. For instructions, see “Fill and Rinse the Boilers” on page 13.

Descaling

Calcium deposits (“scale”) from water will build up in the espresso machine over time and may impair espresso quality. Scale should be removed every four months; local hard-water conditions may require more frequent descalings. Use a packaged descaling agent or appropriate decalcification tablets to remove scale.

1. Remove the shower screen from the brew head. See “Cleaning the Shower Screen” on page 24 for instructions.
2. Make certain the water reservoir is empty. Following the directions on the descaling agent packet, mix the descaling solution and add it to the reservoir.
3. To catch the cleaning solution, place a large cup under the brew head (do not attach the portafilter), and another under the frothing nozzle.
4. Press the On/Off Power Switch to turn the espresso machine on. It is not necessary for the boilers to heat before proceeding to the next step.
5. Press the Espresso Button and dispense cleaning agent through brew head for 15 seconds; press the Espresso Button again to shut off.
6. Open the Steam Dial by turning it counterclockwise, then press and hold the Hot Water Button for 15 seconds to dispense cleaning agent through the frothing arm and nozzle.
7. Press the On/Off Power Switch to turn the espresso machine off.
8. Wait 20 minutes, then repeat steps 4–7. Every 20 minutes, keep repeating steps 4–7 until nearly all the solution in the reservoir has been run through the espresso machine. Do not allow the reservoir to run completely dry.
9. Remove the water reservoir and rinse with fresh water, then replace and fill with fresh water to the max fill line. Press the On/Off Power Switch to turn the espresso machine on, and flush the espresso machine by quickly dispensing the contents of the reservoir, alternating between the brew head and frothing arm. Do not allow the water reservoir to run completely dry.
10. Attach the shower screen to the brew head. See “Cleaning the Shower Screen” on page 24 for instructions. Be sure to add additional fresh water to the reservoir for brewing.

TROUBLESHOOTING

- **If the power on indicator remains off and the boilers fail to heat when the On/Off Power Switch is pressed:**

Check to see if the espresso machine is plugged in; if it is, unplug the espresso machine, plug it back in, and press the On/Off Power Switch again. If the espresso machine still does not operate, check the fuse or circuit breaker on the electrical circuit the espresso machine is connected to and make certain the circuit is closed.

- **If coffee does not flow from the portafilter, the...**

- water reservoir may be empty, or the brewing boiler may not be filled
- reservoir siphon hose may be kinked or improperly placed
- shower screen may require cleaning
- espresso machine may need to be descaled
- coffee may be too finely ground
- coffee may be too firmly tamped

- **If the water pump is noisy, the...**

- water reservoir may be empty
- reservoir siphon hoses may be kinked or improperly placed
- boilers may not be filled

- **If water leaks from the portafilter...**

- the portafilter may not be properly attached to the brew head
- coffee grinds may be clinging to rim of portafilter or brew head gasket
- the brew head gasket may be dirty or worn

- **If little steam or froth is being produced, the...**

- frothing boiler may not be at operating temperature
- Steam Dial may not be completely open
- frothing nozzle may be need to be cleaned
- water reservoir may be empty, or the frothing boiler may not be filled

If the problem cannot be fixed with the steps above, see the KitchenAid Warranty and Service section on page 37.*

*DO NOT return the Espresso Machine to the retailer – they do not provide service.

TECHNIQUES OF A BARISTA

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TECHNIQUES

OF A BARISTA



What is Espresso?

Espresso began as an attempt in the 1800s to quickly brew coffee on demand, by the cup. The goal was to serve the freshest, most flavorful coffee possible and avoid the burned, stale taste of coffee kept warm on a stovetop. To speed the brewing process, coffee pioneers struck upon the idea of forcing water through the grounds under pressure. Steam was initially used to supply the pressure, followed by compressed air, lever operated pistons, and finally, the electric water pump.

Through the decades, the elements of espresso brewing were tested and refined to produce the standards we have today: one ounce of true espresso comes from exposing $\frac{1}{4}$ ounce (7 grams) of finely ground and packed coffee to 195–205° F water under 130 lbs. (9 bars) of pressure. In a brief 25 seconds, most of the highly flavorful coffee aromas and oils are extracted, while the more bitter compounds and off-tastes are left behind.

When the ground coffee is fresh and the brewing is done well, the pressurized brew water emulsifies the coffee oils into the golden foam called *crema*, which crowns the espresso shot with ultimate flavor and aroma.

Overextraction and Underextraction

Brewing great espresso takes an understanding of what actually winds up in the cup when coffee is exposed to water. Roughly 30% of a roasted coffee bean is made of water soluble compounds. 20% of those compounds dissolve fairly easily, while the remaining 10% take a little more work – which is a good thing, because that less-soluble 10% is acidic, bitter, and generally unpleasant. The goal of all coffee making is to extract the easily dissolved oils and compounds while leaving the rest in the grounds.

If ground coffee steeps in water too long, all the soluble compounds will be extracted, which makes for a very bitter brew. This is called *overextraction*. The opposite of overextraction is *underextraction*, which occurs when coffee is not exposed to the brew water long enough, leaving the essential flavors and aromas locked in the grounds. Underextraction results in coffee that is weak in taste.

Whether brewed coffee is overextracted, underextracted, or just right depends on several factors, including the ratio of coffee to brew water, the fineness of the grind, the brewing temperature, and the length of time the water is in contact with the coffee. All these factors are either directly or indirectly affected by the barista's technique.

Before Brewing: The Elements of Great Espresso

Before the espresso machine is even plugged in, you'll need several elements to produce great coffee.

Fresh Coffee Beans

Great coffee can only come from fresh coffee beans, properly roasted. Many baristas recommend buying beans roasted no darker than a medium roast, the color of which appears as an even chocolate brown. This roast preserves the natural sugars and flavor of the bean, which sets the stage for excellent espresso. A medium roast is the darkest a bean can be roasted without oils developing on the surface.

Darkly roasted beans – which appear dark brown or nearly black – look great, but the extra roasting overwhelms the more delicate coffee flavors and caramelizes any sugars. A heavy “roasted” coffee flavor, often bitter and sharp, will predominate with a dark roast.

To preserve the freshness of coffee beans:

Keep beans in an opaque, air-tight container and store them in a cool, dry place. Refrigeration is not recommended, as condensation tends to form on the beans whenever the container is opened. Freezing can help preserve beans stored for an extended period, but it will also impair flavor.

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Great Tasting Water

An often overlooked element of great espresso is the brew water. If you don't enjoy the flavor of your tap water, don't use it to brew espresso – use bottled, purified water instead. Since it doesn't take long for fresh water to acquire a “flat” quality and taste, it's also a good idea to change the water in the reservoir often and refill the boilers after a long period of non-use.

Do not use mineral water or distilled water – they can damage the espresso machine.

The Right Grind – and Grinder

Espresso demands a very fine, very consistent grind. Blade grinders and inexpensive burr grinders usually fall short when it comes to producing the grinds needed for outstanding espresso.

The best espresso requires a quality burr grinder, like the PRO LINE™ Series Burr Coffee Mill. A good burr grinder will maximize the flavor and aroma of espresso by producing an extremely consistent grind with very little frictional heating,

Espresso Brewing Technique

Brewing Temperature

Water temperature and temperature consistency have a direct impact on the flavor of espresso. Great espresso comes from brewing at an optimum temperature, ideally between 195 and 205 degrees Fahrenheit. Modern boilers and thermostats excel at producing and maintaining the right temperature, but there is a complicating factor that is a major concern for baristas: maintaining heat in the brew group.

If water is pumped from the boiler at a near perfect 200° F, but flows into a portafilter that's at room temperature, the water will cool dramatically – and the actual brewing temperature will be far less than what the best espresso requires. If the water temperature drops below 195° F, the espresso might still exhibit good crema, but it will acquire a distinctly bitter or sour note.

To Insure Proper Brewing Temperature:

- Always attach the portafilter (with filter basket) to the brew head when the espresso machine is heating. This warms the filter.
- Always wait until the boilers are fully heated before brewing – at least 6 minutes.
- Dose and tamp your coffee quickly, and brew immediately. This prevents the portafilter from cooling significantly.

- Never rinse the portafilter with cool water if you are brewing additional shots. After knocking the old grounds from the filter, wipe leftover grounds from the basket with a clean towel. Make sure the filter basket is dry before adding more coffee.
- Keep the empty portafilter attached to the brew head when you're engaged in other tasks, like grinding or frothing.
- Warm a cup or demitasse by placing it on top of the espresso machine before brewing. Cups can also be heated instantly with a shot of steam from the frothing arm.

The PRO LINE™ Series Espresso Machine is designed to provide an optimum brewing temperature. Dedicated dual boilers eliminate the temperature fluctuations common with single boiler designs when alternating between brewing and frothing. The chrome-plated brass brew group heats quickly, and is commercial-size for a very good reason: commercial-size groups retain heat better than smaller groups.

The Espresso Machine does its part to provide the right brewing temperature. The rest is up to the barista!

Grinding

Great espresso demands the freshest coffee, and the freshest coffee is always ground immediately before brewing. The most delicate aromatic compounds in coffee go stale within a few minutes of grinding, so grind only as much as you intend to brew immediately.

Dosing

Dosing is the process of measuring ground coffee into the filter basket. A single shot of espresso requires ¼ ounce (7 grams) of coffee – a double shot, twice that. If filled level with finely ground coffee, the scoop included with the PRO LINE™ Series Espresso Machine is a near perfect measure for one shot of espresso.

Accomplished baristas usually don't bother making precise measurements when dosing: they simply fill the basket nearly to the brim and sweep any excess coffee from the filter with their fingers, leaving exactly what they need. After you've had some experience dosing, leveling, and tamping your coffee, you'll be able to consistently dose your coffee by sight, just like the pros.

If you're dosing coffee without the aid of a measuring scoop, it is important not to overfill the filter basket. Coffee needs room to expand when brewing. If the coffee is crushed against the shower screen, it will prevent an even dispersion of water across the filter, leading to uneven extraction and poor espresso.

Here's how to tell if you're overfilling the filter basket:

1. Fill the basket, level the coffee, and apply a good tamp (see the next section, "Tamping").
2. Attach the portafilter to the brew head, then remove it immediately.

Continued...

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3. If the coffee in the portafilter has an imprint of the shower screen or the shower screen screw, there is too much coffee in the filter basket!

Leveling

Leveling the coffee after it has been dosed into the filter is a critical technique for great espresso. If the coffee isn't evenly distributed in the filter, tamping the coffee will create areas of high and low density. The high pressure brew water will inevitably follow the path of least resistance, flowing heavily through the low density coffee – overextracting the bitter coffee compounds – and flowing lightly through the higher density coffee, underextracting the flavorful essences. This uneven extraction results in thin, weak, bitter espresso.

To Level Coffee In the Filter Basket:

- Make sure the filter basket is dry before adding coffee; moisture in the basket will create a path of least resistance for the brew water.
- After dosing the filter with coffee, level the coffee by sweeping a finger back and forth over the filter. Do not sweep in one direction only – this will cause the coffee to pile up on one side of the basket and produce uneven extraction. Try to impart a slight bowl shape to the coffee, with the center lower than the sides.
- Make certain there are no gaps between the coffee and the sides of the filter.

Properly Leveled Coffee



Tamping

Tamping compresses the coffee into a level disc (also called a *puck*) that provides uniform resistance to the high-pressure brew water. Properly leveled and tamped coffee will produce an even extraction of coffee compounds – and great espresso. Coffee that is tamped too softly will be deformed by the brew water, resulting in uneven extraction, a fast brewing time, and mediocre espresso. Coffee tamped too firmly will slow the brewing time, making for a bitter, overextracted beverage.

Proper Tamping Technique

1. The tamper handle should be grasped like a doorknob, with the base of the handle firmly against the palm. When tamping, try to keep the tamper, wrist, and elbow in a straight line.
2. With the bottom of the portafilter resting on a solid surface, gently press the tamper into the coffee with the goal of creating a level surface. Remove the tamper from the filter basket with a slight twisting motion – this will help prevent the tamper from pulling up chunks of coffee.



3. After removing the tamper, some grinds may stick to the side of the filter basket. Tap the portafilter gently on the table to jostle the grinds onto the tamped coffee disc. Do not tap too hard, or the tamped coffee will dislodge or fracture.

4. Apply a second, finishing tamp (also called a polishing tamp). Press straight down on the coffee with about 35 pounds of pressure, then relax the force slightly (to about 20 pounds) and polish the coffee by turning the tamper completely around twice.
5. Inspect your tamp. The coffee disc should be smooth and level with no gaps between the side of the filter basket and the coffee.



Measuring Tamping Pressure

20 pounds, 30 pounds – how do you know how much tamping force you are actually using? Do what the baristas do: use a bathroom scale! Place a scale on a table or countertop, and tamp your coffee on top of it. Pretty soon, you will develop a feel for how much twenty or thirty pounds of force is.

Continued...

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Shot Volume

The brew group and boilers are heated. The fresh coffee has been ground, dosed into the portafilter, expertly leveled, and precisely tamped. Now comes the moment of truth: brewing!

For the best espresso, never extract more than a single shot (1 oz.) using the small filter basket or a double shot (2 oz.) using the large one. Brewing more will overextract the coffee and result in thin, bitter espresso.

As it pours, perfect espresso is a deep reddish brown with a thick texture like honey running off a spoon. It often forms what are called *mouse-tails*, or thin syrupy streams. As increasingly bitter and acidic compounds are extracted, the espresso pour will begin to lighten; in some cases, the pour will become almost white. Expert baristas will watch the pour carefully and quickly stop brewing if it starts to lighten.

Espresso Ristretto is espresso brewed with less than normal shot volume. Prepare the espresso machine to brew a double shot, but stop brewing when only 1½ ounces have been extracted. What you've done is restrict the pour to include only the most flavorful and least bitter coffee oils and essences.

Extraction Rate

Decades of experience have shown that the best espresso – whether a single or a double shot – takes about 20–25 seconds to brew.

If your espresso is brewing much faster or slower than 20–25 seconds, and your tamping technique is good, adjust the grind! Grind finer for a slower extraction rate, and coarser for a faster one. Keep the dose and tamp the same.

Coffee is sensitive to the ambient humidity and will absorb moisture readily. This will affect the extraction rate. In a humid environment, the extraction rate will slow down; in dry conditions, the extraction rate will speed up. You may find yourself adjusting the grind according to the season – or the day's weather.

Some grinders do not allow the fine adjustments necessary to correct the extraction rate. The best solution is to invest in the KitchenAid® PRO LINE™ Series Coffee Mill. If this isn't possible, experiment with the tamping pressure. Tamp with less force for a faster pour, and more force for a slower one.

The Golden Crema

A mark of fine espresso is crema, the dense golden foam of emulsified coffee oils that captures the essence of coffee flavor. Good crema should be thick and cling to the side of the cup when it's tilted; the best crema should be able to support a sprinkling of sugar for nearly 30 seconds.

Troubleshooting Espresso As It Brews

As it pours, if your espresso...

...has more of a cinnamon color, instead of being deep brown:

- make sure your brew group and boilers are fully heated
- use a less acidic blend of coffee

...is whitish with thin brown streaks:

- review your tamping technique – the tamped coffee has fractured, or a gap has developed between the coffee and the side of the filter basket

...is thin and fast-flowing:

- review your tamping technique – the tamp may not be firm enough to provide an even resistance to the brew water
- use a finer grind
- check coffee freshness

...barely dribbles out the portafilter:

- review your tamping technique – the tamp could be too firm
- use a coarser grind

A GLOSSARY OF ESPRESSO DRINKS

Americano

6 to 8 ounces of hot water added to a single shot of espresso. This makes a superb cup of coffee.

Café Latte

8 to 10 ounces of steamed milk added to a single shot of espresso. Lattes are often flavored with 1 to 2 ounces of syrup.

Café Mocha

A café latte with several ounces of chocolate syrup added, and usually topped with whipped cream and chocolate flakes. It can also be prepared without syrup using steamed chocolate milk.

Cappuccino

A standard cappuccino is a combination of steamed milk and espresso that's capped with a layer of frothed milk; it's usually served in a bowl-shaped cup of 6 to 7 ounce volume. Powdered cocoa or cinnamon may be sprinkled on top as a garnish.

Classic Cappuccino

Classic cappuccino is common in Italy, and is simply espresso topped with frothed milk.

Doppio

A double shot of espresso.

Espresso Breve

Espresso with steamed half & half poured on top.

Espresso Con Panna

Espresso topped with a dollop of whipped cream.

Espresso Lungo

Espresso "pulled long" – that is, brewed with a greater than normal shot volume. This technique produces caffeine-heavy espresso which is thinner, lighter-colored, and less full-bodied than normal. To make espresso lungo, brew 1.5 oz. using the small filter basket, or 3 oz. using the large filter basket. Use a slightly coarser grind to keep the brewing time between 20–25 seconds; extending the brewing time beyond 30 seconds will make the espresso lungo excessively bitter.

Espresso lungo is often used to make stronger-tasting Americanos or lattes.

Espresso Macchiato

Espresso with a dab of steamed milk added to the top.

Espresso Ristretto

An espresso "pulled short" – that is, brewed with less than normal shot volume to maximize flavor and minimize bitterness. For ristretto, simply brew about $\frac{3}{4}$ oz. using the small filter basket or 1.5 oz. using the large basket.

WARRANTY AND SERVICE INFORMATION

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ESPRESSO MACHINE **WARRANTY**
FOR THE **50 UNITED STATES**
AND DISTRICT OF COLUMBIA

This warranty extends to the purchaser and any succeeding owner for PRO LINE™ Series Espresso Machines operated in the 50 United States and District of Columbia.

Length of Warranty:	KitchenAid Will Pay For Your Choice of:	KitchenAid Will Not Pay For:
Two Year Full Warranty for Household Use, from date of purchase.	 Hassle-Free Replacement of your Espresso Machine. See "Arranging for Hassle-Free Replacement" for details, or call the KitchenAid Customer Satisfaction Center toll-free at 1-800-541-6390 . OR The replacement parts and repair labor costs to correct defects in materials and workmanship. Service must be provided by an Authorized KitchenAid Service Center. See the KitchenAid® PRO LINE™ Series Espresso Machine Warranty for Puerto Rico for details on how to arrange for service.	A. Repairs when the Espresso Machine is used in other than normal single family home use. B. Damage resulting from accident, alteration, misuse or abuse. C. Any shipping or handling costs to deliver your Espresso Machine to an Authorized Service Center. D. Replacement parts or repair labor costs for Espresso Machines operated outside the 50 United States and District of Columbia.

KITCHENAID DOES NOT ASSUME ANY RESPONSIBILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

ESPRESSO MACHINE **WARRANTY** FOR **PUERTO RICO**

A limited two year warranty extends to the purchaser and any succeeding owner for PRO LINE™ Series Espresso Machines operated in Puerto Rico. During the warranty period, all service must be handled by an Authorized KitchenAid Service Center.

Please bring the Espresso Machine, or ship it prepaid and insured, to the nearest Authorized Service Center. Call toll-free **1-800-541-6390** Monday through Friday, 8 a.m. to 8 p.m. (Eastern Time), or Saturday, 10 a.m. to 5 p.m. to learn the location of a Service Center near you. Your repaired Espresso Machine will be returned to you prepaid and insured.

ARRANGING FOR **HASSLE-FREE** REPLACEMENT

IF YOU RESIDE IN THE 50 UNITED STATES and your KitchenAid® PRO LINE™ Series Espresso Machine should fail within two years of ownership, simply call our toll-free Customer Satisfaction Center at **1-800-541-6390** Monday through Friday, 8 a.m. to 8 p.m. (Eastern Time), or Saturday, 10 a.m. to 5 p.m. Give the consultant your complete shipping address. (No P.O. Box Numbers, please.)

KitchenAid will arrange to deliver an identical or comparable replacement to your door free of charge and arrange to have your “failed” Espresso Machine returned to us. Your replacement unit will also be covered by our two year full warranty.

When you receive your replacement PRO LINE™ Series Espresso Machine, use the carton and packing materials to pack-up your “failed” Espresso Machine. In the carton, include your name and address on a sheet of paper along with a copy of the proof of purchase (register receipt, credit card charge slip, etc.).

ORDERING **ACCESSORIES** AND **REPLACEMENT** PARTS

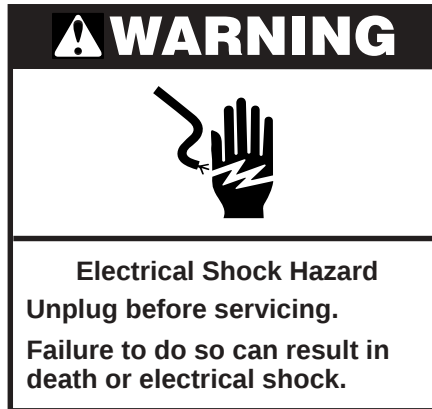
To order accessories or replacement parts for your Espresso Machine, call toll-free **1-800-541-6390** Monday through Friday, 8 a.m. to 8 p.m. (Eastern Time), or Saturday, 10 a.m. to 5 p.m., or write to:

Customer Satisfaction Center, KitchenAid Portable Appliances,
P.O. Box 218, St. Joseph, MI 49085-0218.

ARRANGING FOR **SERVICE** AFTER THE **WARRANTY** EXPIRES

For service information, call toll-free **1-800-541-6390** Monday through Friday, 8 a.m. to 8 p.m. (Eastern Time), or Saturday, 10 a.m. to 5 p.m., or write to:

Customer Satisfaction Center, KitchenAid Portable Appliances,
P.O. Box 218, St. Joseph, MI 49085-0218.



ARRANGING FOR **SERVICE** OUTSIDE
THE **50 UNITED STATES**
AND PUERTO RICO

Consult your local KitchenAid dealer or the store where you purchased your PRO LINE™ Series Espresso Machine for information on how to obtain service.

