Update Bulletin No. 828

Jim Dulley

Thank you for your interest in writing to me about methods to keep foods warm efficiently and specifically warming drawers. Warming drawers are the newest built-in appliance which is becoming popular in today's kitchens.

This is for two reasons - energy efficiency and the varying busy schedules of family members. Today, with both parents working and kids having many planned activities, families seldom have the opportunity to sit down to dinner together as was common when I was a child.

The basic options for preparing a meal ahead of time. One is to refrigerate it and reheat it in the microwave or oven. This is inefficient and the food dries out when it is reheated. You can try to keep the food continuously warm in the oven, this dries out the food and causes the kitchen to overheat during summer. A warming drawer works like a small electric oven, but is allows you to control the moisture level so foods do not dry out. You can also select a "crisp" setting with no moisture for certain foods. See the table on page 3 showing the recommended temperature and moisture settings for various common foods.

I have included information on the products of the major manufacturers of warming drawers on the following pages. They all operate in a similar fashion and range in heating element output from about 450 watts to 600 watts. This allows any of them to operate on standard 110-volt house power without special wiring or circuit breakers. The higher wattage models may heat up a little faster, but is not a significant difference. The Miele models heat up particularly fast. If you do a lot of baking with yeast, consider selecting a model with a low-temperature "proof" setting. Select the largest model which will fit the space available.

A timer is a convenient feature to have because it will shut off the unit after a preset time. This is good when children use it because they often forget to switch it off. Many models have either a moist or a crisp moisture level setting. Others have a variable-moisture level settings. If you are particular about the food, this may be helpful, but just the simple single crisp or moisture setting is usually adequate. An indicator light, showing the unit is on, is also a safety feature around children. I have also included general kitchen efficiency tips on page 4.

Jim

Some suggested retail prices are:

Electrolux 30" - $999

Kitchenaide - 27" - $779 to $829 30" - $849 to $879

Frigidaire - 300" - $600

GE - 30" - $700 to $750, 27" - $600

Sears Kenmore - $600 to $700

Jenn-Aire $800 and up

Selected Manufacturers of Warming Drawers

DACOR, 1440 Bridge Gate Dr., Diamond Bar, CA 91765 - (800) 793-0093 www.dacor.com

sizes - 24" • 27" • 30" • 36" wattages - 500 temperature range - 100 to 200 degrees
colors - black, white, stainless steel, custom drawer front kit timer - up to 4 hours
features - The large 36" drawer will hold six 9" dinner plates side by side. The 27" and 30" models fit four 11" dinner plates while the 24" model holds four 9" plates. The four-hour timer shuts off automatically, or for continuous operation, simply use the compliant manual override switch. The controls are concealed behind the drawer panel for a more unobtrusive look. There are adjustable humidity controls that allow you to select crisp or moist warming of food. The full extension drawer glides make for easy loading and unloading. The 24" or 27" "Integrated" warming ovens accepts a fully integrated drawer panel so you can match the drawer to your existing kitchen cabinetry.

DCS, INC., 5800 Skylab Rd., Huntington Beach, CA 92647 - (800) 433-8466 www.dcsappliances.com

sizes - 27" • 30" wattages - 500 temperature range - 170 to 230 degrees
colors - black, white, stainless steel, platinum, cypress green, adriatic blue timer - no
features - The 30" drawer has 1.9 cubic feet of space while the 27" drawer has 1.5 cubic feet of space. This is enough space for six dinner plates placed on the rack side by side. There are three temperature settings that are thermostatically controlled with a range of 90 to 230 degrees. It has a crisp or a moist setting depending on the type of food you are keeping warm. The drawers are equipped with a specially designed door latch and smart gaskets to provide maximum heat retention. A satin-brushed door handle is equipped with chrome spacers for hand clearance. All models come with a removable stainless steel shelf/serving tray for easy loading, unloading and cleaning. All Warming Drawers are covered by a one (1) year parts and labor warranty. In addition, a five (5) year limited parts warranty covers specific parts that vary by model.

ELECTROLUX HOME PRODUCTS, 250 Bobby Jones Expy., Martinex, GA 30907 - (706) 860-4110 www.electroluxusa.com

sizes - 30" wattages - 600 temperature range - 150 to 260 degrees
color - black w/ chrome timer - no
features - The "Smooth Glide" ball-bearing rack system makes operating the drawer easy. The interior drawer is made of stainless steel for durability and no rusting. It opens by pushing with just one finger - a plus when transferring steaming containers of food. The drawer features a chrome rack that is ideal for buns, rolls or other dishes. It offers the ability to warm a wide variety of containers. It has a blue heating element-on indicator light display for safety. The drawer can be installed in combination with a built-in oven or as a stand alone unit beneath the countertop. It has a one-year warranty on parts and labor.

GE APPLIANCES, Appliance Park, Louisville, KY 40225 - (800) 626-2000 www.geappliances.com

sizes - 27" • 30" wattages - 450 temperature range - 80 to 210 degrees
colors - black, white, bisque, stainless steel, custom drawer front kit timer - no
features - A variable temperature control has four settings: proof (80 degrees), low (140 degrees), medium (170 degrees), and high (210 degrees). The variable humidity control allows foods to remain crisp or retain moisture. All units include a half rack for additional warming space. A signal light illuminates when unit is on. An optional wood panel kit is available that allows you to match existing kitchen cabinetry.

JENN-AIR, 240 Edwards St., Cleveland, TN 37311 - (800) 688-1100 www.jennair.com

sizes - 30" wattages - 450 temperature range - 82 to 210 degrees
colors - black, white, stainless steel, custom drawer front kit timer - up to 4 hours
features - The large interior holds up to four fully loaded 11-inch dinner plates. Interchangeable drawer fronts coordinate with other cooking products. The drawers may be installed anywhere including kitchen, wet bar or butler's pantry. Drawer fronts with a curved glass design are available in black, white or stainless steel. A custom panel kit enables you to match existing cabinetry. A continuous on setting keeps drawer on until manually turned off. An auto-off timer may be set for up to four hours before automatically turning heat off. There are four preset temperature settings ranging from proof to high. Variable moisture control so food can maintain its proper texture, from moist to crisp. Removable half rack enables you to stack plates or pans for added space. Remove rack for larger pans. Optional commercial-grade, stainless steel set of five pans with lids.

KITCHENAID, P.O. Box 218, St. Joseph, MI 49085 - (800) 422-1230 www.kitchenaid.com

sizes - 27" • 30" wattages - 450 temperature range - 90 to 225 degrees
colors - white, black, biscuit, cobalt blue, stainless steel timer - up to 4 hours
features - There is a sensor temperature control with an automatic shut-off for safety. An indicator light allows you to know when drawer heating element is on for safety around children. A removable, two-position rack adjusts to the size and shape of the containers or plates you are using. Individual serving pans or the entire drawer are removable for easy cleaning. The timer is adjustable from just 15 minutes to four hours.

MIELE, INC., 9 Independence Way, Princeton, NJ 08540 - (800) 843-7231 www.mieleusa.com

sizes - 27" • 30" wattages - 450 temperature range - 140 to 203 degrees
colors - black, white, stainless steel timer - up to 4 hours
features - Dual heating elements allows for a rapid heat-up, as little as 10 minutes. You can choose from a continuous warming setting or use the timer for up to four hours of warming. The unit automatically shuts off after selected time period. Controls are hidden inconspicuously behind drawer front for a seamless appearance. There are several handle options to vary its appearance. It uses an open-side design to allow for easy access to large serving trays when entertaining. There is a one-year warranty.

SEARS/KENMORE, 3333 Beverly Rd., Hoffman Estates, IL 60179 - (800) 349-4358 www.sears.com

sizes - 30" wattages - 450 temperature range - 90 to 210 degrees
colors - white, black, bisque, stainless steel timer - no
features - The Kenmore 30" electric built-in warming drawer has 1.9 cubic feet of space for warming foods. The front of the drawer has a flush appearance when closed. There is a variable warming temperature control and a crisp/moist humidity control. All models feature a removable stainless steel pan for easy cleaning. These models have a clean exterior styling and are reasonably priced.

THERMADOR, 5551 McFadden Ave., Huntington Beach, CA 92649 - (800) 656-9226 www.thermador.com

sizes - 24" • 27" • 30" wattages - 450 temperature range - 140 to 220 degrees
colors - white, black, stainless steel timer - no
features - The warming drawers come standard in black, white or stainless steel. The stainless steel drawer front is also available with an optional stainless steel professional handle. The 24" drawer has a capacity of 1.2 cubic feet and the 24" and 30" drawers have a capacity of 1.9 cubic feet. A half rack is included for stacking multiple dishes. There are three temperature settings of low, medium and high.

VIKING, 111 Front St., Greenwood, MS 38930 - (662) 455-1200 www.vikingrange.com

sizes - 27" • 30" • 36" wattages - 425 • 450 • 550 temperature range - 90 to 250 degrees
colors - black, white, biscuit, stainless steel, stone gray, graphite gray timer - no
features - Temperature settings from 90 to 250 degrees accommodate all types of food. Low setting is ideal or plate warming or bread proofing. High setting keeps soups and sauces piping hot. The 36" drawer has the largest capacity at 2.0 cubic feet. All models come with two removable stainless steel low racks and a removable stainless steel moisture cup. Low racks cover entire bottom of pan for the largest loads or can be used for only half coverage by removing on section. The moisture cup holds water to increase interior humidity. The "Professional Series" allows warming drawer to blend seamlessly into existing cabinetry with locally supplied front panel. An optional pan/lid set with five heavy-gauge stainless steel pans with lids are available. All warming drawer models may be ordered with a brass trim option to vary the look of your kitchen.

WOLF APPLIANCE CO., P.O. Box 44848, Madison, WI 53744 - (800) 332-9513 www.subzero.com

sizes - 30" wattages - 450 temperature range - 70 to 200 degrees
colors - stainless steel, platinum, carbon stainless steel, custom drawer front kit
timer - up to 4 hours
features - The warming drawer is sold as a base unit only thus a drawer front accessory is required. The integrated drawer front allows for a custom wood panel and handle hardware. It has four preset temperature points (proof, low, medium, high). There are four choices for the drawer front; classic stainless steel, platinum, carbon stainless steel or an integrated drawer front. There is a hidden electronic touch control panel that controls temperature and moisture (two settings - crisp or moist). There is a preset four-hour automatic shut-off control. The unit comes complete with a stainless steel interior, rack and removable drawer tub. It has a two-year warranty on parts and labor and an extended five-year warranty on some electrical and mechanical parts.

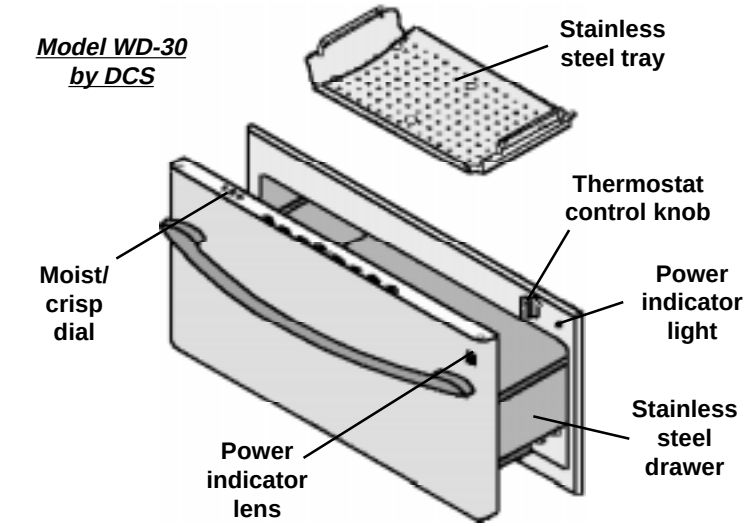
TEMPERATURE SETTINGS:

The Warming Drawer is designed to keep previously cooked foods at a safe, warm temperature, for extended times, when operated correctly. The Warming Drawer should be pre-heat-ed on the highest setting for no less than 1/2 hour prior to inserting the food to be warmed. Failure to pre-heat could result in unsafe food temperatures, which could accelerate the formation of bacteria in the food being kept warm. The dial on the top right corner of the unit is the on/off and temperature control adjustment. When the dial is turned clockwise from the off position to the low position, the unit will maintain a temperature of approximately 175. By rotating the dial clockwise to the high position, the drawer will reach a temperature of approximately 230.

To Use: Turn the thermostat dial to a temperature setting - High, Medium, Low.
- If you will be using the tray, preheat it while preheating the warming drawer.
- Preheat any empty serving dishes to be used, while preheating the drawer.
- Add cooked, hot food in its cooking container or heat-safe container.
- Aluminum foil may be used to cover food containers.

***CAUTION:** Do not use plastic containers or plastic wrap. They can melt if in direct contact with the drawer or a hot utensil and if these items melt, they may adhere to the drawer and may be unremovable. Use only heat-safe dishes.*

Model WD-30 by DCS



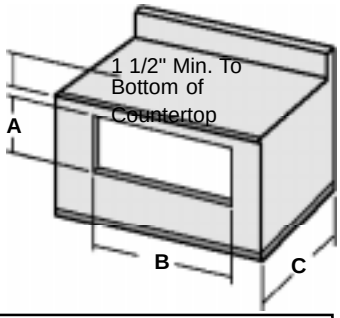
Temp./Moisture Settings for Typical Foods

FOOD	*TEMP.*	*MOISTURE*
Beef-rare	Low	Moist
Beef-medium	Med	Moist
Beef-well done	Med	Moist
Bacon	High	Crisp
Casseroles	Med	Moist
Cooked Cereal	Med	Moist
Eggs	Med	Moist
Fish, Seafood	Med	Moist
Fried Foods	High	Crisp
Fruit	Med	Moist
Gravy, Cream Sauces	Med	Moist
Ham	Med	Moist
Lamb	Med	Moist
Pancakes, Waffles	High	Moist
Pies, one crust	Med	Moist
Pies, two crusts	Med	Crisp
Pizza	High	Crisp
Pork	Med	Moist
Potatoes, baked	High	Crisp
Potatoes, mashed	Med	Moist
Poultry	High	Moist
Vegetables	Med	Moist

The temperatures range from:
Low (175 - 191), Med. (191 - 208), High (209 - 230)
To keep several different foods hot together, set the temperature to the food needing the highest set-ting. Place items needing highest setting on the bottom of the drawer and food needing less heat on the tray.
Source: DSC, Inc.

MOUNTING INSTALLATION for DCS Models WD-30

The lower rear corners of the cabinet need to provide proper support to the back of the Warming Drawer and the anti-tip mounting clips. A 120 volt AC outlet should be located no further than 36 inches from the back center of the Warming Drawer. Illustrations suggest one possible bottom support, but the consumer is not limited to this idea for mounting configuration.



STEP 1

The bottom rear section of the cabinet should be made of solid plywood or 2x4 and needs to be installed to hold the anti-tip mounting clips and support the weight of Warming Drawer, which is 90 lbs.

STEP 2

Use the screws provided to attach the mounting clips which must be installed for anti-tip safety to the bottom support at the back. See placement dimensions in figures below.

Cutout Dimensions			
	A	B	C
WD-27	11 3/4	25 3/8	23 7/8
WD-30	11 3/4	28 3/8	23 7/8

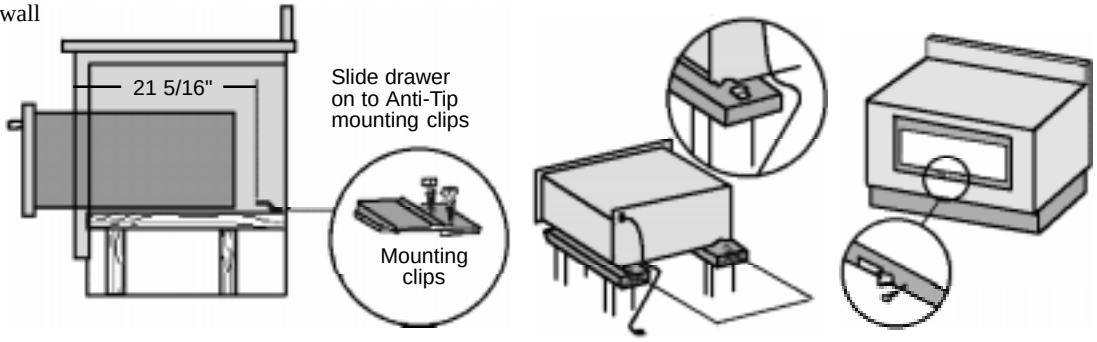
STEP 3

The Warming Drawer has slots on the back side where it will slide onto the anti-tip mounting clips. Plug power cord into a standard electric 120-volt AC wall outlet.

STEP 4

Screw the front face screw into the center hole of the front face of the warming drawer to finish the installation.

***NOTE:** Bottom support should be made of plywood or other solid wood construction capable of supporting the weight of the warming drawer.*



General Kitchen Efficiency Tips

1) Be sure to place the faucet lever on the kitchen sink in the cold position when using small amounts of water. Placing the lever in the hot position uses energy to heat the water even though it never reaches the faucet.
2) Insulate water pipes if possible.
3) Use small electric pans or toaster ovens for small meals rather than your large stove or oven. A toaster oven uses a third to half as much energy as a full-sized oven.
4) Use pressure cookers and microwave ovens whenever possible. They can save energy by significantly reducing cooking time.
5) Use task lighting; instead of brightly lighting a room. Focus the light where you need it by using fluorescent under-cabinet lighting for countertops.
6) Install separate fixtures for work areas like over the sink and range.
7) Install dimmer switches on whole-room ceiling fixtures.
8) Look for appliances with the "Energy Star" label. These appliances have been identified by the U.S. Environmental Protection Agency and DOE as being the most energy-efficient products in their classes.
9) If remodeling, make sure all outside walls are properly insulated and that windows are fully sealed and caulked. Since your kitchen appliances use a large portion of your energy supply, make sure the wiring is sufficient to handle the load.
10) Try to layout your kitchen in an efficient way. Place the refrigerator away from heat sources such as the stove/range, hot water pipes or windows. Insulate the stove/range by placing it between cabinetry and away from windows or doors.
11) When shopping for appliances, keep in mind the size of your family. Singles or small families may want to consider smaller capacity appliances that are more energy efficient.
12) Try to use your oven rather than the stovetop when possible. The oven is more insulated and will use less energy when cooking.
13) Try to prepare multiple meals at one time so that you are using your oven or stovetop less frequently. You can then use your microwave or toaster oven to reheat foods using less energy.
14) Defrost foods before cooking when possible. This can considerably reduce the time needed to cook the food.
15) Dishes that require one hour or more cooking time do not need to be placed in a preheated oven.
16) If possible, purchase a stovetop with ceramic burners. Ceramic stovetops conduct heat more efficiently and will heat up and cool down much quicker than traditional stovetop heating elements.

Refrigerator Efficiency Tips

1) Look for a refrigerator with automatic moisture control. Models with this feature have been engineered to prevent moisture accumulation on the cabinet exterior without the addition of a heater. This is not the same thing as an "anti-sweat" heater which will consume 5 to 10 percent more energy than models without this feature.
2) Don't keep your refrigerator or freezer too cold. Recommended temperatures are 37 to 40 degrees for the fresh food compartment of the refrigerator and 5 degrees for the freezer section. If you have a separate freezer for long-term storage, it should be kept a 0 degrees.
3) To check refrigerator temperature, place an appliance thermometer in a glass of water in the center of the refrigerator. Read it after 24 hours. To check the freezer temperature, place a thermometer between frozen packages and read it after 24 hours.
4) Regularly defrost manual-defrost refrigerators and freezers. Frost buildup increases the amount of energy needed to keep the motor running. Don't allow frost to buildup more than one-quarter of an inch.
5) Make sure your refrigerator door seals are airtight. Test them by closing the door over a piece of paper or a dollar bill so it is half in and half out of the refrigerator. If you can pull the paper out easily, the latch may need adjustment or the seal may need replacing. Keep the seal clean.
6) Cover liquids and wrap foods stored in the refrigerator. Uncovered foods release moisture and make the compressor work harder.
7) Move your refrigerator out from the wall and vacuum its condenser coils once a year unless you have a no-clean condenser model. Your refrigerator will run for shorter periods with clean coils.
8) If possible, place your refrigerator in the coolest part of your kitchen, away from the stove or windows.
9) Do not overcrowd the refrigerator or freezer. Overcrowding makes the unit work harder to maintain the internal temperatures at the optimum levels.

Dishwasher Efficiency Tips

1) Check the manual that came with your dishwasher for the manufacturer's recommendations on water temperature; many have internal heating elements that allow you to set the water heater to a lower temperature.
2) Scrape, don't rinse, off large food pieces and bones. Soaking or prewashing is generally only recommended in cases of burned-on or dried-on food.
3) Be sure your dishwasher is full, but not overloaded.
4) Don't use the "rinse hold" on your machine for just a few soiled dishes. It uses 3 to 7 gallons of hot water each time you use it.
5) Let your dishes air dry; if you don't have an automatic air-dry switch, turn off the control knob after the final rinse and prop the door open a little so the dishes will dry faster.
6) If available, use energy-saving cycles. According to the Association of Appliance Manufacturers, a fully-loaded dishwasher uses less energy than would be required if the same amount of dishes were washed by hand.

Cooking Efficiency Tips

1) If you need to purchase a gas oven or range, look for one with an automatic, electric ignition system. An electric ignition saves gas because a pilot light is not burning continuously.
2) In gas appliances, look for blue flames; yellow flames indicate the gas is burning inefficiently and an adjustment may be needed.
3) Keep range-top burner and reflectors clean; they will reflect the heat better and will save energy.
4) Cooking with tops on pots and pans will bring liquids to a boil more quickly and will allows continued cooking at lower temperature settings. Trapped steam in the pot will cook food faster. This reduces energy use and heat in the kitchen.
5) Use glass or ceramic pans. They retain heat better than metal pans and can allow you to lower the baking temperature by 25 degrees.
6) If you cook with electricity, turn the stovetop burners off several minutes before the allotted cooking time. The heating element will stay hot long enough to finish the cooking without using more electricity. The same principle applies to oven cooking.
7) Never place aluminum foil on an oven bottom (for instance, to catch drippings). The foil may block heat or air circulation reducing oven temperature as much as 50 degrees, thus extending cooking times.
8) Try to avoid opening oven door during cooking time. The temperature in the oven can drop as much as 50 degrees every time it is opened.
9) Try to schedule cooking in the morning so that the kitchen heat does not contribute to air conditioning use during the hotter parts of the day.
10) If you need to cook during hot parts of the day or for extended periods of time, try to shut the kitchen off from the rest of your home and turn on the stove exhaust to help take heat out of the kitchen.
11) When not in use, a kitchen exhaust fan allows hot/cold outside air to come into your home or apartment. Low-cost covers are available to cover exhaust fan openings.
12) Use pots and pans that are similar in size to the stovetop heating element.
13) Only use pot or pans with flat bottoms on the stove.
14) Keep the reflector pans beneath the stovetop heating elements bright and clean.
15) Broil or roast whenever possible because no preheating is necessary.
16) When using the self-cleaning setting on your oven, do it immediately after cooking a meal because the oven will already be hot.
17) Use a microwave when possible. No heat is added to your kitchen when you cook with a microwave oven.
18) When using a microwave, foods cook faster at the edge of the rotary tray, as more microwaves interact with the food there than at the center.
19) When using a toaster oven, be sure air is able to circulate freely around the unit.