Implementing Equipment

Trends in the Production System

- Introduction of new food and new equipments have made significant changes to the food production
  - Shrinking down the kitchen size
  - Expansion of service space
  - Allowing use of fewer and less skilled workers in the production section

Trends in the Production System

- Use of value added foods (requires only limited treatment to be ready for service)

- Availability of many frozen foods
  - Increased the needs for more frozen food space
  - Eliminated the need for dry storage and refrigerated products

Equipment Requirements

- Depends on : the basic Menu

- **Limited menu** → eliminate the requirements for equipment and also save the space

- **Elaborated menu** → requires much more equipment and space

Menu Planning

- Menu planners study recipes and note the equipment needed to produce the menu

- Menu items to be prepared from raw ingredients rather than value-added products increase equipment needs

Selecting Equipment

Receiving Equipment

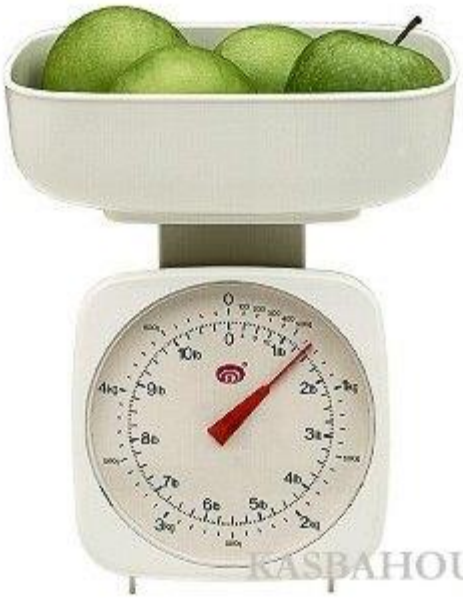
- Before any food is received, it should be checked for quality and quantity
  - Scales
  - Moving equipment
  - Miscellaneous equipment (desks, chairs, file cabinet)

Scales

- **Small scales** to give accurate weights down to ounces or ounce fractions
- **Larger scales** are needed to weigh the heaviest items

- May give an invoice to be stamped showing the time and date of receipt along with the weight


3000 Series
000 kg
Defender
OHAUS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Moving Equipment

1. Dollies
2. Trucks

- The type selected depends on the kinds and amount of items to be moved

Dollies

Storage Areas

- To protect food
- Ensure proper sanitation
- Maintain high food standards

1. Dry storage (shelving and containers)
2. Cold storage (refrigeration and low temp. equipment)

Refrigeration and low temp. equipment

1. Reach in refrigerators
2. Roll in refrigerator
3. Walk in refrigerators

- Reach in

- Roll in

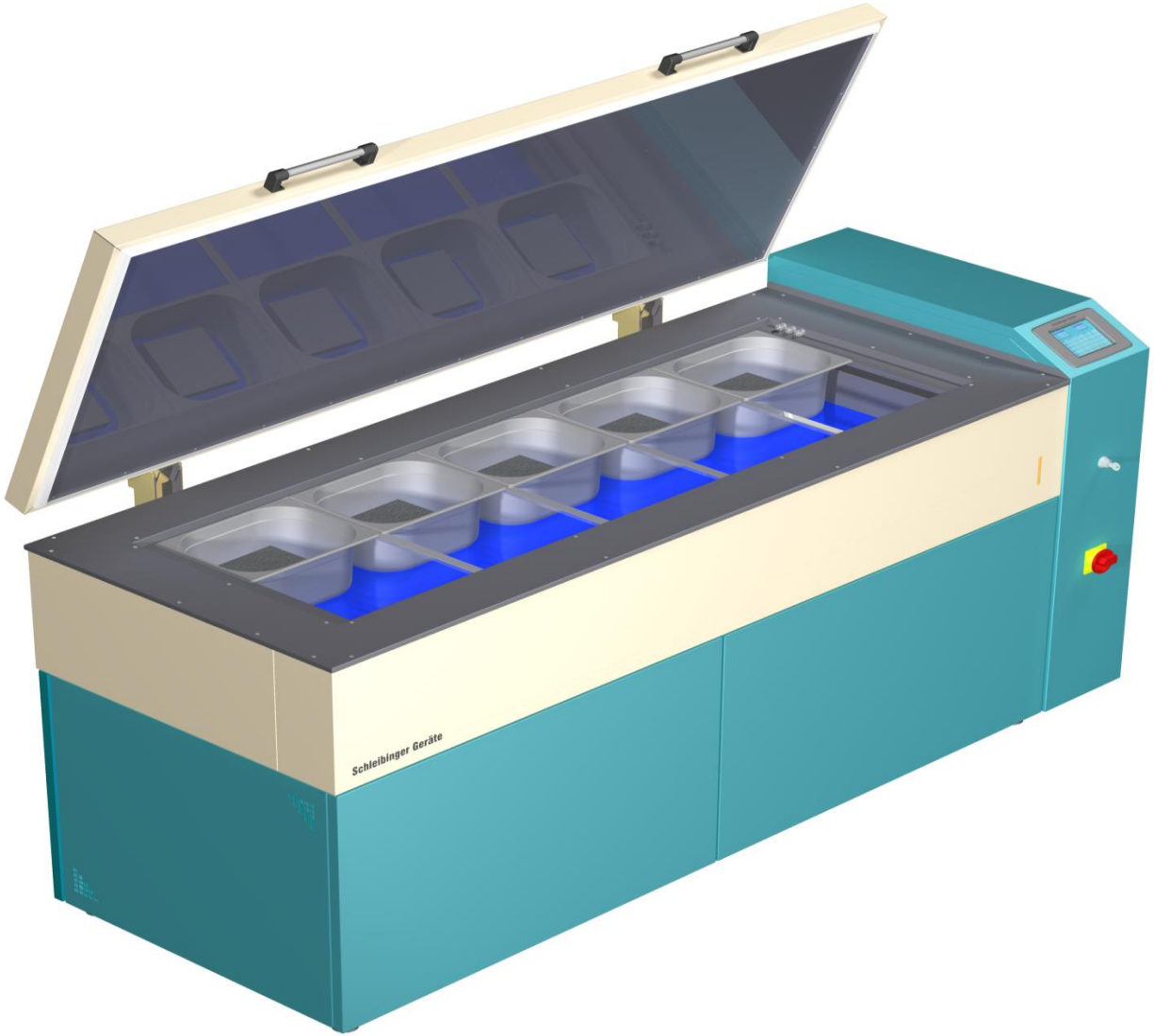
- Walk in

Cold storage equipment

- Quick chill refrigerators
- Blast freezes (freeze food quickly at -34 to -40 C)
- Controlled thawing units (sanitary and convenient overnight thawing of bulk frozen foods)
- Ice makers

Quick chill refrigerators

Controlled thawing units



Preparation equipment

- Food mixers
- Food cutters
- Food slicers
- Meat processing equipment

Food Mixers

- Bench model

- Floor model

Food Cutters

- **Buffalo chopper**
  - Rotating bowl that moves food into the path of a spinning blade
  - The longer the machine allowed to run, the smaller the particles become
  - For chopped onion and cabbage
  - Cheese for topping
  - Meat trimming

http://youtu.be/yh0aPRWwHbQ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Food Cutters

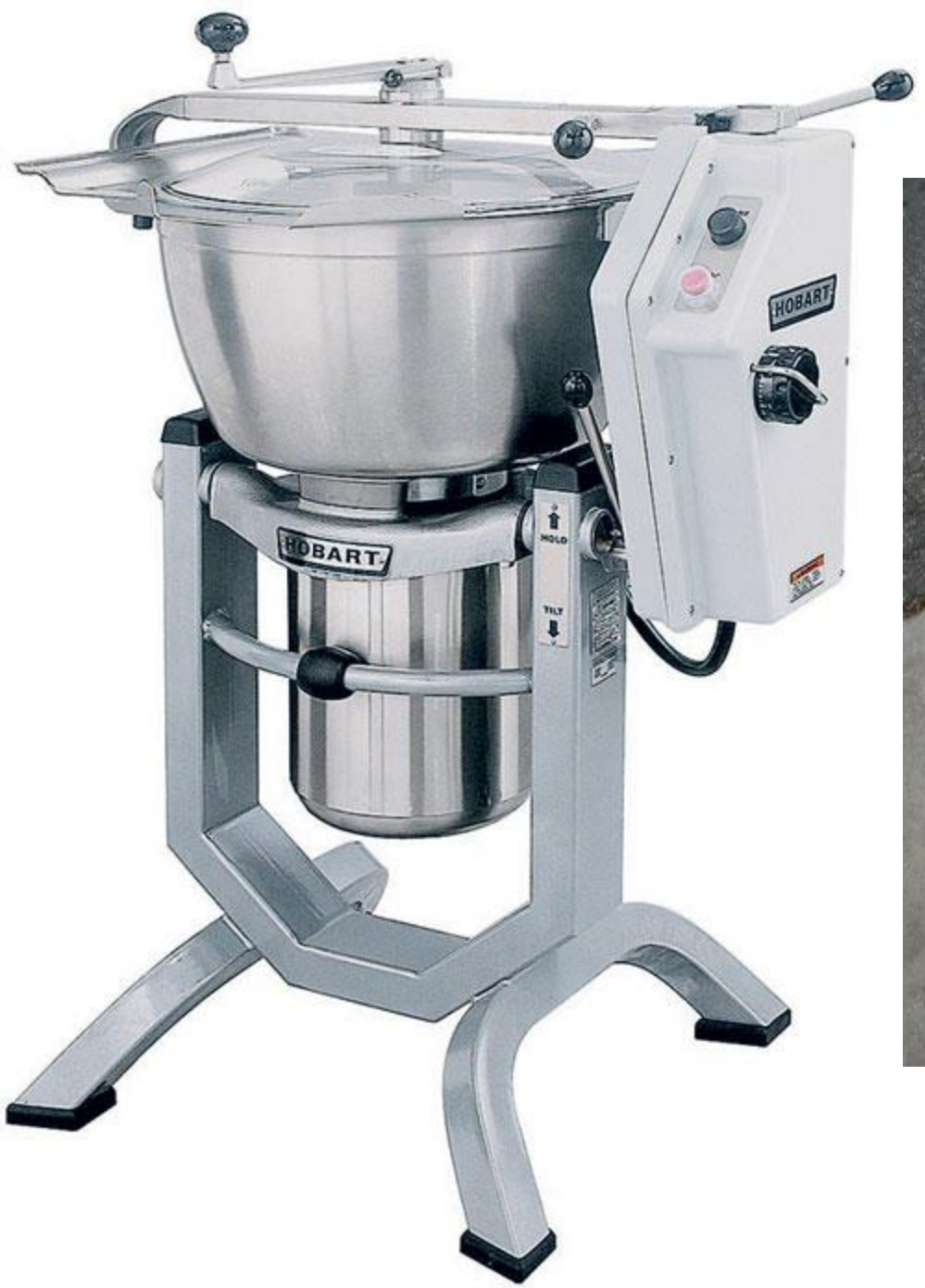
- **Qualheim cutter**
- Chopping, dicing, making strips
- Used when large quantity of work to do
- Because clean up and reassembly times may be lengthy

Food Cutters

- **The vertical cutter and mixer (VCM)**
- For chopping, cutting, mixing, blending, emulsifying, pureeing, and homogenizing food

- Easy to clean (adding water and cleaning solution, switch on, and then drain)

- Few movable parts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HOBART
HOLD
TILT

Food Slicers

- A circular knife on which items such as cheese, boneless meats, luncheon meats, vegetables, and breads can be sliced
- Result : clean and straight slice
- Ability to adjust the thickness of the slices by adjusting the distance between the plate and the knife

Food slicers

- Careful rescheduling can reduce required clean up time
- Celery, cabbage, carrots, and onion
- THEN fruits and juicy vegetables
- THEN cheeses and cold meats
- Finishing by hot meats and other cooked items

Minimizes cleaning of the machine between each food group

Meat processing equipment

- Meat sawing
- Chopping
- Grinding
- Cubing
- Tenderizing

- If the operation purchase meats already prepared, no need for these equipment

- Meat mixer

Meat saw

Ovens

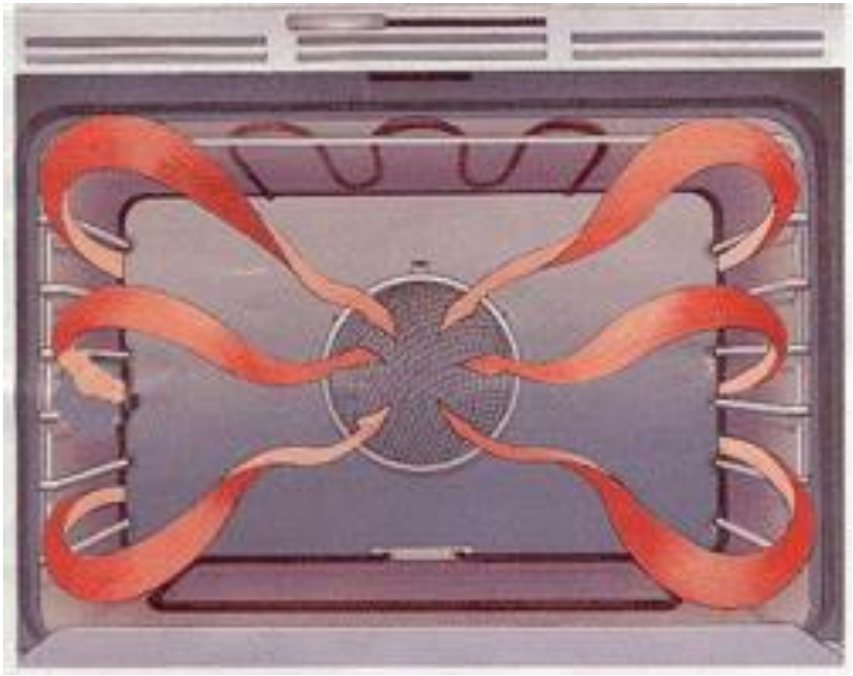
1. Conventional
2. Convectional
3. Combo
4. Microwave
5. Reconstituting

Conventional

- Heated by lower heat source in an enclosed chamber
- Transfer of heat occurs both by:
  - Convection (of hot air moving in the chamber)
  - Conduction (when pans come into contact with hot surfaces)

Convection oven

- **Convection oven is** an oven that use a built-in fan to increase hot air movement in the oven during the cooking process



The circulation of hot air around the food during cooking in convection oven

The advantages of using convection oven

- **Faster Cooking:** When hot air is blowing onto food, as opposed to merely surrounding it, the food tends to cook up to 20% more quickly.
- **Lower Temperature:** The food in a convection oven is cooked at a lower temperature than in a regular oven. This saves both time and energy.
- **No Burns:** Because food is cooked more evenly in a convection oven, it burns less frequently.
- **Superior for Roasting:** Because the evenly distributed heat of a convection oven is better for roasting meat

Disadvantage of convection oven

Costs More :A convection oven saves money in energy, but they are more expensive than standard ovens.

Combo oven (combo steamer)

Combines several cooking functions in one piece

Of kitchen equipment ..

-The combo oven uses dry and steam .

***they lowered production time and minimized final**

product losses (loss nutrient , color)

Some benefit :

- **Vegetables by cooking steam instead boiling water vegetables keep more nutrient value and color**
- **Baking – baked goods are evenly and crisply cooked (like bread Meat – Up to a third of the weight of a piece of meat can be lost during dry roasting through loss of the water content of the meat . minimizes weight loss and produces a more tender joint.**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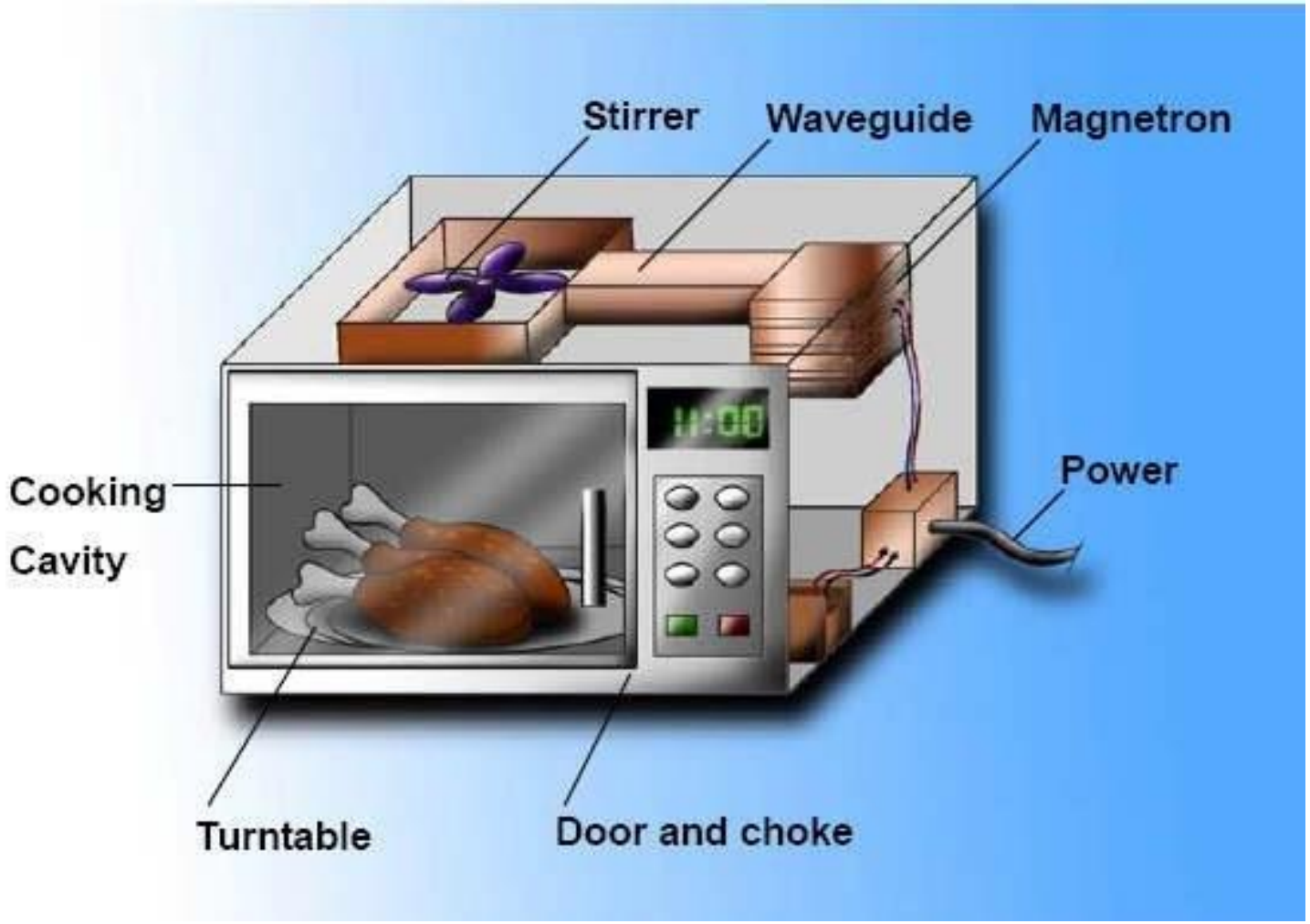
Microwave Ovens



- Microwaves are a form of electromagnetic energy basically high frequency radio waves and infrared waves .
- Microwaves cause water and fat molecules to vibrate, which makes the substances hot.
- So we can use microwaves to **cook** many types of food.

How does microwave oven heat food ?

- When microwaves penetrate food , molecular activity or movement takes place within the food ,creating friction that heats the food internally .

Which material can not be used in microwaves oven ?

- Metallic materials reflect microwaves and should not be used ,as they can reflect back to the microwave tube and destroy it .
- Microwaves pass through glass and nonmetallic materials ,so these materials are used to hold foods being cooked in a microwave oven .

Advantages of using microwave ovens:

- **Microwave oven cooks many foods in about 1/4th of the time necessary on a gas burner. There is no wastage of energy.**
- **It saves time in heating frozen foods. Thawing can be done in minutes or seconds.**
- **Only the food is heated during cooking. The oven or the utensil does not get heated except under prolonged heating periods.**
- **Loss of nutrients is minimized.**
- **After cooking in a microwave oven washing dishes is much easier as food does not stick to the sides of the vessels.**

Disadvantages :

- Microwave oven do not allow the production of a large volumes of food so it has not replaced conventional cooking in food service operations .

- There is no browning occurs for food , so it is not appropriate for food that requires browning .

- The short cooking time may not give a chance of blending of flavours as in conventional methods.

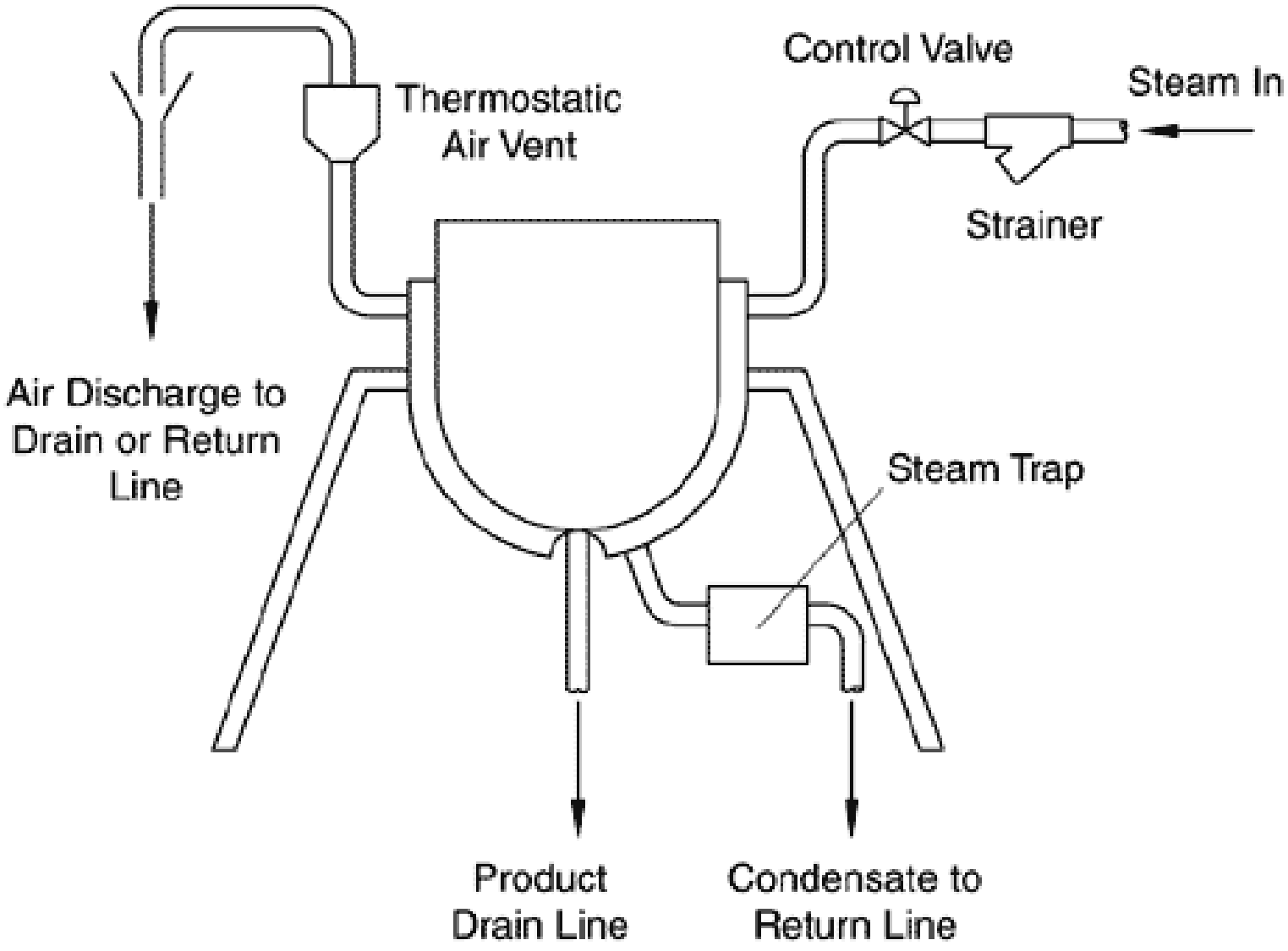
Steam-Jacketed kettles

Steam-Jacketed kettles

- Steam-jacketed kettle works similar to a double boiler.
- It cooks large quantities of food using steam heat. Steam is generated and surrounds food contained in a separate compartment.
- It is composed of 2 steel walls (inner & outer walls) that cooks the food inside by releasing steam in the space between the walls.

Steam-Jacketed kettles

- They may be powered by electricity or gas.
- Most steam-jacketed kettles are made of stainless steel, and are filled with treated, distilled water.
- It cooks more evenly than normal pots because the heat is evenly distributed and because the contact surface of the kettle is not at a high heat.
- Browning meats and performing similar processes are possible in these kettles.


Control Valve
Steam In
Thermostatic
Air Vent
Strainer
Air Discharge to
Drain or Return
Line
Steam Trap
Product
Drain Line
Condensate to
Return Line

Functions:

- Uniform heating
- Rapid heat transfer
- Easily controlled heat temperature.

- Can be used to make entrees, soups, sauces/gravies, and other foods such as pudding, jam and jellies.

Holding Equipment

Can be either for hot or cold food

Holding equipment for hot food

- Hot food should be held at a specific temperature usually from 60-88˚.
- Each food has its own holding temperature:

Meat dishes: 60˚C

Soup and beverage: 82 to 88˚C

pass- through holding units

Steam tables

They are located between preparation areas and the service area

Other equipment

Undercounter warming drawers

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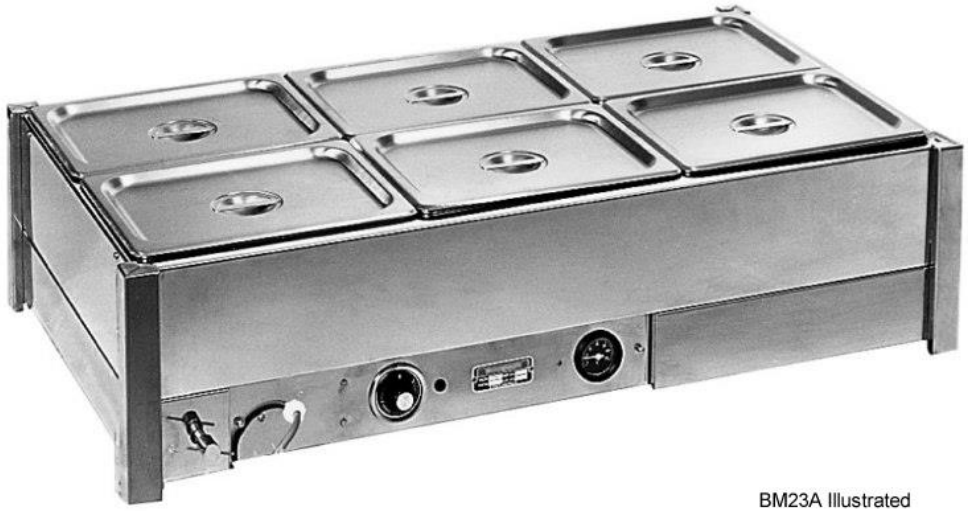

Holding equipment for cold food

Used to reduce the growth of undesirable microorganism

Cold food should never be held at temperature above 7˚C:

*Cold food at around 4.5˚C

*Frozen food at around -4.4˚C

Examples:

undercounter refrigerator

freezer cabinets

Dishwasher equipment

- **Dishwasher equipment** is an electrically operated machine used for filling , washing , draining , rinsing and drying

- **Kinds of Dishwashers :**

- There are many type of dishwasher equipment , from large to small each having their own unique benefits and negatives

  there are **5 models** of dishwasher machine
- 1-counter and under counter dishwasher
- 2-door models
- 3-freestanding dishwasher
- 4-rack conveyor models dishwasher
- 5-belt conveyor dishwasher

Counter dishwasher :

electronic to help save money and conserve energy .

undercounter dishwasher

Undercounter dishwashers are coveted by small restaurants and other smaller-scale foodservice operations for their high performance and compact nature

- Freestnding dishwasher

Energy consumption is low without affecting washing performance. Creating more space in the bottom basket, to accommodate pots and pans.

door models : door-type dishwashers can wash up to 80 dish racks per hour

Most models feature a door-safety switch that stops the wash cycle if the door is opened.

rack conveyor models : the dishwashers have ultra low rinse water . It reduces energy consumption

- belt conveyor : or rackless dishwasher
- There is no racks because dishes are placed directly onto the conveyor belt

- **Full size dishwasher** (freestanding)uses in cases where someone has a large family that they would need a large enough dishwasher machine to clean their tools
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- **Drawer dishwasher** are more recent design of dishwasher, safe for children , and comes in two format
  1- one drawer , 2- two drawer is safe for children