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– Chapter 2 –

Mixers and Food Processing Equipment

Many types of mixers and other machines can be used in preparing dough, sauce, cheese, and toppings. This chapter describes the main options, explains how the equipment works, and lists the advantages and drawbacks of each.

Lengths, weights, temperatures, and volume measurements are given in inches, pounds and ounces, degrees Fahrenheit, and quarts and cups (U.S. version). The following abbreviations are used: **lb** = pounds, **oz** = ounces, **F** = Fahrenheit, and **qt** = quarts. For conversion to other measurement systems, refer to the chapter on Measurements and Conversions.

Ingredient Processing Methods

Preparing pizza ingredients involves various methods. Defined here are the main methods that might be used.

SCALING is the process of weighing out materials with a *scale*, as when ingredients are weighed out for making dough, or when a large piece of dough is divided into smaller units of a certain weight for making into finished baked goods (also called *dividing*).

MIXING is the process of combining ingredients together, as when flour, water, and other ingredients are combined together to form dough. It can be done

manually (in small batches) or by machine. The machine used in mixing is called a *mixer*.

KNEADING is the process of folding, pressing, and stretching dough. The purpose is to develop the gluten contained in the dough. Kneading is accomplished during the latter stage of the mixing process after the ingredients have combined together.

DIVIDING, also called scaling, is the process of separating a large piece of dough into smaller units of a certain weight for making into balls (or some other shape). It can be done manually or by a machine called a *divider*.

ROUNDING is the process of shaping a piece of dough into a smooth, predetermined shape. In the case of pizza, dough is often rounded into balls. It can be done manually or by a machine called a *rounder*.

BLENDING, like mixing, is the process of combining ingredients together, as when making pizza sauce. While mixing is often applied to batters and doughs, blending is applied to other foods. It can be done manually or by a mixer.

CUTTING is the process of separating a piece of food into smaller pieces with a knife, either by hand or by machine.

SLICING is the process of cutting food into flat pieces of uniform thickness. The resulting pieces are often called slices, as in slices of bread and meat. Slicing can be done manually or by a machine called a *slicer*. Slicing vegetables also can be done with various types of vegetable cutters.

SHREDDING is the process of cutting or tearing food into small pieces, usually 1 to 2 inches long and 1/8-inch to 1/4-inch wide. It can be done manually or by a machine called a *vegetable cutter* (with a shredding disc). It also can be done with a *vegetable cutting attachment* on a mixer.

GRATING is the process of cutting or scraping hard food, such as Parmesan cheese or nuts, into small pieces about 1/8 to 1/4-inch long and 1/16-inch wide. It can be done manually or with a vegetable cutter (with a grating disc). It also can be done with a vegetable cutting attachment on a mixer.

GRINDING, also called mincing, is the process of crushing food into small particles. The machine used for grinding is called a *grinder* and also sometimes called a *chopper*. It also can be done with a *grinding/chopping attachment* on a mixer, or with a *cutter-mixer* (sometimes called a VCM).

CHOPPING is the process of cutting food into smaller pieces. It can be done manually or with a machine called a *food cutter*. It's sometimes referred to as a "buffalo chopper" because the lid has a hump resembling a buffalo's back. It also can be done with a cutter-mixer.

DICING is the process of cutting food into cubes, usually 1/8-inch to 1/2-inch in size. It can be done manually with a vegetable cutter (with dicing grids and disc) or with a special dicing machine.

There are many tools and machines for performing each of the above processes. The rest of this chapter describes them.

Five Types of Mixers

Except for the oven, the mixer is the most important piece of equipment in most pizzerias. There are five types:

- Planetary Mixers
- Cutter-mixers
- Spiral Mixers
- Reciprocating Arm Mixers
- Horizontal Mixers.

The types most commonly used in pizzerias are the planetary mixer and cutter-mixer. However, no type is best for all situations; each has advantages and drawbacks.

Planetary Mixers

The original mixer in pizzerias is the planetary type, so named because it contains a set of planetary gears which cause the mixing shaft to revolve in circular motion around the perimeter of the mixing bowl. Some folks also refer to this machine as the "upright mixer."



Planetary Mixer – versatile, widespread.

Terminology Note

For years this machine has been called a vertical mixer. However, with the introduction of other vertical mixing machines, such as the cutter-mixer and spiral mixer (described in following sections), using the word “vertical” has caused confusion. In fact, it’s not uncommon for two persons to discuss the merits of “vertical mixers,” with neither of them referring to the same machine! So we now refer to this machine as a planetary mixer to avoid confusing it with the cutter-mixer and spiral mixer.

Sellers

An early maker of planetary mixers was Hobart Corporation, and many of their older models are still in use today — testimony to the durability of the planetary-type mixer as well as to Hobart’s early stronghold on the mixer market. Today Hobart still sells many mixers. However, there are also many worthy competing models. Sellers of planetary mixers include (in alphabetical order):

- AMF Bakery Systems (340-qt. size) – (804) 355-7961
- Arimex – (201) 575-7500; 800-631-1132
- Berkel Inc. – (219) 326-7000
- Blakeslee – (708) 656-0660
- General Slicing – (615) 893-4820
- Hobart Corporation – (513) 332-3000; 332-3095
- Intedge Industries, Inc. – (803) 969-9601
- Middleby Marshall, Inc. – (708) 966-8300
- Polin USA, Inc. – (216) 425-4427

- Rondo, Inc. – (201) 488-0121
- Univex Corporation– (603) 893-6191
- Welbilt-Varimixer – (318) 865-1711; 800-222-1138

Sizes

Planetary mixers are sized according to the volume of the mixing bowl. They range from 5 to 340 quarts, with the common increments being 12, 20, 30, 40, 60, 80, and 140 quarts. Models of 20-qt size or smaller sit on a table (although there is an optional 20-qt floor version). The most common size in pizzerias is the 60-qt model. However, a 30- or 40-qt machine might suffice for a smaller pizzeria; while a larger operation might opt for an 80-qt model.



Planetary mixers come in sizes for every job.

Dough Capacity

Mixer companies provide capacity charts which state the maximum amount of pizza dough per batch that each model can be expected to produce. Oddly, even though motor sizes vary little from company to company, stated capacities vary considerably. When averaged out, the charts lead us to believe that a 30-qt mixer will produce 25 to 30 lbs of medium-stiff dough, a 60-qt will yield 60 to 70 lbs, and an 80-qt will mix 140 to 150 lbs. (A medium-stiff dough is a dough containing 50 percent water relative to flour weight.)

However, experience suggests that the *optimum* batch size is smaller than the maximum. With the maximum batch size the mixer works very hard, plus the dough rapidly climbs the dough hook. Optimum batch sizes for medium-stiff pizza dough are probably 30 to 40 percent less than the maximum, or *approximately 20 lbs for a 30-quart mixer, 40 lbs for a 60-quart, and 100 lbs for an 80-quart.*