



FOOD
PREPARATION



MIXER USE AND APPLICATIONS HANDBOOK



LEGACY⁺ MIXERS

ATTACHMENTS AND ACCESSORIES

HOBART

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YOUR HOBART LEGACY+ MIXER THE LEGACY CONTINUES

Your Hobart Legacy+® mixer brings profit to your operation every time you use it. It is the industry's only Maximum Heavy-Duty mixer, giving you as much as 30% more mixing capacity. Legacy+ mixers give you more so you can do more.

Added capacity is possible because of your Legacy+ mixer's PLUS System - a powerful combination of three industry-leading technologies:

- **VFDadvantage variable frequency drive** delivers more precision motor control and exceptional power. It ensures more production time and the best mixes, doughs and incorporation of ingredients in the industry.
- **Maximum-capacity overheat protection** lets you handle the heaviest jobs with confidence. Extreme-duty wiring and connections handle more power, reducing thermal cycling impact to ensure more production and less downtime.
- **Reinforced planetary shaft system** drives maximum power into the bowl. You get more of the robust construction you expect from Hobart: an optimized shaft geometry and all-gear-driven transmission leverage more of the motor's precision tuning and high-capacity output.

Hobart Legacy+: constantly advancing to give you more of what you need to be amazing in the kitchen.

Great food starts here.



HL600

BEATERS, DOUGH HOOKS, PASTRY KNIVES ... AND HOW TO USE THEM

This section illustrates and names the various mixer agitators and discusses their applications. General information on how to get the best results from your Hobart mixer is also provided. As is always the case with the art of creating great food, the best results are achieved by carefully proving the methods and formulas and evaluating results.

The discussions on mixer performance and agitator uses are similar for planetary action mixers regardless of size. That is not to say that the same mix times will apply. This handbook offers suggestions and guidelines only.

Attachments and accessories and their uses are discussed in the last section of the handbook.

CLEANING NEW MIXER BOWLS AND ACCESSORIES

Before using the first time, thoroughly wash new mixer bowls and agitators (beaters, whips, dough hooks and pastry knives). Wash in hot water and a mild detergent solution, rinse with either a mild soda or vinegar solution, and thoroughly rinse with clear water. Also follow this cleaning procedure for bowls and agitators before whipping egg whites or whole eggs.

AGITATORS AND THEIR USES

Your Legacy+ mixer has easy to remove Quick-Release™ agitators. Pins lock the agitator to the shaft, eliminating the up/down play of bayonet agitators and creating a consistent agitator-to-bowl ratio that delivers superior mixing performance.



The **B Flat Beater** is a multi-purpose agitator used for mashing potatoes and mixing cakes, batters or icings. It is also used in applications requiring a creaming or rubbing action and uniform dispersion of ingredients. Use first speed for starting most operations; medium speed for finishing.



The **D Wire Whip** is designed for maximum blending of air into light products. Uses include: whipping cream, beating egg whites, mixing very light icings, meringues and all similar applications. The D Wire Whip is most commonly used in third and fourth speed.



The **ED Dough Hook** is used for mixing most bread, roll and pizza doughs which require folding and stretching action for best development. These agitators are suitable for use on all yeast raised doughs and should be operated in first, second, or third speed.



The **C Wing Whip** is used for whipping material that is too heavy for the D Wire Whip. The heavy frame permits its use for light creaming and beating. It is often used for whipping or blending potatoes, butter, mayonnaise or icings. It is generally used in first and second speed for whipping heavy products like potatoes or in third or fourth speed for lighter products like mayonnaise or icings.



The **P Pastry Knife** combines shortening with flour, and is ideal for light pastry shells (patty shells), flaky pie doughs and similar mixes. The cutting action of the knife practically eliminates rubbing and allows delicate ingredients to be combined without overdevelopment. The P Pastry Knife is suitable for stirring operations in low speeds and for fastcutting operations in medium speeds. You should not use the P Pastry Knife at high speed if you want the pastry to have a flaky texture.



The **I Wire Whip** makes sponge cakes and mixes marshmallow icing for heavy whipping.

FORMULAS AND METHODS

Use your own formula for any products you wish to make in your Hobart mixer. Then evaluate the finished product for texture, conformity, lightness, flakiness, etc. You will find that any method of blending ingredients can be duplicated or improved with your machine. Be careful and do not over mix. Over mixing can adversely affect the texture of your product. You will also discover there is often a saving in time for each mixing operation. Even delicate products usually mixed by hand can be mixed in your Hobart mixer.

Your Hobart mixer mixes your products in the most efficient and quickest way possible. There is no need for you to sacrifice individual characteristics when using your Hobart mixer. When results are exactly to your liking, note carefully the time of operation and the speed setting. Under the same conditions, your Hobart mixer will perform exactly the same, day after day, providing uniformity in your products.

MIXER CAPACITY

The Mixer Capacity Chart is a guide for controlling the batch sizes in your formulations. The capacities listed take into account the amount of product which can be contained in the various sized bowls. The listed capacities are the maximum recommended batch sizes. Whenever batch size exceeds 50 pounds, use a bowl truck to load and unload the bowl from the mixer. Recipes for doughs used to establish the batch sizes in the Mixer Capacity Chart are listed below:

INGREDIENT	HEAVY DOUGH BREAD	MEDIUM PIZZA DOUGH	RAISED DONUT DOUGH
Flour	100.0%	100.0%	100.0%
Water	55.0%	50.0%	65.0%
Yeast	2.0%	1.0%	5.0%
Salt	2.5%	1.5%	2.5%
Sugar	5.0%	0.0%	15.0%
Shortening	5.0%	0.0%	15.0%
Oil	0.0%	2.0%	0.0%
Non-Fat Dry Milk	6.0%	0.0%	8.0%
Total	175.5%	154.5%	210.5%

The ingredient percentages are based on a flour content of 100 percent to simplify using the recipes to make various sized batches and compute the moisture absorption ratio. The heavy bread dough recipe above is a criterion listed in Section 4.4.2 of Federal Specification 00-M-0038K, Standard for Electric Food Mixing Machines.

The flour used in the recipes is hard wheat flour, enriched and bleached. It contains 11 to 12 percent protein content and a 12 percent moisture content. Flour which has a lower moisture content will decrease the moisture absorption, cause difficulty in proper gluten hydration, and make a heavier load on your mixer. Flours containing high quality protein, such as high gluten flour, result in a dough which can be very difficult to mix. **If high gluten flour is used, reduce the batch quantity noted on the Mixer Capacity Chart by 10 percent to prevent overloading of the mixer.**

The temperature of the water used in the recipes is 65°F to 75°F. Colder water temperature will cause the dough to be harder to mix. **If you plan to mix doughs using cold water, the batch size may need to be reduced by 15 to 20%. Use of ice requires a 10% reduction in batch size.**

Also considered and noted on the Mixer Capacity Chart is the moisture absorption ratio (AR). This is the ratio of the weight of wet ingredients to the weight of dry ingredients expressed as a percentage.

$$\text{AR} = \text{weight of wet ingredients} \div \text{weight of dry ingredients} \leftrightarrow 100\%$$

The absorption ratio gives an indication of the relative “heaviness” or “wetness” of a batch. In fact, the capacities listed on the Mixer Capacity Chart for the products listed below are based on the following absorption ratios:

PRODUCT	ABSORPTION RATIO
Heavy Bread Dough	55%
Medium Bread Dough	60%
Light Bread Dough	65%
Thin Pizza Dough	40%
Medium Pizza Dough	50%
Thick Pizza Dough	60%
Raised Donut Dough	65%
Whole Wheat Dough	65%

When mixing any of the above products with an absorption ratio lower than listed, decrease the batch size proportionately to assure efficient mixing of the product and thus eliminate the possibility of overloading your mixer. For example: An HL600 mixer has a thin pizza dough capacity of 40 pounds at first speed based on an AR of 40% according to the Mixer Capacity Chart. If the batch has an AR of 30%, reduce the batch size to compensate for the difference. Compute the size of the reduction as follows:

1. Divide the AR of the batch to be mixed by the AR listed on the Mixer Capacity Chart.
2. Multiply the rated batch size by percentage obtained in step 1. The result is the maximum batch size of the HL600 mixer for pizza dough with 30% AR.

$$\frac{30\% \text{ Actual AR}}{40\% \text{ Rated AR}} = 75\%$$

$$40 \text{ lbs. Rated Batch Size} \times 75\%$$

30 lbs. Maximum Capacity for 30% AR Dough

Another factor often overlooked is the ability of your mixer to operate at a different speed. To prevent overloading, use the recommended mix speed from the Mixer Capacity Chart. Because of the toughness of a 40% AR thin pizza dough, a maximum mix time of 5 minutes on first speed is recommended. Second speed should never be used on 50% AR or lower products except on model HL662.

The speed of the mixer, length of mix time, room temperature and ingredient temperatures all affect dough temperature. To achieve the desired final dough temperature, you may need to adjust the water temperature.

For batch size capacities on other bread doughs not mentioned on the Mixer Capacity Chart, follow the batch size recommendation for a listed bread dough with a similar absorption ratio.

AR AND CAPACITY CALCULATIONS EXAMPLE

Recipe:

- 100 lbs. pizza dough mix with high gluten flour
- 5 lbs. oil
- 5 gallons water
- 5 lbs. ice

Mixer:

HL1400

1. Calculate total pounds of dry ingredients

- 100 lbs. pizza dough mix

2. Calculate total pounds of wet ingredients

- 5 lbs. oil
- 5 gallons of water = 42.7 lbs. of water
 - *Converting gallons to pounds
 - 1. 1 gallon of water weighs 8.33 lbs.
 - 2. 5 gallons x 8.33 = 42.7 lbs. water
- 5 lbs. oil + 42.7 lbs. water = 47.7 lbs. wet ingredients

3. Calculate total recipe batch size

100 lbs. dough mix + 47.7 lbs. wet ingredients +
5 lbs. ice = 152.7 lbs. recipe batch size

4. Calculate AR

47.7 lbs. wet ÷ 100 lbs. dry = 47.7% AR

5. Consult the Mixer Capacity Chart

According to the capacity chart, the HL1400 has a **medium pizza dough capacity of 190 lbs. based on an AR of 50%**. This batch size will have to be reduced because of the lower AR of this recipe's dough.

6. Compute the reduction of maximum batch size

1. Divide the AR of the batch to be mixed by the AR listed on the capacity chart
 $47.7\% \div 50\% = 95.4\%$
2. Multiply the rated batch size by the calculated percentage
 $190 \text{ lbs.} \times 95.4\% = 181.3 \text{ lbs. maximum capacity}$
for 47.7% AR pizza dough

3. Ice is used in recipe - reduce maximum capacity by 10%

$181.3 \text{ lbs.} \times 90\% = 163.2 \text{ lbs. maximum capacity}$ for 47.7% AR pizza dough

4. High gluten flour is used - reduce maximum capacity by 10%

$163.2 \text{ lbs.} \times 90\% = 146.9 \text{ lbs. maximum capacity}$

5. Compare recipe batch size to maximum capacity

152.7 lbs. batch of 47.7% AR pizza dough
146.9 lbs. maximum capacity for 47.7% AR pizza dough



HL1400

This recipe is too large to be mixed in the HL1400. Smaller batches of the recipe will need to be used.

CALCULATION WORKSPACE

Use this workspace to do the AR and capacity calculations for your recipes and your mixer!

Do you have more questions or need help with AR and capacity calculations? Reach out to your local Hobart sales representative or authorized Hobart dealer. You can find contact information on our website www.hobartcorp.com.

MIXER CAPACITY CHART - HL120 & HL200

Recommended Maximum Capacities – dough capacities based on 70°F water and 12% flour moisture.

PRODUCT	AGITATORS SUITABLE FOR OPERATION	HL120	HL200
CAPACITY OF BOWL (QTS. LIQUID)		12	20
Egg Whites	D	1 ¼ pts.	1 qt.
Mashed Potatoes	B & C	10 lbs.	15 lbs.
Mayonnaise (Qts. of Oil)	B or C or D	4 ½ pts.	10 qts.
Meringue (Qty. of Water)	D	¾ pts.	1 ½ pts.
Waffle or Hot Cake Batter	B	5 pts.	8 qts.
Whipped Cream	D or C	2 ½ pts.	4 qts.
Cake, Angel Food (8-10 oz. cake)	C	7 lbs.	15 lbs.
Cake, Box or Slab	B or C	12 lbs.	20 lbs.
Cake, Cup	B or C	12 lbs.	20 lbs.
Cake, Layer	B or C	12 lbs.	20 lbs.
Cake, Pound	B	12 lbs.	21 lbs.
Cake, Short (Sponge)	C	8 lbs.	15 lbs.
Cake, Sponge	C	6 ½ lbs.	12 lbs.
Cookies, Sugar	B	10 lbs.	15 lbs.
Dough, Bread or Roll (Lt.-Med.) 60% AR §	ED	13 lbs. ●	25 lbs. ●
Dough, Heavy Bread 55% AR §	ED	8 lbs. ●	15 lbs. ●
Dough, Pie	B & P	11 lbs.	18 lbs.
Dough, Thin Pizza 40% § † (maximum mix time 5 minutes)	ED	5 lbs. ●	9 lbs. ●
Dough, Medium Pizza 50% AR § †	ED	6 lbs. ●	10 lbs. ●
Dough, Thick Pizza 60% AR § †	ED	11 lbs. ●	20 lbs. ●
Dough, Raised Donut 65% AR	ED	4 lbs. ●	9 lbs. ●
Dough, Whole Wheat 70% AR	ED	11 lbs. ●	20 lbs. ●
Eggs & Sugar for Sponge Cake	B & C	5 lbs. ●	8 lbs.
Icing, Fondant	B	7 lbs. ●	12 lbs.
Icing, Marshmallow	C	1¼ lbs.	2 lbs.
Shortening & Sugar, Creamed	B	9½ lbs.	16 lbs.
Pasta, Basic Egg Noodle (maximum mix time 5 minutes)	ED	-	5 lbs. ●

NOTE: %AR (% Absorption Ratio) = Wet ingredient weight divided by dry ingredient weight. Capacity depends on moisture content of dough. Above capacities based on 12% flour moisture at 70°F water temperature.

§ If high gluten flour is used, reduce above batch size by 10%

† 2nd speed should never be used on 50% AR or lower products.

Use of ice requires a 10% reduction in batch size.

1 gallon of water weighs 8.33 lbs.

NOTE: Attachment hub should not be used while mixing.

ABBREVIATIONS – AGITATORS SUITABLE FOR OPERATION

B Flat Beater

C Wing Whip

D Wire Whip

ED Dough Hook

I Heavy-Duty Wire Whip

P Pastry Knife

● 1st Speed

■ 2nd Speed

▲ 3rd Speed

MIXER CAPACITY CHART - HL300 & HL400

Recommended Maximum Capacities – dough capacities based on 70°F water and 12% flour moisture.

PRODUCT	AGITATORS SUITABLE FOR OPERATION	HL300	HL400
CAPACITY OF BOWL (QTS. LIQUID)		30	40
Egg Whites	D	1 ½ qts.	1 ¾ qts.
Mashed Potatoes	B & C	23 lbs.	30 lbs.
Mayonnaise (Qts. of Oil)	B or C or D	12 qts.	13 qts.
Meringue (Qty. of Water)	D	1 qt.	1 ½ qts.
Waffle or Hot Cake Batter	B	12 qts.	16 qts.
Whipped Cream	D or C	6 qts.	9 qts.
Cake, Angel Food (8-10 oz. cake)	C or I	22 lbs.	30 lbs.
Cake, Box or Slab	B or C	30 lbs.	40 lbs.
Cake, Cup	B or C	30 lbs.	45 lbs.
Cake, Layer	B or C	30 lbs.	45 lbs.
Cake, Pound	B	30 lbs.	45 lbs.
Cake, Short (Sponge)	C or I	23 lbs.	25 lbs.
Cake, Sponge	C or I	18 lbs.	36 lbs.
Cookies, Sugar	B	23 lbs.	30 lbs.
Dough, Bread or Roll (Lt.-Med.) 60% AR §	ED	45 lbs. ●	45 lbs. ●
Dough, Heavy Bread 55% AR §	ED	30 lbs. ●	35 lbs. ●
Dough, Pie	B & P	27 lbs.	35 lbs.
Dough, Thin Pizza 40% § † (maximum mix time 5 minutes)	ED	14 lbs. ●	25 lbs. ●
Dough, Medium Pizza 50% AR § †	ED	20 lbs. ●	32 lbs. ●
Dough, Thick Pizza 60% AR § †	ED	40 lbs. ●	45 lbs. ●
Dough, Raised Donut 65% AR	ED	15 lbs. ■	25 lbs. ■
Dough, Whole Wheat 70% AR	ED	40 lbs. ●	45 lbs. ●
Eggs & Sugar for Sponge Cake	B & C or I	12 lbs.	18 lbs.
Icing, Fondant	B	18 lbs.	25 lbs.
Icing, Marshmallow	C or I	3 lbs.	4 ½ lbs.
Shortening & Sugar, Creamed	B	24 lbs.	35 lbs.
Pasta, Basic Egg Noodle (maximum mix time 5 minutes)	ED	8 lbs. ●	15 lbs. ●

NOTE: %AR (% Absorption Ratio) = Wet ingredient weight divided by dry ingredient weight. Capacity depends on moisture content of dough. Above capacities based on 12% flour moisture at 70°F water temperature.

§ If high gluten flour is used, reduce above batch size by 10%

† 2nd speed should never be used on 50% AR or lower products.

Use of ice requires a 10% reduction in batch size.

1 gallon of water weighs 8.33 lbs.

NOTE: Attachment hub should not be used while mixing.

ABBREVIATIONS – AGITATORS SUITABLE FOR OPERATION

B Flat Beater

C Wing Whip

D Wire Whip

ED Dough Hook

I Heavy-Duty Wire Whip

P Pastry Knife

● 1st Speed

■ 2nd Speed

▲ 3rd Speed

MIXER CAPACITY CHART - HL600 & HL662

Recommended Maximum Capacities – dough capacities based on 70°F water and 12% flour moisture.

PRODUCT	AGITATORS SUITABLE FOR OPERATION	HL600	HL662
CAPACITY OF BOWL (QTS. LIQUID)		60	60
Egg Whites	D	2 qts.	-
Mashed Potatoes	B & C	40 lbs.	-
Mayonnaise (Qts. of Oil)	B or C or D	18 qts.	-
Meringue (Qty. of Water)	D	1 ½ qts.	-
Waffle or Hot Cake Batter	B	24 qts.	-
Whipped Cream	D or C	12 qts.	-
Cake, Angel Food (8-10 oz. cake)	C or I	45 lbs.	-
Cake, Box or Slab	B or C	50 lbs.	75 lbs.
Cake, Cup	B or C	60 lbs.	70 lbs.
Cake, Layer	B or C	60 lbs.	70 lbs.
Cake, Pound	B	55 lbs.	75 lbs.
Cake, Short (Sponge)	C or I	45 lbs.	-
Cake, Sponge	C or I	40 lbs.	-
Cookies, Sugar	B	40 lbs.	50 lbs.
Dough, Bread or Roll (Lt.-Med.) 60% AR §	ED	80 lbs. ■	90 lbs. ■
Dough, Heavy Bread 55% AR §	ED	60 lbs. ■	85 lbs. ■
Dough, Pie	B & P	50 lbs.	60 lbs.
Dough, Thin Pizza 40% § † (maximum mix time 5 minutes)	ED	40 lbs. ●	60●/40 lbs. ■
Dough, Medium Pizza 50% AR § †	ED	70 lbs. ●	90●/70 lbs. ■
Dough, Thick Pizza 60% AR § †	ED	70 lbs. ■	90 lbs. ■
Dough, Raised Donut 65% AR	ED	30 lbs. ▲	75 lbs. ■
Dough, Whole Wheat 70% AR	ED	70 lbs. ■	90 lbs. ■
Eggs & Sugar for Sponge Cake	B & C or I	24 lbs.	-
Icing, Fondant	B	36 lbs.	-
Icing, Marshmallow	C or I	5 lbs.	-
Shortening & Sugar, Creamed	B	48 lbs.	50 lbs.
Pasta, Basic Egg Noodle (maximum mix time 5 minutes)	ED	30 lbs. ●	40 lbs. ●

NOTE: %AR (% Absorption Ratio) = Wet ingredient weight divided by dry ingredient weight. Capacity depends on moisture content of dough. Above capacities based on 12% flour moisture at 70°F water temperature.

§ If high gluten flour is used, reduce above batch size by 10%

† 2nd speed should never be used on 50% AR or lower products.

Use of ice requires a 10% reduction in batch size.

1 gallon of water weighs 8.33 lbs.

NOTE: Attachment hub should not be used while mixing.

ABBREVIATIONS – AGITATORS SUITABLE FOR OPERATION

B Flat Beater

C Wing Whip

D Wire Whip

ED Dough Hook

I Heavy-Duty Wire Whip

P Pastry Knife

● 1st Speed

■ 2nd Speed

▲ 3rd Speed

MIXER CAPACITY CHART - HL800 & HL1400

Recommended Maximum Capacities – dough capacities based on 70°F water and 12% flour moisture.

PRODUCT	AGITATORS SUITABLE FOR OPERATION	HL800	HL1400
CAPACITY OF BOWL (QTS. LIQUID)		80	140
Egg Whites	D	2 qts.	4 qts.
Mashed Potatoes	B & C	60 lbs.	100 lbs.
Mayonnaise (Qts. of Oil)	B or C or D	30 qts.	50 qts.
Meringue (Qty. of Water)	D	3 qts.	5 qts.
Waffle or Hot Cake Batter	B	32 qts.	-
Whipped Cream	D or C	15 qts.	30 qts.
Cake, Angel Food (8-10 oz. cake)	C or I	60 lbs.	120 lbs.
Cake, Box or Slab	B or C	100 lbs.	185 lbs.
Cake, Cup	B or C	90 lbs.	165 lbs.
Cake, Layer	B or C	90 lbs.	165 lbs.
Cake, Pound	B	100 lbs.	185 lbs.
Cake, Short (Sponge)	C or I	80 lbs.	150 lbs.
Cake, Sponge	C or I	65 lbs.	140 lbs.
Cookies, Sugar	B	60 lbs.	100 lbs.
Dough, Bread or Roll (Lt.-Med.) 60% AR §	ED	170 lbs. ■	210 lbs. ■
Dough, Heavy Bread 55% AR §	ED	140 lbs. ■	175 lbs. ■
Dough, Pie	B & P	75 lbs.	125 lbs.
Dough, Thin Pizza 40% § † (maximum mix time 5 minutes)	ED	85 lbs. ●	135 lbs. ●
Dough, Medium Pizza 50% AR § †	ED	155 lbs. ●	190 lbs. ●
Dough, Thick Pizza 60% AR § †	ED	155 lbs. ■	190 lbs. ■
Dough, Raised Donut 65% AR	ED	60 lbs. ▲	100 lbs. ▲
Dough, Whole Wheat 70% AR	ED	150 lbs. ■	185 lbs. ●
Eggs & Sugar for Sponge Cake	B & C or I	40 lbs.	75 lbs.
Icing, Fondant	B	65 lbs.	100 lbs.
Icing, Marshmallow	C or I	10 lbs.	20 lbs.
Shortening & Sugar, Creamed	B	65 lbs.	120 lbs.
Pasta, Basic Egg Noodle (maximum mix time 5 minutes)	ED	65 lbs. ●	100 lbs. ●

NOTE: %AR (% Absorption Ratio) = Wet ingredient weight divided by dry ingredient weight. Capacity depends on moisture content of dough. Above capacities based on 12% flour moisture at 70°F water temperature.

§ If high gluten flour is used, reduce above batch size by 10%

† 2nd speed should never be used on 50% AR or lower products.

Use of ice requires a 10% reduction in batch size.

1 gallon of water weighs 8.33 lbs.

NOTE: Attachment hub should not be used while mixing.

ABBREVIATIONS – AGITATORS SUITABLE FOR OPERATION

B Flat Beater

C Wing Whip

D Wire Whip

ED Dough Hook

I Heavy-Duty Wire Whip

P Pastry Knife

● 1st Speed

■ 2nd Speed

▲ 3rd Speed

CREAMING OR RUBBING WITH THE B FLAT BEATER

When making cakes or similar products, the first step is normally rubbing or creaming the shortening. Start this work on first speed and complete it on second speed. If a very light consistency is desired, it may be beaten on third speed before adding more ingredients.

In most formulas, the second step is adding sugar. Most operators prefer to add sugar slowly while the mixer is operating in second or third speed. If you wish to add the sugar all at one time, complete the creaming of the shortening and then stop the machine. When adding the sugar, place it toward the center of the bowl. Start the machine in first speed for the first few turns around the bowl, then increase the speed to complete the operation. After all the sugar has been added, you may want to scrape down the bowl, if you don't have the optional bowl scraper. To scrape the bowl, first stop the mixer. After the beater has stopped, scrape down the sides of the bowl with a bowl scraper or spatula. This returns to the mixture any material which may have accumulated on the bowl sides above the beater shoulder. After scraping down the material, restart the mixer. Beat until smooth using a three speed. Be careful and do not over mix.

CAKES WITH A HIGH SUGAR CONTENT

Do not add the total amount of whole eggs to the batch at one time.

Darkening of the butter and sugar mix can also result if you add the sugar before the shortening is creamed, you add the sugar too quickly to the creamed shortening, or you add more sugar than the creamed base can absorb.

When mixing whole eggs, it is unnecessary to separate the whites from the yolks. Add the eggs slowly and allow them to become thoroughly incorporated into the shortening base.

Flour and any leavening agent, such as baking powder, soda or special combinations of dry ingredients, may be sifted together. When incorporating dry ingredients, stop the mixer (wait for the beater to stop), scrape down the bowl if necessary, if you don't have the optional bowl scraper, and then add about $\frac{1}{3}$ of the flour and a portion of the milk or added moisture in any form. Resume mixing in first speed. When the flour is incorporated, add half of the remaining liquid and flour. When this is blended, add the remaining liquid and flour. Use only Stir or first speed while adding flour. If necessary, use the Stir speed during incorporation of the flour. This prevents raw flour from being thrown out of the mixer and avoids toughening of the mix by over mixing.

Exercise caution not to over mix the batch during or after the addition of the flour. Usually, by the time the flour is thoroughly incorporated, the mix is completed. Further beating is of no benefit and may cause toughening of the product. The time for beating and creaming is before adding the flour. After the flour and final moisture is added, do as little mixing as possible.

WHIPPING

Use either the D Wire Whip or the C Wing Whip for whipping operations. Although some special operations require other adaptations of the same general type of agitator, our discussion centers on the D Wire Whip and the C Wing Whip.

The D Wire Whip (sometimes called balloon or cage whip) is recommended for whipping cream. With today's marketing conditions, most raw or fresh cream whips well. All cream should be at least 36 to 48 hours old, and should be sufficiently high in butterfat to allow the air to be introduced by whipping. Cream should be cold, but not so cold that ice crystals are formed. When cream is too warm, it turns to butter when whipped. Start the mixer in first speed and gradually increase the speed finishing in third or fourth.

The amount of total whipping will depend on the condition, temperature and butterfat content of the cream and the type of product being prepared. An experienced operator will recognize the point of greatest

firmness or stiffness in the whipped product. Use care, the small diameter wires that produce good whipping can break if used to mix heavy product or if the whip is rapped on the side of the bowl to remove excess product.

The C Wing Whip may be used for cream whipping, but it is somewhat slower in operation. One of its principal uses in the kitchen is for whipping potatoes. Of course, whipped potatoes are cooked and then whipped while hot. The potatoes must be soft enough to break up easily by the action of the C Wing Whip in low speed. It is not advisable to whip potatoes in fourth speed without using a splash cover. If other ingredients (hot milk, butter or other enriching material) are added, use Stir speed. The C Wing Whip is excellent for whipping butter. The C Wing Whip may also be used for mixing salad dressing and light mayonnaise. Since it is an aerating type whip, it reaches its greatest efficiency at the higher speeds.

The D Wire Whip is generally used for eggs. When you whip only egg whites, begin in first speed.

When the material begins to expand, progress to second speed. Due to the expansion of the product from the incorporation of air, bowl capacity is limited by the volume of the final product, not by the amount of liquid ingredients at the beginning. When egg whites are whipped, they are generally finished in high speed. When adding sugar to make a meringue, add the sugar at slow speed and then whip briefly in third speed. Over-whipping will result in a refining action which liberates air. Stop the mixer as soon as a dry-appearing peak is reached.

When whipping eggs, either whites or whole eggs, it is important to have the bowl and the agitator completely free of any trace of shortening or other oily material. The slightest amount of fat will prevent proper incorporation of air. See CLEANING NEW MIXER BOWLS AND ACCESSORIES. In some kitchens and bakeries, it has become general practice to keep certain bowls only for this purpose.

You may also use the C Wing Whip for whipping eggs or egg whites. However, the results are somewhat slower than produced by the D Wire Whip.

MAYONNAISE

The C Wing Whip, because of its strength, high efficiency and durability when used on larger mixers, is most commonly used for making mayonnaise. However, the D Wire Whip may be preferred when making very light batches or when using step-down bowls. When you do not need a high emulsion, you may use the B Flat Beater. The B Flat Beater may be used for French or other thin types of salad dressings. The C Wing Whip can also provide satisfactory results by operating the machine at a slow speed.

Because of the great variation in types of mayonnaise and a still wider range of salad dressings known under other names, we will not supply a specific mayonnaise formula. All formulas, however, require the introduction of liquid ingredients, the most important of which is vegetable oil. This may be corn oil, peanut oil, soybean oil, palm oil, safflower oil or several others. You must add the oil slowly, and the operator must pay close attention.

When making mayonnaise, eggs are first thoroughly whipped, then spices, flavoring or other ingredients are added at slow speed. These may have been previously mixed together, perhaps with a portion of vinegar or other mild acid. After blending these ingredients, the mixer may be operated in third speed (or fourth).

Add the oil very slowly over an interval of 10 to 20 minutes. Add vinegar or vinegar and water toward the end of the interval when oil can be added. You may wish to stop the mixer (wait for the beater to stop), then scrape the sides of the bowl to return any splashed materials to the batch, if you don't have the optional bowl scraper. Start the mixer on slow speed, then advance to medium for a short period of mixing. The times given are approximate and not based on any particular formula. However, do not continue beating or mixing after adding the last of the vinegar.

ATTACHMENTS AND ACCESSORIES

Several valuable time and labor saving attachments and accessories are available for use with Hobart mixers. These tools will extend your usage of the mixer and enhance your operation by efficiently producing additional consistent, uniform products. Thoroughly clean all parts which come in contact with food both before and after use.

9" VEGETABLE SLICER

The 9" Vegetable Slicer attachment allows you to prepare many additional foods with your Hobart mixer. The standard knife and shaft is adjustable to provide variation in slice thickness from a maximum of about $\frac{5}{8}$ " to wafer thin. Thicker settings are used for slicing vegetables for salads or coleslaw, slicing potatoes for German (cottage fries) or American fried potatoes, slicing cucumbers, bananas, nuts, apples, etc.

The VS9 is easily adapted for grating or shredding processes by removing the knife and shaft and using the shaft with the wheel, called a plate holder. One grater plate and four shredder plates (with hole sizes of $\frac{3}{32}$, $\frac{3}{16}$, $\frac{5}{16}$ and $\frac{1}{2}$ ") are used for fine grating or fine to coarse shredding. The most coarse shredder plate ($\frac{1}{2}$ ") is used for slaw, cutting soup stock, salad blends or hash brown potatoes. Experience with the unit will suggest many other products to the operator. The medium and fine shredder plates are for finer cuts on carrots, mushrooms or cabbage hearts for salad or quick cooking uses. Medium shredder plates are also used for shredding processed cheese for a topping when desired. The grater plate is used for natural hard cheeses for pizza, grating hard vegetables, spices, and crumbling dried bread.

Many different products can be prepared with the 9" Vegetable Slicer – in kitchens, bakeries or delicatessen operations. As a mixer attachment, the vegetable slicer should operate at second or third speed on the HL120, HL200, HL300 and HL400, third or fourth speed on the HL600 and dedicated speeds on the HL662 mixer. The VS9 cannot be used on the HL800 and HL1400.

Never use the highest speed setting when shredding cheese.

The VS9 easily disassembles for cleaning.



VS9 Vegetable Slicer and Plates

MEAT CHOPPER ATTACHMENT

The Meat Chopper Attachment allows you to prepare many additional foods with your Hobart mixer.

A plate having $\frac{1}{8}$ " holes comes with the Meat Chopper Attachment when shipped from the factory. Other plates are available with hole sizes $\frac{5}{64}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ and $1\frac{1}{16}$ " for fine to coarse chopping. The results are the same as produced by Hobart commercial meat choppers. Operate Meat Chopper Attachments in slower speeds.

The feed pan should be kept in place in the cylinder for ease of feeding. Cut meat into strips and feed it into the chopper using the feed stomper only as needed. Substances that could become packed tight in the chopper like bread crumbs are not recommended. If material in the cylinder stalls the mixer, push the STOP button at once. DO NOT attempt to restart at a slower speed. Remove the adjusting ring, knife, plate and worm and clear the obstruction.

Always keep the drain hole on both the Attachment Hub and Meat Chopper clean, clear and free of obstruction.



Meat Chopper with Round Feed Pan



Splash Cover



Bowl Extension Ring

SPLASH COVER AND BOWL EXTENSION RING

Splash Covers and Bowl Extension Rings provide a means for reducing splashing for certain mixes at higher speeds. Splash covers fit under the Bowl Guard. The stainless steel Bowl Extension Ring is also available.

Splash Covers and Bowl Extensions, while convenient accessories, should not be used to increase the mixing capacity beyond the recommended maximum. The best functioning of Hobart mixers requires room at the top of the bowl for aeration and manipulation. Follow the Hobart Mixer Capacity Chart of the best quality of mix.

Splash Covers on larger mixers have a smaller diameter opening at the top due to their inverted cone shape. Overloading the mixer while a splash cover is in use reduces aeration because of restriction in the area where air enters the batch.



Ingredient Chute

INGREDIENT CHUTE

The Ingredient Chute can be attached to the Wire Cage on the Bowl Guard. The Ingredient Chute allows ingredients to be added to the bowl while the mixer is mixing..



Bowl Scraper

BOWL SCRAPER ATTACHMENT

The mixer Bowl Scraper Attachment is available to scrape the sides of the bowl as the agitator rotates to re-introduce material into the mixture.



Bowl Truck

BOWL TRUCK

Bowl Trucks or dollies provide convenience, save time, and reduce effort in handling large batches. Use a Bowl Truck for any batches over 50 pounds. Remove heavy batches of dough or batter from the mixer by unlocking the bowl and lowering the bowl to the Bowl Truck. Then, carefully roll the truck away to make room for the next batch. Move the material to another location where it is to be used, or refrigerate between mixing and further processing. Bowl Trucks save time, reduce handling, and improve work flow. They are valuable tools in a work place.

LEGACY[®] MAXIMUM HEAVY-DUTY MIXERS



HL120



HL200



HL300



HL400



HL600



HL662



HL800



HL1400

BACKING UP YOUR PURCHASE . . . DEPENDABLE HOBART SERVICE



Should your Hobart mixer, attachments or accessories ever require service, it's good to know that over 1,500 factory-trained technicians in more than 125 locations across the US and Canada can keep your mixer working like new. As the OEM service provider for Hobart, all Hobart Service technicians are factory-trained, and our parts distribution network provides technicians with direct access to all our OEM parts, including over 40,000 SKUs in stock and ready for next-day delivery.

For ready reference, write down your mixer model and serial numbers here. Should a question or problem arise that this booklet or the instructions you received with the machine cannot answer, expert Hobart assistance is as close as your telephone.

Model No. _____

Serial No. _____

Hobart Service Location _____

Telephone Number _____

Check out our website for additional product resources: www.hobartcorp.com

Find more information about Hobart Service, including the nearest Service Location, at:

www.hobartservice.com



hobartcorp.com

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