

# **Bella™**

**FLUIDIZED ZONE MIXER**



***The Mixer with the Weightless Zone***

# ***Bella Mixer – Highly Efficient Mixing of***

## **Super fast, gentle, precision mixing**

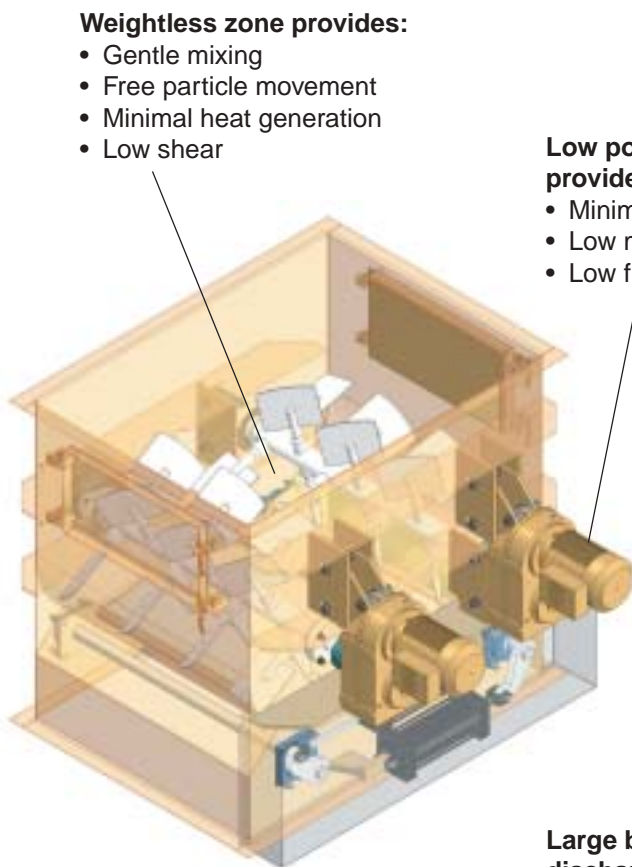
The Bella Fluidized Zone Mixer by Dynamic Air features an original design that achieves fast, high capacity, thorough, precision mixing of either dry bulk solids or liquids with solids. Regardless of particle size, shape or density, materials are mixed with a fast, efficient and gentle action. A weightless zone created by low speed counter-rotating shafts generates very low friction without shear. This makes the Bella mixer ideal for fragile products that cannot tolerate rough handling. Even flakes or spray dried bodies remain intact.

## **Versatile for liquid additions**

Liquids can be added at much higher rates than normally possible and vast material surfaces are constantly being exposed for maximum dispersion. A wide range of viscosities can be quickly dispersed whether poured, streamed or sprayed. Particle sizes dictate rate and method of liquid addition. In the Bella mixer you can add small amounts of powder or fibers, small amounts of liquid, solid fat (shortening) or liquid fat, or liquid with high viscosity. You can also coat particles or pellets and agglomerate in the mixer.

## **Two Bella Mixer Models Available**

- Model XN with dual direct drives
- Model XE with a single chain drive.

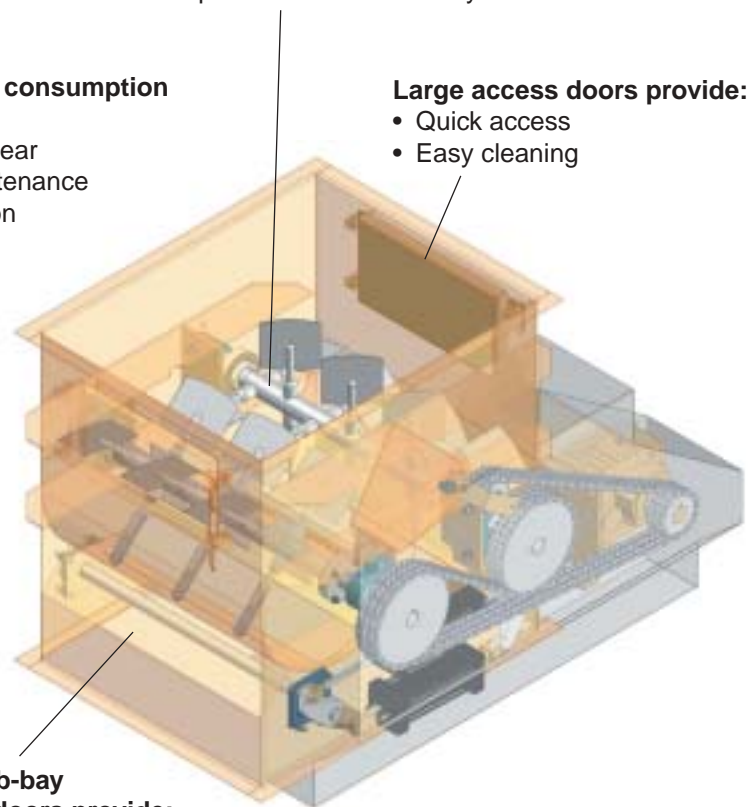


### **Weightless zone provides:**

- Gentle mixing
- Free particle movement
- Minimal heat generation
- Low shear

### **Low power consumption provides:**

- Minimal wear
- Low maintenance
- Low friction



### **Twin mixer shafts provide:**

- Optimum particle movement
- Short mix times
- High quality mixing
- Low rotation speeds
- Homogeneous mixing independent of particle size and density.

### **Large access doors provide:**

- Quick access
- Easy cleaning

### **Large bomb-bay discharge doors provide:**

- Fast discharging
- Reduced segregation

**Bella Mixer Model XN**  
**Dual Direct Drives**

**Bella Mixer Model XE**  
**Single Chain Drive**

# Powders, Granules, Flakes and Pellets



Start



After 2 seconds



After 5 seconds



After 10 seconds

The rapid mixing time of the Bella fluidized zone mixer is demonstrated here as three dissimilar materials achieve quick homogeneity regardless of particle size, shape or density. Typical mix times are from 10 to 60 seconds for dry, free-flowing materials.

## How It Works

The Bella mixer consists of twin drums which have two counter-rotating agitators with specifically angled paddles. The paddles sweep the entire bottom of both mixer drums and yet allow the mixer to be started under full load (figure 1).

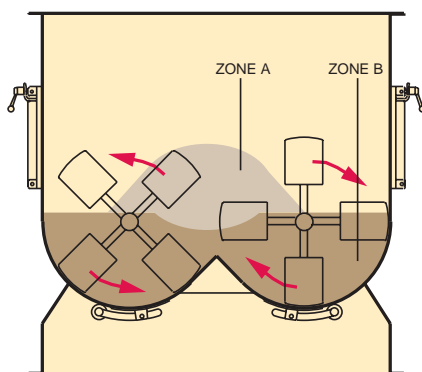


Figure 1

The material in the mixer moves in a horizontal counter-clockwise direction at the perimeter while simultaneously moving both left and right in the center (figure 2).

The material in Zone B (figure 1) is in its normal gravimetric state as it is being moved and dispersed. In Zone A, a weightless zone is created that effectively lifts the ingredients to an almost weightless state allowing them to move freely and randomly, regardless of particle size and density. Thus, the two zones' interaction becomes highly efficient as every particle moves rapidly to a highly homogenous mix, the key to the Bella mixing technology for fast, precise mixing.

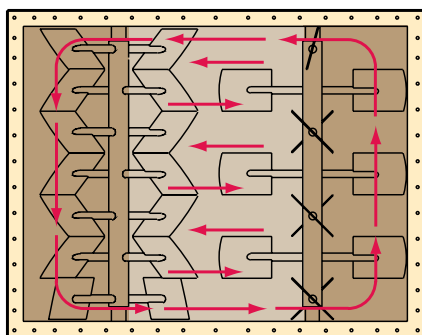
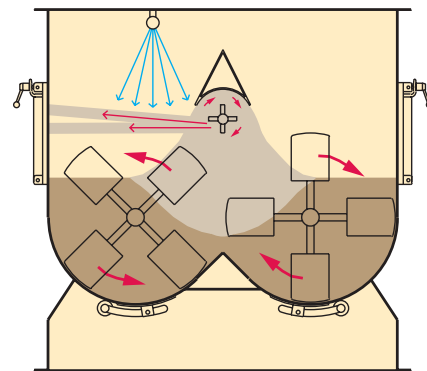


Figure 2

## Options

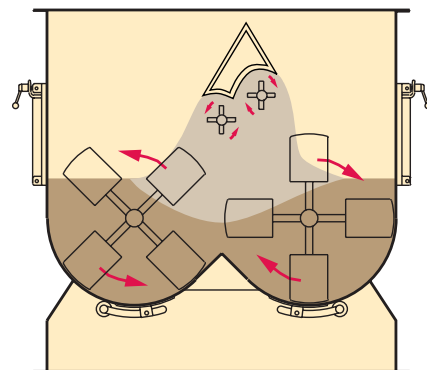
### Liquid Addition with the Flow Distortion Bar

When adding liquid to materials which tend to agglomerate, a flow distortion bar is used to improve performance. It consists of a rapidly rotating bar with pins located close together to create a moving curtain of material over the paddles during mixing for maximum exposure to the material. This improves product uniformity and liquid dispersion. A fill level of 140 percent of batch capacity is normally required.



### Mixing with the Pin Mill System

When higher shear is required, the use of the pin mill system is employed. It consists of two rapidly rotating bars with pins and a stationary shroud. The pin mill system is used to introduce high shear into the material during mixing for breaking soft lumps and agglomerates that may be present. A fill level of 140 percent of batch capacity is normally required.



# Special Features and Options

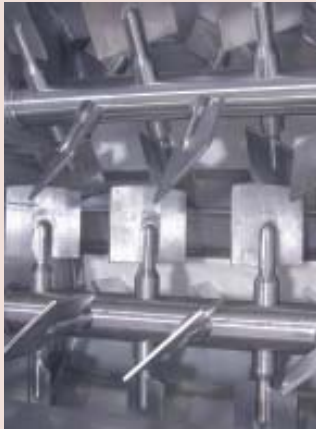
## Twin Mixing Agitators - Standard

All Bella mixer models are available with twin counter-rotating shafts to achieve a high degree of random material movement throughout the mixer. This tremendous mixing action optimizes overall mixing performance and produces a homogeneous mix in a very short period of time. Most mix times for dry materials are less than 60 seconds to achieve the desired quality. Mix times with liquid addition are longer and will vary with the application.



### Fixed Paddle Option

Fixed, all welded paddles are available for those applications that require an all welded design. Welds are ground smooth to minimize material buildup and for easier cleaning.



### Removable Paddle Option

Special agitator shafts accommodate easily removable paddles. These paddles can be removed in place without removing the agitator shafts. This unique design also provides a machined smooth surface to minimize material build-up.

## Air Purged Bearings - Standard

A specially designed and proven air purged bearing seal provides much longer life to the main mixer shaft bearings and helps prevent mixed material from leaking from the twin mixer shafts. A packing gland design is also available for special or high temperature applications.



## Single Chain Drive System Option

The Bella Model XE Mixer includes a heavy-duty multiple strand chain drive system with chain tensioner. One drive motor and gearbox drives both mixing shafts in opposite directions to achieve low shear fluidized zone mixing.



## Dual Direct Drive System Option

The Bella Model XN Mixer includes two (2) direct drive gearboxes that drive the twin mixing shafts in opposite directions to achieve low shear fluidized zone mixing.



## Quick Opening Access Door Option

Quick opening access doors are available as options. The standard design provides a high quality seal, yet minimizes any material buildup at the openings. Special limit switches on every door provide lockout protection during operation.

## Bomb-Bay Discharge Doors - Standard

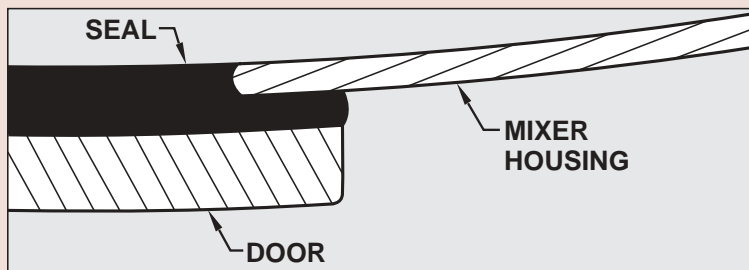
The large twin bomb-bay door openings are key to fast, efficient discharging. They also minimize any segregation during the discharge cycle, which is normally inherent to mixers with a single port discharge valve.



Large bomb-bay discharge doors - bottom view

## Bomb-Bay Discharge Door Seal - Standard

All Bella Mixers come standard with a reliable flush molded rubber door seal, which is bonded to the steel discharge door. This molded seal is available in Buna N, EPDM or silicone compounds as standard. However, any rubber compound is available as an option. The rugged rubber door seal is also very positive and reliable because it is molded to our exact specifications for maximum performance.



## Pin Mill System Option

Twin pin mills are an option when additional shear is required during the mixing cycle, or to break down unwanted lumps of material to grain size after the addition of liquids. These twin shafts are normally operated at higher speeds and are custom to the application.



## Portable Mixer Option

For applications that require the mixer to be moved, wheels can be added.

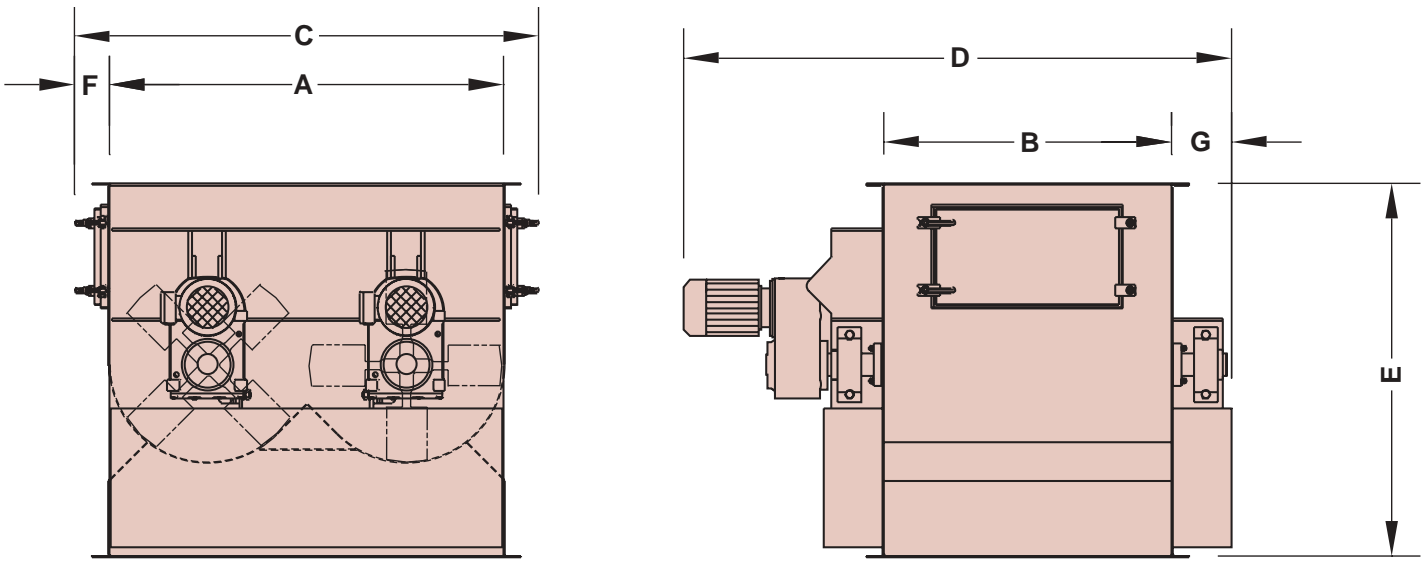


## Liquid Addition Option

Custom liquid addition systems are available and sized to meet the application. Even special liquid heating is available to accommodate those very viscous materials that need to be added. Special nozzles and pumping systems can also be included and sized for the application.

# Standard Bella XN Mixer

## B-6XN – B-8000XN



### DIMENSIONS & SPECIFICATIONS

MODEL	BATCH CAPACITY <sup>①</sup> CUBIC FEET (LITERS)	MOTOR <sup>②</sup> SIZE & QUANTITY	DIMENSIONS: INCHES (MM)							MIXER WEIGHT <sup>③</sup> POUNDS (KILOGRAMS)
			A	B	C	D	E	F	G	
B-6XN	0.21 (6)	0.25 HP (2) 0.2 KW (2)	13.88 (353)	10.56 (268)	16.88 (429)	30.50 (775)	17.19 (437)	1.50 (38)	5.00 (127)	300 (136)
B-20XN	0.71 (20)	0.5 HP (2) 0.4 KW (2)	21.00 (533)	15.69 (399)	24.00 (610)	36.50 (927)	25.81 (656)	1.50 (38)	5.00 (127)	650 (295)
B-60XN	2.12 (60)	1.5 HP (2) 1.1 KW (2)	31.00 (787)	22.50 (572)	34.00 (864)	59.38 (1508)	34.00 (864)	1.50 (38)	6.00 (152)	800 (363)
B-120XN	4.24 (120)	2.0 HP (2) 1.5 KW (2)	37.00 (940)	28.31 (719)	42.00 (1067)	52.00 (1321)	36.69 (932)	4.75 (121)	7.00 (178)	1050 (476)
B-200XN	7.06 (200)	3.0 HP (2) 2.2 KW (2)	43.69 (1110)	33.50 (851)	48.69 (1237)	66.69 (1694)	45.19 (1148)	4.75 (121)	7.00 (178)	1338 (607)
B-350XN	12.36 (350)	5.0 HP (2) 3.7 KW (2)	54.00 (1372)	39.38 (1000)	61.31 (1557)	74.62 (1895)	51.19 (1300)	4.75 (121)	7.50 (191)	2020 (916)
B-500XN	17.66 (500)	5.0 HP (2) 3.7 KW (2)	59.62 (1514)	45.69 (1161)	64.62 (1641)	78.62 (1997)	54.31 (1379)	4.75 (121)	7.50 (191)	2466 (1119)
B-750XN	26.49 (750)	7.5 HP (2) 5.6 KW (2)	68.50 (1740)	52.00 (1321)	74.69 (1897)	93.19 (2367)	66.12 (1679)	4.75 (121)	7.50 (191)	3310 (1501)
B-1000XN	35.31 (1000)	10 HP (2) 7.5 KW (2)	75.50 (1918)	57.00 (1448)	80.50 (2045)	99.50 (2527)	69.38 (1762)	4.75 (121)	10.00 (254)	4506 (2044)
B-1500XN	52.97 (1500)	15 HP (2) 11 KW (2)	85.50 (2172)	66.00 (1676)	94.12 (2391)	118.31 (3005)	80.69 (2050)	4.75 (121)	10.00 (254)	6790 (3080)
B-2000XN	70.63 (2000)	20 HP (2) 15 KW (2)	94.12 (2391)	73.62 (1870)	99.12 (2518)	125.12 (3178)	85.00 (2159)	4.75 (121)	11.00 (279)	9187 (4167)
B-2500XN	88.29 (2500)	20 HP (2) 15 KW (2)	101.31 (2573)	77.88 (1978)	110.31 (2802)	138.19 (3510)	95.38 (2423)	4.75 (121)	11.00 (279)	11,750 (5330)
B-3600XN	127.13 (3600)	25 HP (2) 19 KW (2)	115.88 (2943)	91.13 (2315)	124.88 (3172)	163.69 (4158)	107.00 (2718)	4.75 (121)	15.00 (381)	16,000 (7257)
B-5000XN	176.57 (5000)	40 HP (2) 30 KW (2)	129.00 (3277)	98.50 (2502)	138.00 (3505)	167.00 (4242)	114.00 (2896)	4.75 (121)	16.00 (406)	20,000 (9072)
B-6000XN	211.89 (6000)	40 HP (2) 30 KW (2)	137.19 (3485)	106.31 (2700)	146.19 (3713)	167.81 (4262)	123.00 (3124)	4.75 (121)	17.00 (432)	23,000 (10,433)
B-8000XN	282.52 (8000)	50 HP (2) 37 KW (2)	151.00 (3835)	118.50 (3010)	160.00 (4064)	183.00 (4648)	132.00 (3353)	4.75 (121)	17.00 (432)	26,000 (11,793)

① Batch capacity may be increased or decreased for specific applications.

② Larger drive motors are available for extreme or specific applications.

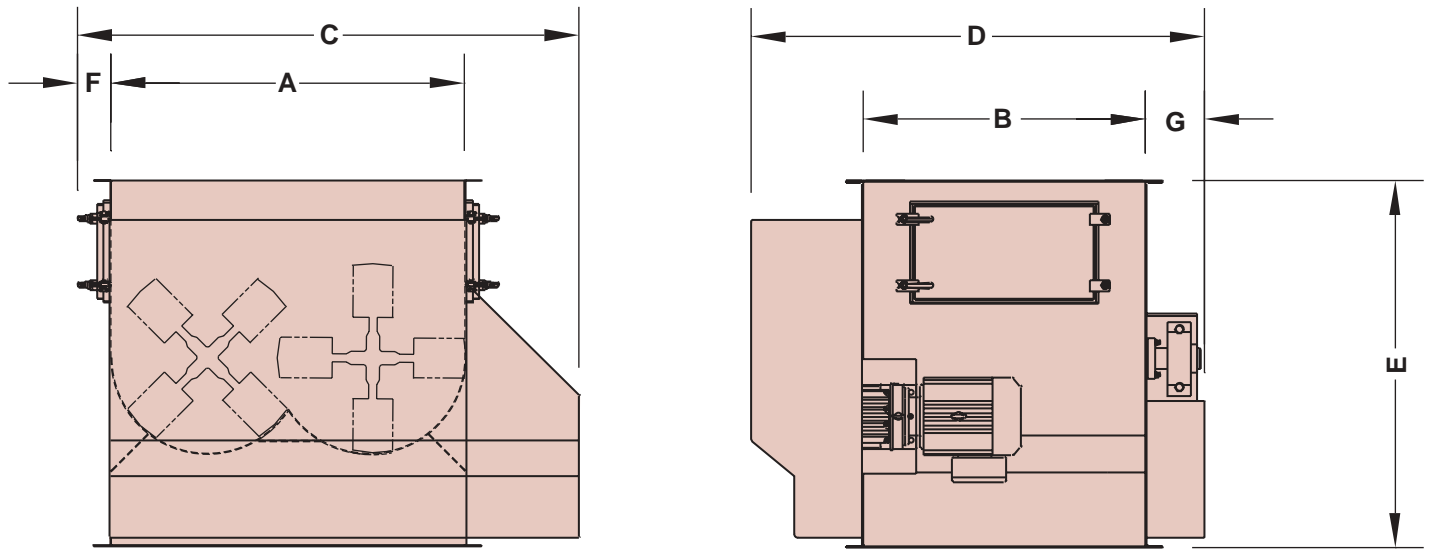
③ The weight of the mixer will vary depending on equipment options.

**Note:** The Bella mixer is available in custom sizes, finishes and materials of construction on request.

All specifications are subject to change without notice.

# Standard Bella XE Mixer

## B-6XE – B-8000XE



### DIMENSIONS & SPECIFICATIONS

MODEL	BATCH CAPACITY <sup>①</sup> CUBIC FEET (LITERS)	MOTOR <sup>②</sup> SIZE	DIMENSIONS: INCHES (MM)							MIXER WEIGHT <sup>③</sup> POUNDS (KILOGRAMS)
			A	B	C	D	E	F	G	
B-6XE	0.21 (6)	0.5 HP 0.37 KW	12.50 (318)	10.56 (268)	21.00 (533)	22.00 (559)	17.19 (437)	1.50 (38)	4.50 (114)	270 (122)
B-20XE	0.71 (20)	1.0 HP 0.75 KW	18.50 (470)	15.69 (399)	32.00 (813)	28.31 (719)	25.81 (656)	1.50 (38)	5.00 (127)	350 (159)
B-60XE	2.12 (60)	3.0 HP 2.2 KW	26.81 (681)	22.50 (572)	39.31 (998)	38.38 (975)	34.00 (864)	1.50 (38)	6.00 (152)	640 (290)
B-120XE	4.24 (120)	5.0 HP 3.7 KW	33.00 (838)	28.31 (719)	49.00 (1245)	47.69 (1211)	36.69 (932)	4.75 (121)	7.00 (178)	1000 (454)
B-200XE	7.06 (200)	5.0 HP 3.7 KW	39.38 (1000)	33.50 (851)	55.12 (1400)	54.50 (1384)	45.19 (1148)	4.75 (121)	7.00 (178)	1550 (703)
B-350XE	12.36 (350)	7.5 HP 5.6 KW	49.31 (1252)	39.38 (1000)	71.31 (1811)	66.00 (1676)	48.69 (1237)	4.75 (121)	7.50 (191)	2500 (1134)
B-500XE	17.66 (500)	10 HP 7.5 KW	53.62 (1362)	45.69 (1161)	78.31 (1989)	70.12 (1781)	54.00 (1372)	4.75 (121)	7.50 (191)	3000 (1361)
B-750XE	26.49 (750)	15 HP 11 KW	61.00 (1549)	52.00 (1321)	90.00 (2286)	83.69 (2126)	66.12 (1679)	4.75 (121)	7.50 (191)	4000 (1814)
B-1000XE	35.31 (1000)	20 HP 15 KW	67.00 (1702)	57.00 (1448)	89.31 (2268)	91.12 (2314)	69.38 (1762)	4.75 (121)	10.00 (254)	5400 (2449)
B-1500XE	52.97 (1500)	30 HP 22 KW	77.00 (1956)	66.00 (1676)	103.69 (2634)	100.38 (2550)	86.31 (2192)	4.75 (121)	10.00 (254)	8200 (3719)
B-2000XE	70.63 (2000)	40 HP 30 KW	86.00 (2184)	73.62 (1870)	120.50 (3061)	110.62 (2810)	90.62 (2302)	4.75 (121)	11.00 (279)	10,650 (4831)
B-2500XE	88.29 (2500)	40 HP 30 KW	91.38 (2321)	78.00 (1981)	120.00 (3048)	109.50 (2781)	95.31 (2421)	4.75 (121)	11.00 (279)	13,200 (5987)
B-3600XE	127.13 (3600)	50 HP 37 KW	106.50 (2705)	91.13 (2315)	123.00 (3124)	150.50 (3823)	107.00 (2718)	4.75 (121)	15.00 (381)	18,825 (8539)
B-5000XE	176.57 (5000)	75 HP 56 KW	118.19 (3002)	98.50 (2502)	127.50 (3239)	160.50 (4077)	114.00 (2896)	4.75 (121)	16.00 (406)	25,985 (11787)
B-6000XE	211.89 (6000)	75 HP 56 KW	125.00 (3175)	106.31 (2700)	133.00 (3378)	164.31 (4173)	123.00 (3124)	4.75 (121)	17.00 (432)	27,500 (12474)
B-8000XE	282.52 (8000)	100 HP 75 KW	138.50 (3518)	118.50 (3010)	146.50 (3721)	178.00 (4521)	132.00 (3353)	4.75 (121)	17.00 (432)	29,000 (13154)

① Batch capacity may be increased or decreased for specific applications.

② Larger drive motors are available for extreme or specific applications.

③ The weight of the mixer will vary depending on equipment options.

**Note:** The Bella mixer is available in custom sizes, finishes and materials of construction on request.

All specifications are subject to change without notice.

# Typical Applications

## Food

Aspartame  
Baby formula  
Brown sugar  
Cake mixes  
Cereals  
Cereals/fruit  
Cheese powder  
Coffee  
Confections  
Corn starch  
Drink mix  
Doughnut mix  
Dried soups  
Flours  
Fruit mixes  
Grains  
Granola  
Herbs  
Licorice  
Meat seasonings  
Meusli cereals  
Milk powder  
Mixed nuts  
Potato flakes  
Raisins/Flakes  
Rice  
Saffron mix  
Salads  
Salt tablets  
Snack foods  
Spices  
Sugars  
Vanilla powders  
Fresh vegetables  
Frozen vegetables

## Plastics

Plastic additives  
Polyethylene  
Polymers  
Polypropylene  
PVC chips  
Resins

## Chemicals

Boric acid  
Boric oxide  
Carbon  
Carpet freshener  
Chalk/talcum  
Cleansers  
Cosmetics  
Detergents/bleach  
Detergents/wax  
Drain cleaner  
Graphite/carbon  
Fertilizer  
Fly ash  
Fungicides  
Powdered paint  
Pesticides  
Soda ash  
Toiletries

## Building Materials

Brick facings  
Cement/fibers  
Crushed marble  
Drilling mud  
Drywall compound  
Flooring materials  
Grouts  
Gypsum  
Joint compounds  
Lime  
Mortar mixes  
Pre-mixed cements  
Road lining materials  
Thermosetting paint  
Wall plasters  
Wallpaper pastes

## Metal Powders

Metal oxides  
Copper/graphite  
Iron powder/graphite  
Magnesium  
Stellite powder  
Titanium  
Zinc powder

## Feeds

Dairy additives  
Animal feed  
Fish food  
Pet food  
Zoological food

## Foundry

Core sand  
Molding sand  
Sand/bentonite

## Rubber

Carbon black  
Ground rubber  
Talc

## Ceramics

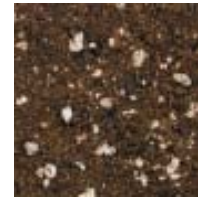
Glass batch  
Cement/clay  
Clay/sand  
Glazes  
Pumice  
Refractories

## Other

Cat box litter  
Electrode mass  
Fish medicine  
Peat moss mixes  
Pharmaceuticals  
Potting soil  
Potpourri  
Pyrotechnics  
Wood chips



Cereal



Potting soil



Grains



Detergent



Fruit/snack mix



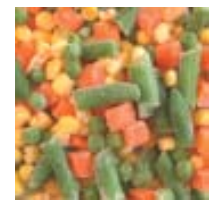
Drain cleaner



Dried soup



Drink mix



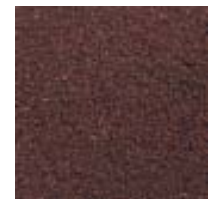
Frozen vegetables



Cleanser



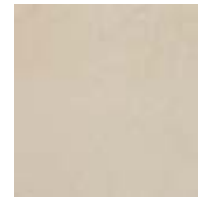
Raisins/flakes



Coffee



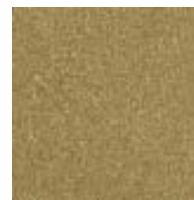
Herbs and spices



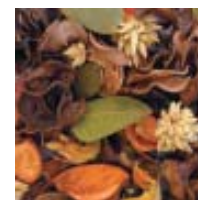
Grout



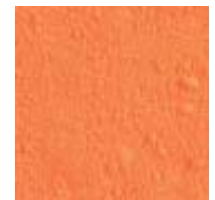
Cat box litter



Metal powders



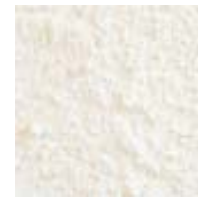
Potpourri



Ceramic glaze



Snack foods



Glass batch



Cereal