

# Paddle + Ribbon = Paddle/Ribbon



*Combination inner ribbon / outer paddle agitator*

Combination outer paddle/inner ribbon agitator for applications involving fragile and heat sensitive products such as cereals, leafy spice mixes and to prevent sugars from caramelizing. Other possible uses include abrasive products which require adjustable and/or replaceable paddles.

- Gentler than a double ribbon blender

- Faster than a paddle blender

- Greater range of batch sizes in relation to total capacity

- A real option for fragile products

- A true alternative for many other applications!

## Double Ribbon Blenders

The two ribbons of the traditional ribbon agitator create a counter-directional flow of materials, keeping the product in constant motion throughout the vessel. Goods are evenly distributed over the entire length of the mixing tank.

But the outer ribbon creates pinch points between its edge and the tank wall often resulting in damage to fragile products.

## Paddle Blenders

While being gentler, mixers with a paddle style agitator require longer mixing cycles. Because the paddle is a less efficient agitator style it puts stricter limitations on volume capacity and batch size. Goods form a mound in the center of the mixing tank.

## The Combination Agitator

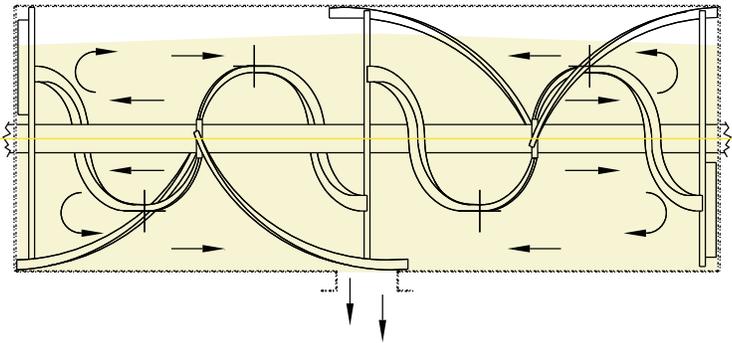
By combining an outer paddle arrangement with an inner ribbon, American Process Systems has developed a perfect solution for many applications.

The outer paddles in place of the ribbon minimize pinch points along the tank wall. Instead of mounding the product in the center of the vessel, the inner ribbon moves the product toward the ends much like it does in a conventional ribbon blender. The paddles gently scoop up the product and move it back toward the center discharge. Less frictional heat is introduced into the product than would be with a second ribbon.

Another benefit of the outer paddle/inner ribbon configuration is the greater range of batch sizes, particularly at the low end of the scale. While double ribbon blenders are limited to no less than 40% of their batch capacity, the combination agitator allows for smaller batches much like those of a paddle blender. They may be as low as 10% of the rated batch capacity depending upon the mix ingredients.

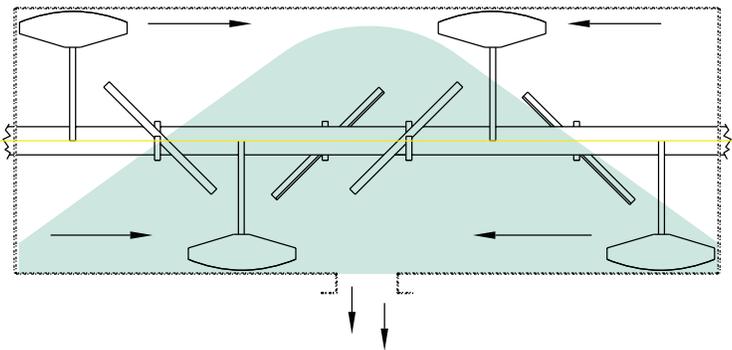
The three illustrations on the back show the difference in product flow when using the three agitator styles discussed here.

**1. Inside & Outside Ribbon**



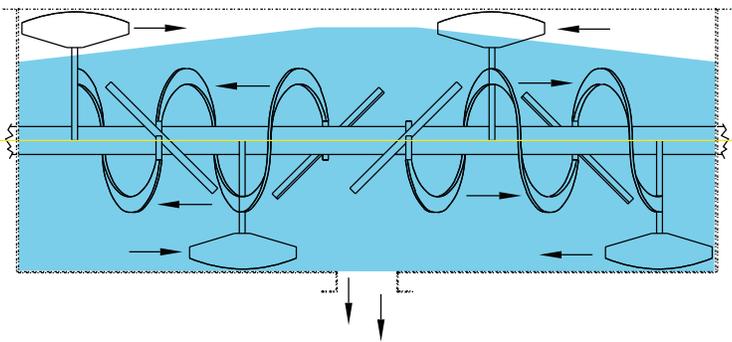
- Product will be leveled across the length of the blender.
- The spiral of the ribbons will pull product in opposite directions.
- More mechanical energy (shear) is transmitted to the product because of greater agitator surface. (Aggressive pushing action)
- Shorter mixing time required

**2. Paddles Only**



- Product will mound in the center of the blender.
- Paddles lift product to the center of the blender.
- Less mechanical energy is transmitted to the product because of smaller agitator surface. (Gentle lifting action)
- Requires longer mixing times.
- Smaller working capacity.

**3. Combination Agitator: Inside Ribbon & Outside Paddles**



- Product will be more level across the length of the blender.
- Outside paddle will lift product to the center of the blender. Inside ribbon will pull product to both ends of the blender.
- Less mechanical energy is transmitted to the product because of smaller agitator surface. (Gentle lifting action)
- Requires less mixing time than paddles alone.

