

# San★Star™ Mixers

Versatile mixing solutions  
for cGMP applications  
in pharmaceutical,  
biotech, food  
and cosmetics



## Create your own solution from our complete family of sanitary mixers

Lightnin's family of SanStar™ sanitary mixers are designed to meet the most stringent requirements for cGMP facilities, and to provide the most comprehensive array of mixer solutions for the pharmaceutical, biological, cosmetic and food processing industries.



### Lightnin SV/BP Series Mixers

Designed for use in dry-running, aseptic environments, Lightnin's stainless steel SV Mixers and polished, nickel-plated exterior BP Mixers offer a proven track record of superior, dependable performance and clean operation.

- Minimum footprint for vessels up to 30,000 liters in a vertical, in-line design for closed tank applications.
- Flange or tri-clamp mounted units from 1/4 to 5 hp, and standard output speeds from 70 to 290 rpm.
- Polished exterior. Stainless steel washdown and inverter duty electric motors for maximum flexibility and cleanliness.
- Variety of impeller configurations and variable speed drives for a wide range of process requirements.
- Aseptic dry running seal can be supplied with sanitary gland (debris well).
- Sterilizable double mechanical seals for operation from full vacuum to 100 psig.
- Full clean-in-place, sterilize-in-place (CIP/SIP) features.
- Comes with Lightnin's 100% process guarantee.



### Lightnin SR Series Mixers

Lightnin Sanitary Right-Angle Mixers are designed for a variety of processing applications in locations with a small footprint and minimum available headroom, for use on closed tanks ranging up to 30,000 liters.

- For media suspension and storage, buffer solutions make down, plasma extraction and fermentation, including bacteria and cell culture and general media processing.
- Right angle gear drive and low center of gravity.
- Processing tanks can easily be moved from one location to another with the mixer in place.
- Aseptic dry running seal can be supplied with sterilizable sanitary gland.
- Available drive finishes include all stainless steel and epoxy painted with anodized aluminum.
- Flange or tri-clamp mounted units.
- Variety of impeller configurations and variable speed drives from 70 to 350 rpm.
- Full CIP/SIP features.
- Comes with Lightnin's 100% process guarantee.



### Lightnin MBI Series Mixers

Lightnin MBI Series Mixers set the new standard for cleanability, durability and performance. The patented Hyper-Flo™ bearing design makes these mixers the ideal choice for a variety of sanitary processing and storage applications, including plasma, fractions, vaccines, injectables and media suspensions.

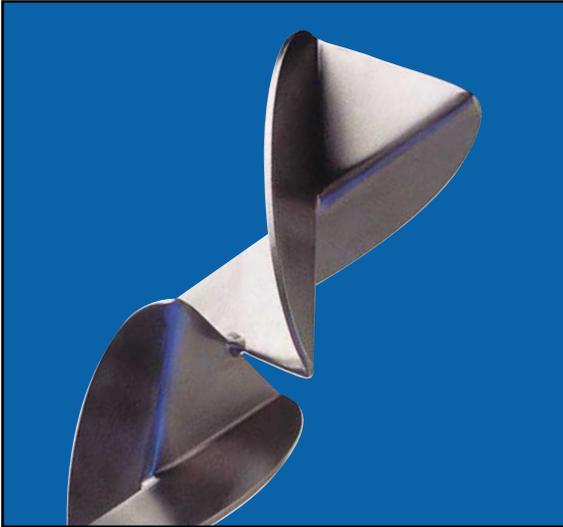
- Patented bearing design has been proven more cleanable than sleeve bearing designs, especially in applications involving sticky, hard-to-clean soils.
- Bearings will not fracture due to rough handling or heavy particulate generation.
- “Dry running” bearings allow tank to be completely drained while mixer is still in operation.
- Integral lifting loops permits easy installation and removal of the impeller.
- Suitable for closed tanks up to 30,000 liters.
- Can handle product viscosities up to 1,000 cp.
- Variety of impeller configurations and variable speed drives.
- Full CIP/SIP features.
- Comes with Lightnin’s 100% process guarantee.



### Lightnin SSP/SSPG Series Mixers

Lightnin SSP/SSPG Stainless Steel Mixers are direct drive and gear drive units designed to handle a variety of open tank mixing applications. These clamp-on mixers meet cGMP in any environment.

- Available from 1/2 to 2 hp for batches from 50 to 10,000 liters and product viscosities from one to 5,000 cps.
- Applications include coatings, lotions, personal care products.
- Includes stainless steel washdown and inverter duty electric motors.
- Polished stainless steel exterior for easy cleaning.
- Variety of impeller configurations and variable speed drives.
- Comes with Lightnin’s 100% process guarantee.



## Lightnin Series 45 Inliner Mixers

Lightnin's Series 45 mixers provide an unmatched combination of accurate process results, economy and space efficiency. These helical plate mixers can process any pumpable material regardless of flow regime in a wide variety of applications and industries.

- Precision-designed mixing element modifies the flow and creates a specific pattern of splitting, rotating and mixing actions.
- Helical element is made of durable, economical stainless steel.
- Eliminates the need for tanks, agitators, moving parts and motors.
- Increases mixing efficiency and maintains material uniformity during transfer when installed with a tank/mixer system.
- Often used to take product samples close to the mixer discharge to prevent under or over-dosing.
- Easy to install and requires virtually no maintenance.
- Can be customized to suit any application, including sanitary and CIP processes.
- Comes with Lightnin's 100% process guarantee.



## Lightnin Washdown Clamp Mount Mixers

Lightnin Washdown Clamp Mount Mixers are ideal for sanitary mixing applications not requiring stainless housings. These mixers come as both gear-drive mixers for large batch, low speed processing, or as direct-drive models for small batch, high shear applications.

- Choice of washdown-rated epoxy-covered aluminum or electroless nickel-plated aluminum construction.
- Fully adjustable clamp assembly.
- Flexible motor coupling reduces mechanical starting loads for extended gear life.
- Oversized bearings provide superior shaft support.
- Permanently-sealed lubrication reduces maintenance costs.
- Self-aligning, floating gears optimize load sharing and reduce wear.
- Comes with Lightnin's 100% process guarantee.



## Lightnin BioMixers

Lightnin BioMixers address the mixing needs of sterilized biological and pharmaceutical mixing environments, using patented design concepts, microprocessor technology, robust power and advanced laser-designed impellers.

- Single detachable drive head mixes multiple vessels.
- Repeatably digital data entry via splash-proof keypad.
- Displays for speed, power, torque, impeller flow and time.
- Chemically-resistant sanitary housing.
- Autoclavable in-place.
- FDA-grade non-cytotoxic materials.
- Control software operates up to 32 mixers from computer.
- Eight critical fluid mixing scale-up parameters recorded.
- Validation data is easily exported.
- Easy to install on sanitary flanged vessels.
- Reversible rotation for up or down-pumping experiments.
- Comes with Lightnin's 100% process guarantee.



## Lightnin SealMaster Mixers

Lightnin SealMaster Mixers feature stainless steel surfaces, rugged gear-drive operation and NEMA 4 design for pharmaceutical and biotech applications.

- Mechanical seal may be sterilized by SIP methods to prevent contamination.
- Variable speed electric motor operates at speeds up to 175 RPM (30 to 300 RPM for optional air drive).
- Optional precise digital RPM readout (electric model only).
- Custom mounting options include tri-clamp mounting.
- Detachable drive and process control interface options.
- Optional seal and sanitary gland.
- Optional composite housing.
- Comes with Lightnin's 100% process guarantee.

## A spectrum of impellers for every process requirement

At Lightning we match the impeller to your process, thus ensuring 100% process results. You can bring your product to our mixing lab to optimize the impeller selection. During scaled-down tests, you'll actually see what happens as we put it through rigid testing at our mixing lab. Here are a few of our most popular models.

### A310 High Efficiency Flow Hydrofoil Impeller



Lightnin's first laser-designed impeller has helped redefine high flow performance for the clean industry. The A310 impeller produces a low shear/high flow/low power ratio and is considered the most efficient metal impeller available. Can be ordered in stainless, <sup>1</sup>Hastelloy<sup>®</sup> alloys, titanium and other materials.

### A340 Up-Pumping Impeller

Three-blade hydrofoil combines the best features of Lightnin's laser-designed impellers and Lightnin's state-of-the-art up-pumping technology for gas dispersion. A340 impellers can handle the requirements of a variety of bioreactor processing needs, from enzymes to mammalian cell culture.



### R100 Rushton Impeller

Six blade, disc-type radial flow impeller provides the shear needed to achieve good contacting for liquid-liquid dispersions and emulsions. It is primarily used to provide high shear for gas dispersions. Applications include wetting powders, dispersing fillers, breaking down shear sensitive materials and particle size reduction. Handles viscosities to 25,000 cp.



## Call the LIGHTNIN experts

For more information about the SanStar Series or to discuss your application, contact your local Lightnin Sales Representative. Or visit our website at [www.lightninmixers.com](http://www.lightninmixers.com). Or call 1-888-MIX-BEST (U.S. and Canada), or 1(716) 527-1623 (worldwide).

<sup>1</sup> Hastelloy<sup>®</sup> is a registered trademark of Haynes International, Inc.

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## Technology is the key to successful impeller design

The heart of Lightnin's impeller research and design effort is its Rochester, NY-based Knowledge and Technology Center featuring the world's first integrated Laser Doppler Velocimeter (LDV) and Computational Fluid Mixing (CFM) workstations. The LDV converts fluid motion measurements into digital information, so the many parameters of impeller design can be accurately assessed for optimum process results.

LDV data can now be combined with the power of Computational Fluid Mixing (CFM), where predictions can be made about the mixing dynamics of any vessel configuration. This powerful capability significantly reduces the time and cost of pilot scale experiments and full scale trials. The end result is an impeller that meets the needs of your process accurately and efficiently, while generating lower capital and operating costs for many years to come.

### Quality Assurance Documentation (QAD) ensures Good Manufacturing Practices

To help ensure that FDA-mandated cGMP guidelines have been met, many pharmaceutical, biotechnology and specialty chemical customers require extensive supporting documentation when they purchase mixers. In addition to product specs, drawings and operating and maintenance manuals that are delivered with every Lightnin mixer, customers may also order Quality Assurance Documentation (QAD) to fulfill their cGMP validation requirements.

To order a QAD, talk to your Lightnin Sales Representative or authorized Lightnin Service Center.

**LIGHTNIN**

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