

>Lightnin®



# 980 SERIES

High-Torque Top Entry Mixers



SPXFLOW®

# LIGHTNIN 980 SERIES – GEARED FOR THE LONG RUN

We understand that when it comes to efficient process plant operations, equipment reliability is of paramount importance. As a long-standing member of AGMA (American Gear Manufacturers Association) SPX FLOW's Lightnin brand recognizes that multipurpose commercial gearboxes are poorly suited to agitator service.

For more than 100 years the Lightnin products have utilized proprietary, purpose designed agitator gear drives to ensure dependability and low cost of ownership. With more than 1 million units in the field our operating experience is unsurpassed.

The new 981 size units joins our 980 size unit to form the beginning of a unified series of parallel gear drives. The 980 is our new name for our previous 98 size unit.

## 980 Series Features

- Parallel shaft, double reduction design provides enhanced installation flexibility where there are space limitations on top of the vessel.
- Carburized and ground helical gearing helps ensure quiet operation and extended gear life.
- Dry well oil dam is integrated into the gear housing to prevent lubrication from leaking down the mixer shaft.
- Integral positive displacement pump driven off the input shaft provides continuous lubrication whenever the mixer motor is operating. Separate lubrication motor instrumentation and heat exchanger is provided when needed or on request. Filters can be added to the lubrication system to increase oil life.
- Compact drive design requires significantly less oil for lubrication - eliminates need for large oil sump.
- Standard flanged motors and pedestal mounted reduces assembly time while eliminating high-speed coupling alignment and the need for outboard motor support.
- Integral mounting plate eliminates the need for an additional bolted plate.
- Optional seal cartridge can be removed easily in four simple steps without having to move the gear drive or motor, and without having to loosen any mixer shaft bearings.



# 980 SIZE FEATURES

## Chose Lightnin's seal unit adds the exclusive Lightnin IsoLoad design for longer gear life.

Traditionally, internal gear drive components are subject to large axial and bending loads which are the primary source of unwanted gear deflection and misalignment. Left unchecked, these dynamic loads can significantly reduce gear life or cause sudden gear-drive failure. These loads are attributed to the fluid forces which are applied perpendicular to the mixer shaft at the impellers.

**The solution. Lightnin's IsoLoad feature** isolates the gearing from the effects of these fluid forces through the following combination of design advantages:

- A bronze bushing – acting as a radial bearing – transfers reaction force loads into the upper quill shaft bearing.
- The lower quill shaft bearing experiences no external loading and does not support the mixer shaft in any way.
- Clearance between the mixer shaft and quill shaft ensures that no bending loads are imposed on the quill shaft, effectively isolating the gearing from the mechanical effects created by the fluid forces.
- The fixed bearing located below the gear drive in the seal cartridge absorbs radial reaction forces in addition to the axial loads. As a result, they are prevented from being transferred to the gear drive.
- The precise positioning of the fixed bearing within millimeters of the mixer seal faces minimizes shaft runout and dynamic deflection to maximize seal life.

## Expanding Our Range with Advanced Parallel Drive Gearboxes

Introducing the 980 Series: Building on the 98, we have created a new line of larger parallel drive gearboxes. The 98 is now the 980 size, and we've added the 981 to achieve higher power and speed. More sizes will be added to the series soon.

### Standard Range

- 20 - 175 HP (15 – 130kW)
- IEC or NEMA Motors
- 50Hz or 60Hz
- 20 to 100 RPM
- Open Tank, Stuffing Box or Mechanical Seal Options



# 981 SIZE FEATURES

## Introducing the 981 Parallel Drive: The Next Evolution in Mixer Gear Drives for Mining and Chemical Process Industries

Building on our extensive knowledge of designing legendary mixer gear drives for both our Lightning and Philadelphia Mixer brands, we have developed the 981.

This new parallel drive takes the best of reliability and renowned strength in our established 781 size low speed gearboxes and adds a new parallel drive input option – the 981 is born.

Designed to suit the most rigorous of applications in Mining and Chemical Process Industries, the 981 is set to become a new work horse in our range.

Taking advantage of 4, 6 and 8 pole motors we can offer a wide range of speeds and accommodate a wide range of motor powers. The designs are particularly suited to pen tanks and pressurized applications such as HPAL, Autoclaves, and Chemical Polymer Reactions.

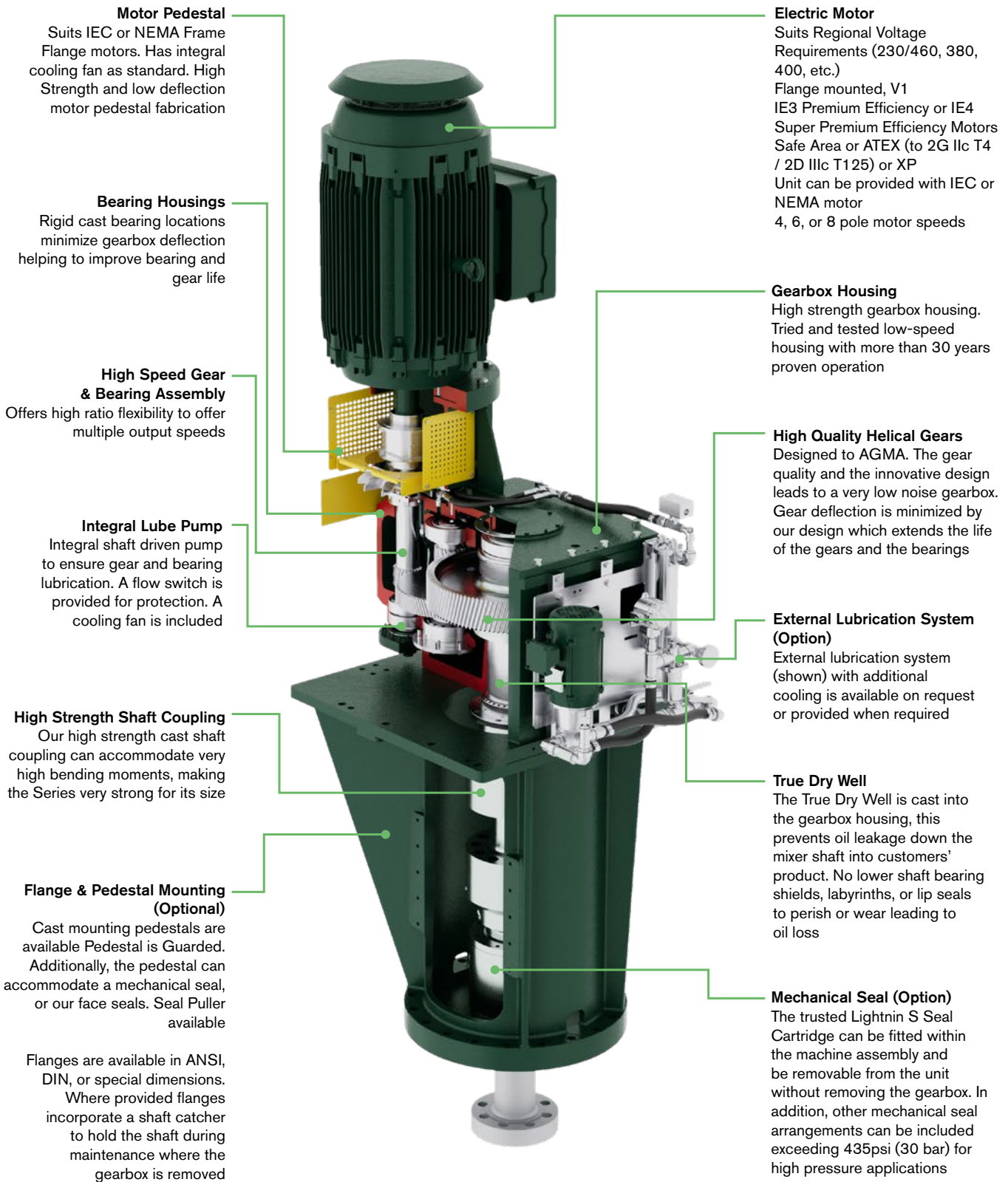
The bearing lives of 100,000 Hrs L10 on the output shaft. In most selections these design points are greatly exceeded.

The 981 design is completely interchangeable with the 781, as a whole drive, or replacing the old input gearbox with a new parallel shaft input gearbox. The design is deliberately modular and interchangeable to offer new and existing customers the same great options.

### Standard Range

- 75 - 300HP (55 – 200kW)
- IEC or NEMA, ATEX or XP Motors
- 50Hz or 60Hz
- 25 to 125 RPM
- Open Tank, Stuffing Box or Mechanical Seal Options





# APPLICATION KNOWLEDGE

**SPX FLOW has a process solution for a wide variety of mixing applications.**

Mixing applications can be broken down into the following mixing duties: liquid-liquid, liquid-solid, gas-liquid, gas-liquid-solid and fluid motion. Many applications are often a combination of these duties and thus having a full understanding of each of these areas is crucial to recommending an optimized design that is also economical.



<b>LIQUID-LIQUID</b>	Solvent extraction of copper and other metals Blending of additives in chemical processes
<b>LIQUID-SOLID</b>	Draft tube crystallizers, used in the production of alumina High pressure acid leach autoclave mixers Suspension of slurries in large tanks at slurry pipeline facilities
<b>FLUID MOTION</b>	Homogenization and suspension
<b>GAS-LIQUID</b>	Flue-Gas desulfurization for municipal and industrial power plants Hydrogenation and other gas dispersion for chemical and petrochemical industries
<b>GAS-LIQUID-SOLID</b>	Pressure oxidation autoclave mixers Fermentation, a key process step in many biopharma and biofuel plants

# EXPERIENCE AND INNOVATION IN MIXING TECHNOLOGY



**SPX FLOW was  
the first to use  
computational fluid  
dynamics (CFD)**



Select SPX FLOW Mixing equipment and you get more than an efficient and cost-effective process. You get over 100 years of experience in superior processing technology. Adding our sister Brands of Philadelphia, Stelzer, and Uutechnic to Lightnin our experience level and industry knowledge has expanded to another level. Our operational footprint cannot be surpassed for mixing knowledge and accessibility wherever your operations are globally.

We were the first to use computational fluid dynamics (CFD). This experience has enabled us to design and develop products specifically for oil storage into the 21st century.

Our laboratory is a standard for the art of mixing technology, and allows us to optimize your process, from pilot to full-scale testing. Your benefits are higher reliability, lower production costs, greater output, resulting in higher profits.

Processing.....we perfected it.





## GLOBAL LOCATIONS

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For more information, visit [www.spxflow.com/lightnin](http://www.spxflow.com/lightnin) or [lightnin@spxflow.com](mailto:lightnin@spxflow.com)