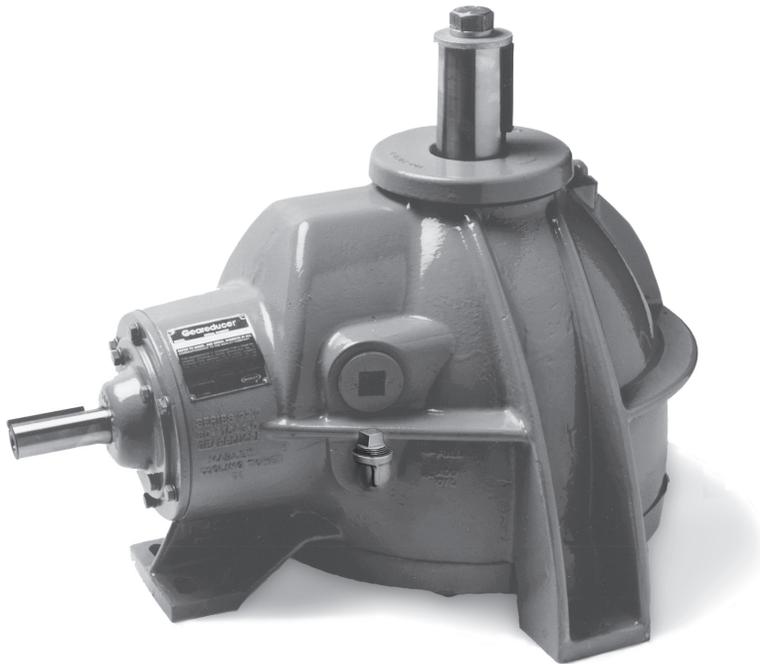


## Geareducer® Sound Levels



*Marley 22.3 Geareducer*

### More than quiet

Although the primary function of a cooling tower geared speed reducer is to reduce the speed of the driver (usually an electric motor) to a speed which is conducive to good fan performance, it must satisfy other criteria as well. For example, it must provide support for a large fan, withstand the shock loads imposed at start-up and during subsequent speed changes, and anchor the fan against lateral movement in response to rotational forces. Plus it must contribute as little as possible to power transmission losses as well as the generation of noise.

SPX Cooling Technologies is the only major manufacturer whose speed reducer is designed uniquely for cooling tower duty. Since SPX warrants not only its Geareducer, but the thermal performance of the cooling tower as well, design and manufacturing is taken very seriously.

### Marley vs. Amarillo®

Sound measurement testing of cooling tower gear speed reducers was conducted by National Technical Systems (NTS) in 1998. Concurrent testing was conducted on Marley and Amarillo gear speed reducers in accordance with SAE J2101 at various speeds and loads.

Lower sound levels were measured for Marley gear speed reducer products in both comparison groupings tested:

*The Marley Series 22.3 was up to 4 dBA quieter than the Amarillo Series A22. Both products having the same gear ratio.*

*The Marley Series 32.2 was 7 to 10 dBA quieter than the Amarillo Series A32. Both products having the same gear ratio.*

*These sound levels were recorded under fully loaded conditions.*

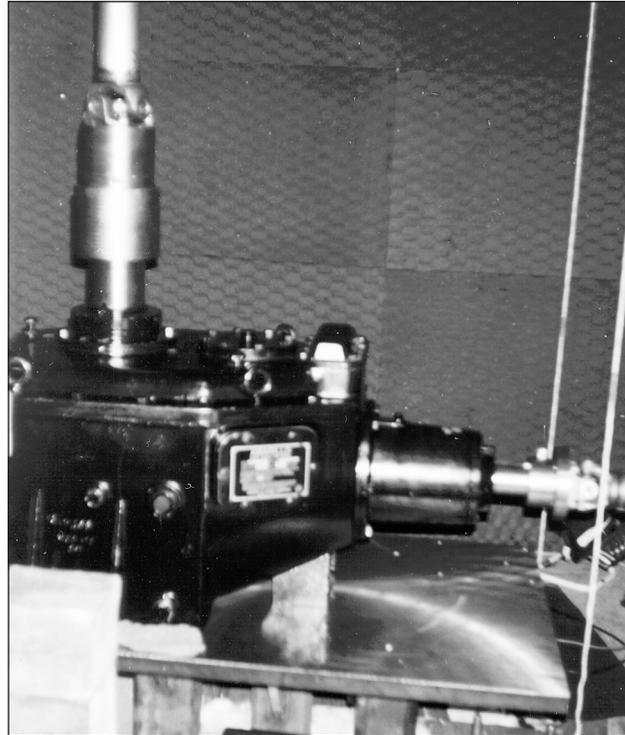
## Quiet by design

The design of the Marley Geareducer takes into consideration the effect and contribution of each of its specific components on the overall sound power level. Gear speed reducer noise can be attributed to any or all of the following: gears, housings, shafts, bearings, lubrication and type of gear speed reducer mounting.

The gear geometry of the Marley Geareducer is optimized to provide excellent strength and quieter running gears. Our design engineers have worked in conjunction with world-class gear manufacturers to develop one of the best overall gear geometry, gear material, heat treatment, finishing operations and inspection of tooth contact patterns to insure the highest quality product for our customers.

The Marley Geareducer's massive case is made from gray cast iron which is an excellent vibration dampening material – decreasing noise by eliminating a source. Also, the curved shape of the case decreases noise by reducing the “drum” effect that can be produced by flat surfaces. The capability of the Geareducer case to resist deflection under load stabilizes the gear tooth contact pattern decreasing noise generation from the gears.

Finally, Timken® tapered roller bearings—an industry leader in quiet, durable, high quality bearings – are always specified for Marley Geareducers.



*Amarillo Series A32 in test chamber at NTS*

## The Difference

Speed reducer noise can be attributed to a number of root causes including gears, housings, shafts, bearings, lubrication and system mounting. Improved tooth geometry, heat treatment, and gear contact patterns reduce gear variability and distortion on all Marley Geareducers.

Marley Geareducers in these sizes, are consistently quieter than similar Amarillo models. Compare the Marley Geareducer to other manufacturers in the industry and you'll find distinct design and manufacturing differences in many critical components.

### SPX COOLING TECHNOLOGIES, INC.

7401 WEST 129 STREET  
OVERLAND PARK, KS 66213 USA  
913 664 7400 | spxcooling@spx.com  
spxcooling.com

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