Glossary of Terms

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Glossary of Gearbox Terms

Axial Movement

Often called “endplay.” The endwise movement of motor or gear shafts. Usually expressed in thousandths of an inch.

Back Driving

Driving the output shaft of a gearbox to increase speed rather than reduce speed. Worm gearboxes are not suitable for service to increase speed.

Backlash

Rotational movement of the output shaft clockwise and counter clockwise, while holding the input shaft stationary. Usually expressed in thousandths of an inch and measured at a specific radius at the output shaft.

Center Distance

A basic measurement or size reference for worm gearboxes. The distance between the centerlines of the input and output shafts.

Efficiency

A ratio of the input power compared to the output power, usually expressed as a percentage.

Flanged Reducer

Usually used to refer to a gearbox having provisions for close coupling of a motor either via a hollow (quill) shaft or flexible coupling. Most often a NEMA C-face motor is used.

Gearbox

Also called a Speed Reducer. An enclosed set of gears used in mechanical power transmission to reduce speed and increase torque.

Input Power

The power applied to the input shaft of a gearbox. There are separate ratings for Mechanical Input Power, Thermal Input Power, and Nominal Motor Horsepower.

K Factor

Also called an Overhung Load Factor. A constant used to modify the overhung load rating of a gearbox based on the type of load applied on the shaft. Use the K factor either to increase the calculated overhung load, or to reduce the gearbox overhung load rating.

Mechanical Ratings

The maximum power or torque a gearbox can transmit based on the strength and durability of its components. Some applications require the gearbox Mechanical Ratings to be reduced by a Service Factor.

Mounting Position

The relationship of the input and output shafts of a gearbox relative to horizontal.

Nominal Motor Horsepower

The highest horsepower 1800 rpm motor that can be used with the gearbox under 1.0 service factor conditions. This rating decreases as the motor speed decreases, and as the service factor increases.

Output Horsepower

The amount of horsepower available at the output shaft of a gearbox. Output horsepower is always less than the input horsepower due to the efficiency of the gearbox.

Overhung Load

A force applied at right angles to a shaft beyond its outermost bearing. This shaft-bending load must be supported by the bearing. Overhung load ratings are listed for each gearbox size, and should not be exceeded. Some applications require the gearbox Overhung Load rating to be reduced by a K Factor and/or a Service Factor.

Overhung Load Factor

K Factor.

Prime Mover

In industry, the prime mover is most often an electric motor. Occasionally engines, hydraulic or air motors are used. Special considerations are called for when other than an electric motor is the prime mover.

Self-Locking

The inability of a reducer to be driven backwards by its load. No IronHorse worm gearbox should be considered self-locking.

Service Factor (for gearbox)

A constant used to modify the Mechanical Rating of a gearbox based on the duration of service and characteristics of the driven load. Use the Service Factor either as a multiplier to increase the calculated loads, or as a divisor to reduce the gearbox Mechanical and Overhung Load ratings.

Service Factor (for motors)

Refers to a motor's ability to handle a load greater than the motor's rated horsepower on a continuous basis.

Speed Reducer

Gearbox.

Thermal Ratings

The power or torque a gearbox can transmit continuously. These ratings are based upon the cast-iron gearbox's ability to dissipate the heat caused by friction. (Not applicable for aluminum-frame gearboxes, due to their inherently better ability to dissipate heat.)

Thrust Load

Forces along the axis of the output shaft, usually encountered in vertical-drive applications.

Worm Gear

A set of threads, similar to a thread screw, that advance as they rotate around their axis. The advancing threads cause the mating gear to turn, and also slide against the gear teeth.

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