



OHIO GEAR™

Torque and Horsepower

Torque as it is related to gear reducers is defined as a twisting motion resulting in rotational movement. Horsepower is a measure of the rate of doing work, and depends on speed of rotation and the radius of rotation.

$$HP = \frac{TQ \times Speed (RPM)}{63025}$$

$$TQ = \frac{HP \times 63025}{RPM}$$

Efficiency

The efficiency of a Worm Gear Speed Reducer is dependent on input speed, lead angle of the worm, type of lubricant, ambient temperature and many other variables. The efficiency for speed reducer can be easily calculated as follows.

$$Efficiency = \frac{Output\ HP}{Input\ HP}$$

Overhung Load & Thrust Loads

An overhung load exists when a force is applied at right angles to a shaft beyond the shaft's outermost bearing. Pulleys, sheaves and sprockets will cause an overhung load when used as a power take-off. The amount of overhung load will vary, depending on the type of power take-off used and its mounting location on the shaft. The catalog Overhung Load ratings listed below are calculated at the centerline of the shaft.

Overhung load ratings are listed for each reducer size and should not be exceeded. If the basic reducer is selected using a service factor, that factor must also be used in the equations below.

Output Shaft OHL =

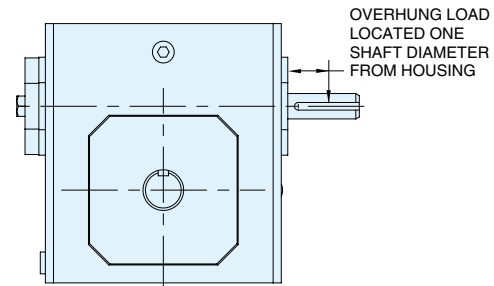
$$\frac{126000 \times Motor\ HP \times Output\ HP\ Rating \times Overhung\ Load\ Factor}{Pitch\ Diameter\ (of\ sprocket,\ pulley\ or\ sheave) \times Input\ HP\ Rating \times Output\ RPM}$$

Input Shaft OHL =

$$\frac{126000 \times Motor\ HP \times Overhung\ Load\ Factor}{Pitch\ Diameter\ (of\ sprocket,\ pulley\ or\ sheave) \times Input\ RPM}$$

Overhung Load Factors—

Sprocket	1.00
Gear Pinion	1.25
V-Belt Sheave or Pulley	1.50
Flat Belt	2.50



Maximum Overhung Load and Thrust Load Capacities (lbs.)

SINGLE REDUCTION

External Load Applied	Unit Size										
	813	815	818	821	824	826	830	832	842	852	860
Input Shaft OHL	75	75	75	75	125	125	150	150	175	300	450
Output Shaft OHL	400	500	475	475	1100	1025	1500	1450	2250	2750	3700
Output Shaft Thrust Load	825**	800**	800**	725**	1450	1425	1725	1600	1450	1675	3625

** Ratios 20:1 to 100:1 have a thrust load capacity of 1125 lbs.

DOUBLE REDUCTION WORM/WORM

External Load Applied	Unit Size										
	813	815	818	821	824	826	830	832	842	852	860
Input Shaft OHL	75	75	75	75	75	75	75	75	75	125	150
Output Shaft OHL	400	500	475	475	1100	1025	1500	1450	2250	2750	3700
Output Shaft Thrust Load	1125	1125	1125	1125	1450	1425	1725	1600	1450	1675	3625

DOUBLE REDUCTION HELICAL/WORM

External Load Applied	Unit Size										
	813	815	818	821	824	826	830	832	842	852	860
Input Shaft OHL	75	75	75	75	75	75	75	75	150	150	150
Output Shaft OHL	400	500	475	475	1100	1025	1500	1450	2250	2750	3700
Output Shaft Thrust Load	1125	1125	1125	1125	1450	1425	1725	1600	1450	1675	3625