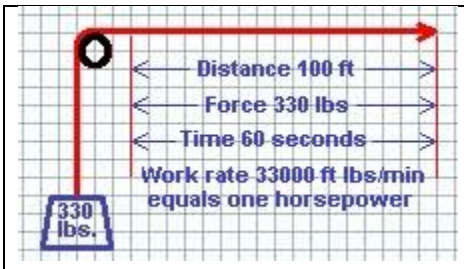
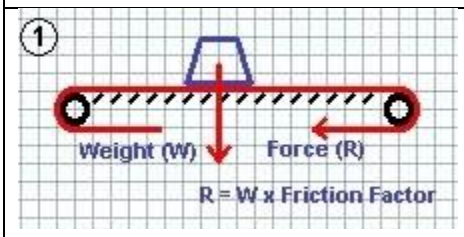
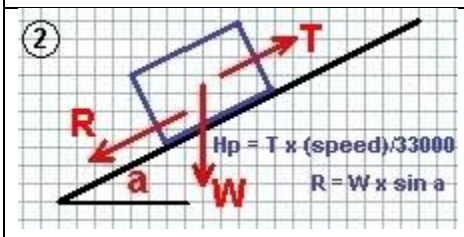
BASICS OF HORSEPOWER



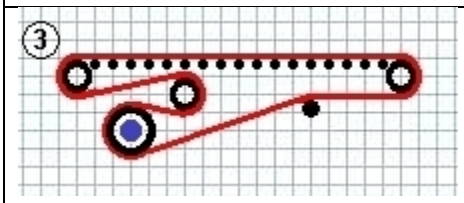
"Horsepower" is a measure devised by 19th century manufacturers of steam engines (literally "engineers") to compare the work performed by their machines with the amount more traditionally achieved using horses and pit ponies. It was determined that horses of that era could, on average, elevate a weight of 330 lbs. by a height of 100 feet, in a time of one minute. In other words, a horse could perform work at a rate of 330 x 100 (33000) foot pounds per minute.
It follows that the measure (in horsepower) of the work that a machine performs is: **Force (in lbs) multiplied by Speed (in feet per minute) divided by 33000**



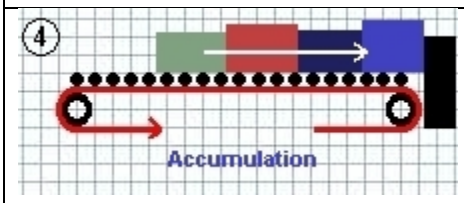
Many conveyors do not elevate loads, but merely carry them horizontally from one location to another. In this case, the resistance to motion is not the weight of the load itself, but rather the friction generated by that weight. The resistance to motion generated between two objects is determined by the weight of the moving object, and by the coefficient of friction. (Or friction factor - a term which covers rolling as well as sliding objects)
Force (R) equals weight **(W)** multiplied by **Friction Factor**



Even elevating conveyors do not always operate vertically, more often they carry the load up an incline plane.
In order to calculate horsepower, it is necessary to determine the resultant force **(R)** due to the weight **(W)** acting at incline angle **(a)**
Force (R) equals **Weight (W)** multiplied by **sine (a)**.
Sines of common incline angles are listed in weights and tables
The force **(T)** required to move the load is the sum of the resultant force **(R)**, plus the resistance due to friction calculated in **step 1**



In addition to its burden, a horse must also be able to bear its own weight up the hill. In the same way, your conveyor must have the extra power to operate its own moving components.
To the live load on the conveyor, add the weight of all the moving components.
Belting and roller weights are listed in weights and tables Add a best estimate of the weight of drive components such as worm gears, chain and sprockets etc. which will vary from system to system.



Accumulated loads, and packages which rub against guides.
The friction factor which applies to sliding loads is approximately six times greater than that which applies to rolling loads. If you you intend to accumulate a load on your roller conveyor (belt driven, chain driven, or line shaft), it is prudent to apply the sliding factor rather than the rolling factor to the accumulated portion of the load. The same applies to portions of the load which rub against guides or deflectors.