HIGH SLIP MOTORS

Some motors found on OEM equipment have RPM ratings in the 1300 to 1400 range. These non-conventional motors are called high slip four pole motors. Conventional four pole PSC motors generally run around 1625 RPM and six pole motors run around 1075 RPM. High slip 4 pole motors offer a slower running motor than 1625 but faster than six pole 1075 RPM. This gives the OEM the best of both worlds. It offers a quieter motor than a 1625 RPM and faster than a 1075 RPM.

The term slip refers to the difference between the speed of the rotating magnetic field and the actual speed of the rotor in the motor. A four pole rotating magnetic field spins invisibly at 1800 RPM with 60 Hz. power applied to it. This field drags the rotor along at a speed less than 1800 RPM. It spins slower and will never catch up. It can run at 1550 or 1625 RPM, for example. Remember to never replace a high slip motor with a conventional speed motor. For example, never replace a 1350 RPM high slip motor with a conventional 1625 RPM motor. The reason is straightforward. Spinning fan blades or wheels in equipment that run faster than they were designed for will require a new HP calculated similar to this example.

Example:
A customer has a failed motor that was spinning a fan blade. The motor was rated at 1/2 HP, 1350 RPM. If a conventional 1625 RPM motor is used, what HP will be needed?

New HP = Old HP(New RPM/Old RPM)^3
= 0.5(1625/1350)^3
= 0.5(1.2)^3
= 0.86 HP

This is well over 3/4 HP (3/4 = 0.75)! Increasing the speed would also negatively affect the total system performance. Stick with the original RPM.