Using Table 12 on Page 46 in Maria’s Restaurant Guide & Workbook, find the RPM and BHP for a system designed to operate at 1.0 IWC ESP and 3,500 CFM.

From the chart: RPM= 854 and BHP = 1.65

Using Table 12 on Page 46 in Maria’s Restaurant Guide & Workbook, find the RPM and BHP for a system designed to operate at 0.02 IWC ESP and 3,500 CFM.

From the chart: RPM= 592 and BHP = 0.90

We have a 1HP motor that is tripping the motor starter and shutting down on a 12.5 ton XHP roof top package unit. The Measured ESP is 0.6 and the fan RPM was measured at 733. What is the correct solution?

It depends on the design CFM. Looking at the chart, if the design CFM is lower than 3,000 CFM, the fan speed needs to be lowered. If the design CFM is above 3,000 CFM, the motor size needs to be increased.

We have a design CFM of 3,550 CFM, an installed 1.5 HP motor. The 7.5 ton XHP package unit was found to be operating at a measured ESP of 0.63, and the fan RPM was measured at 740. Without interpolation will that motor work?

Yes, the 1.5 HP motor is properly sized for that application. Based on the Table 12 values, one would expect an ESP slightly above 0.60 operating at 740 RPM to require a Bhp slightly higher than the table value of 1.31.

Field Notes:

A common problem found in the field is a finished duct system that was not installed exactly like the design. Oversized, not a problem, the fan motor will be adjustable to a lower RPM so the CFM will be correct. However, duct is generally undersized. To make things worse the filter area is often undersized too. Thus, to get the required airflow the motor size must be increased.