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From Experience

Considerations When Installing Centrifugal Pumps in Existing Applications

Many factors must be considered when selecting a centrifugal pump for an application, and even more when the pump is being added to an existing process. In addition to the flow and pressure requirements of the system, other aspects, such as space limitations in the room and existing electrical infrastructure constraints in the surrounding area, must also be reviewed. Adding a pump with a Variable Frequency Drive (VFD) to an existing system creates further challenges.

Consider this: A common practice in the industry is to use an electrical cabinet called a Motor Control Center (MCC) to provide power and control to multiple motors throughout the plant, all from one source. An existing MCC has a finite amount of total power it can provide, and that total is broken up into many sections called buckets. The height of a bucket can also be described as a space factor, and each $\frac{1}{2}$ space factor is $6\frac{1}{2}$ inches. The bucket size is determined by the size of the starter or VFD required to control the motor. Essentially, larger buckets provide space for larger HP Starters and VFDs. Therefore, the larger the motor a pump uses, the larger bucket it will require, and the more space it will take up in the MCC.

In one recent example of these issues in action, Hixson was asked to specify a pump for an existing plant. The original pump selected required a 7.5 HP, 3500 rpm motor to meet the system's requirements. (See curve, Figure 1.) This motor required a bucket with a space factor of 1.5 in the MCC, but there was only a space factor of 1 available. Rather than purchasing an entirely new MCC, Hixson recommended purchasing a larger pump that could run at 1750 rpm. (See curve, Figure 2.) The pump was slightly more expensive and marginally less efficient, but the VFD only required a bucket with a space factor of 1 in the MCC.

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EXPERIENCE IN BRIEF

Because of the importance of VFDs (the industry standard for speed control of motors), and of the motor circuits themselves, many businesses look for ways to protect their investments in these components. Make sure to read our [December 2022 issue of From Experience](#) in which we looked at two cost-effective options for facility owners to consider.

Figure 1: Smaller Pump with 3500 RPM motor.

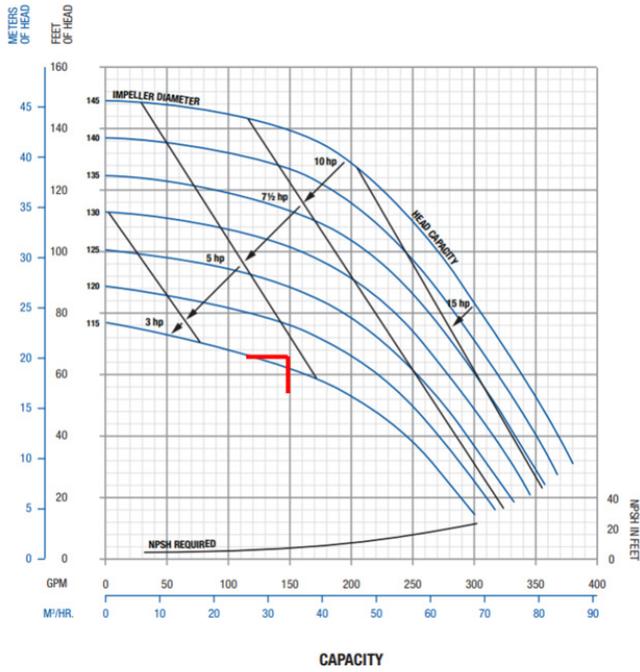
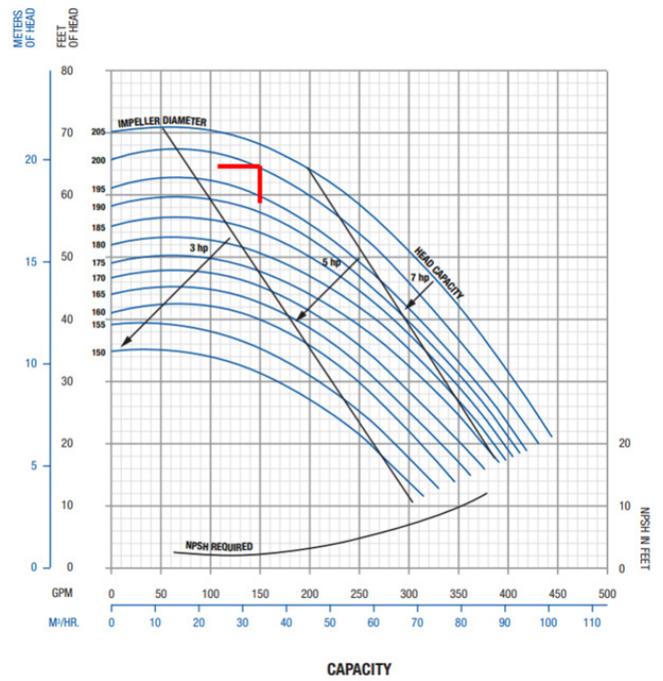


Figure 2: Larger Pump with 1750 RPM motor.



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