Why Are Variable Pitch Sheaves Used In V-Belt Drive Applications?

The most common reason is for mechanical drive speed variation. A great deal of drive speed refinement is possible with the use of variable pitch sheaves and they are used on fans and blowers and industrial water and trash pump applications. Variable pitch sheaves allow for mechanical drive speed variation that is economical, easy to install, and easy to adjust. In just seconds a technician can increase or decrease drive speed.

Types of Variable Pitch Sheaves

1-Groove
   VP/ VL/ VM

2-Groove
   VP

MVP®
   (offered 2-10 grooves)

Speed Variation

The principle of a variable pitch sheave is that the threaded angular faced discs forming the V-shaped groove, in which the belt rides, are movable. When the discs are moved toward each other, the belt rides higher in the groove and the pitch diameter of the sheave is larger, which increases the driven speed. When the discs are moved away from each other, the belt rides lower and the pitch diameter is smaller decreasing the driven speed. In contrast, with a “fixed pitch” drive design you are limited to a specific drive speed, which is a direct result of the “fixed diameter” of the sheaves.

Drive speed variation can be extremely valuable as a system is commissioned. Variable pitch sheaves are a simple method to vary fan speed to meet the required air flow specifications, allowing the system to be compliant with all engineering and regulatory requirements. Using a “fixed pitch” design would require a sheave combination change out to alter the driven fan speed, which is both time consuming and more costly. Using a variable pitch drive design can also help reduce zone air flow without relying on inefficient dampers, which restrict the air flow. Using variable pitch sheaves allows the motor and fan to operate at optimum speed characteristics.
Not all variable pitch sheaves are created equal. The features and benefits designed into Browning variable pitch sheaves provide high quality machining, tight thread tolerance, setscrew on the flat (VL/VP series), and much more. Browning offers the world’s largest selection of variable pitch sheaves and our product line can accommodate drives up to 750HP/600 kilowatt.

In the Multiple Variable Pitch MVP® sheave offering, Browning recommends using companion sheaves. Companion sheaves offer wider groove spacing than standard Browning Sheaves and keep belts properly aligned. Browning Companion Sheaves are recommended for use with MVP sheaves over three grooves to help provide proper alignment and reduce belt wear.

For additional information on our variable pitch sheave offering, visit our website www.RegalPTS.com, Like us on Facebook®, @ Browning Belt drives, or simply reference the previous Browning Belt Drive Monthly volumes listed below:

Volume 3, October 2008 – Can You Explain The Importance Of Setscrew On The Flats With VP Sheaves?
Volume 4, November 2008 – How Does An MVP Sheave Differ From A VP/VL/VM Sheave?

For personal assistance in specifying the right parts for your v-belt drive, please contact our Application Engineering Department at 1-800-626-2093 Mon-Fri 7:30a.m. – 5:30p.m. EST.