Variable Speed V-Belt Drive – Snowmobile Application

http://www.gates.com/brochure.cfm?brochure=1033&location_id=542
Primary Pulley Section (shown in both de-clutched/low gear & high positions)

As the engine rpm increases, the clutch weights swing out against the rollers in the spider tower, generating a force that overcomes the spring pretension.
As the primary pulley squeezes together and increases the diameter of the belt path, the secondary pulley must “open” to let the belt path diameter decrease (because the belt length is constant!)
Torque Sensitive Cam Function

As the transmitted power increases, the wedges slide and rotate against each other, creating the squeezing force on the belt.
A properly designed variable speed system lets the engine run near its maximum torque-producing speed, permitting highest acceleration.