

Assignment # 2, Belts

1. Derive an exact expression for the belt length (L) in open type belts; hence find the approximate belt length in terms of small sheave diameter (d), large sheave diameter (D), and center distance (C).
2. It is required to design a V-Belt drive to connect 15 kW, 1440 rpm electric motor, which drives a centrifugal pump running at 360 rpm for a service of 24 hr per day. From space considerations, the center distance should be approximately 1 m.
3. It is required to design a V-Belt drive to connect 25 kW, 1440 rpm electric motor, to a compressor running at 480 rpm for 15 hr per day. From space considerations, the center distance should be approximately 1.2 m.