

Task Title: Understanding V-Belts

OALCF Cover Sheet – Learner Copy

Learner Name: _____

Date Started: _____

Date Completed: _____

Successful Completion: Yes ☐ No ☐

Goal Path: Employment ☐ Apprenticeship ☐

Secondary School ☐ Post Secondary ☐ Independence ☐

Task Description: The learner will read about V-Belts and answer questions.

Main Competency/Task Group/Level Indicator:

- Find and Use Information/Read continuous text/A1.3

Materials Required:

- Pen/pencil and paper and/or digital device

Task Title: UnderstandingVBelts_A_A1.3

Learner Information

Millwrights must understand different types and sizes of V-Belts for the purpose of repairing, replacing them on various industrial equipment.

Read "V-Belt Information and Sizes" and "V-Belt Construction".

V Belt Information and Sizes

Flat belts and V-belts transmit power by their grip on the pulley or sheave.

Three major factors determine the potential of the grip:

1. Area of contact
2. Belt tension
3. Friction between the belt and pulley or sheave surface

A belt is a loop of flexible material used to mechanically link two or more rotating shafts, most often parallel. Belts may be used as a source of motion, to transmit power efficiently, or to track relative movement. Belts are looped over pulleys. In a two-pulley system, the belt can either drive the pulleys normally in one direction, or the belt may be crossed so that the direction of the driven shaft is reversed. As a source of motion, a conveyor belt is one application where the belt is adapted to continuously carry a load between two points.

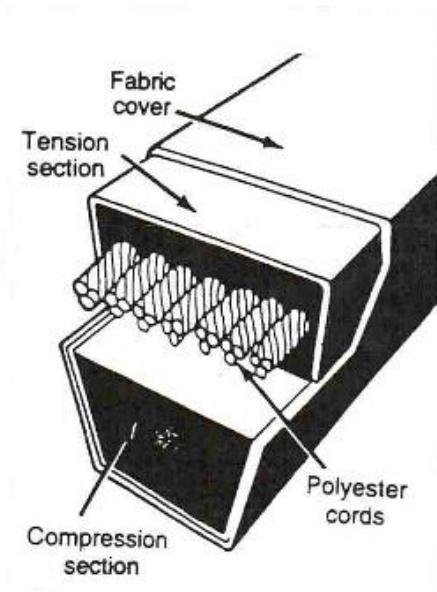
Vee belts (also known as V-belt or wedge rope) is the basic belt for power transmission. They provide the best combination of traction, speed of movement, load of the bearings, and long service life. They are generally endless, and their general cross-section shape is trapezoidal (hence the name "V"). The "V" shape of the belt wedges firmly into a mating groove in the pulley (or sheave), with the result that the belt cannot slip off. The belt also tends to wedge into the groove as the load increases—the greater the load, the greater the wedging action—improving torque transmission and making the V-belt an effective solution, needing less width and tension than flat belts. Optimal speed range is 1000–7000 ft/min. V-belts need larger pulleys for their larger thickness than flat belts.

For high-power requirements, two or more V-belts can be joined side-by-side in an arrangement called a multi-V, running on matching multi-groove sheaves. This is known as a multiple-V-belt drive (or sometimes a "classical V-belt drive").

V-Belt Construction

The V-belt is constructed of three main sections:

- Cover Section: Protects the inner sections from wear and abrasion.
- Tension Section: Contains cords which give the belt the ability to resist stretching.
- Compression Section: Supports the tension section and creates the wedging action in the sheave.



When an endless belt does not fit the need, jointed and link V-belts may be used. However, they are weaker and only usable at speeds up to 4000 ft/min. A link v-belt is a number of rubberized fabric links held together by metal fasteners. They may be adjusted by removing or adding links as needed.

Work Sheet

Task 1: List three functions of belts.

Answer:

Task 2: Describe the construction and reason for a multiple-V-belt drive.

Answer:

Task 3: List the three components of a V-Belt.

Answer:
