Exercise E201-S03-EXR-RV1.wpd

Belt Identification Systems

Objective

- Using the IPT Industrial Trades Manual, and the belts provided with the DAC Belt Drive Trainer, identify belt types and sizes using standard belt identification systems.

Performance Standard

- Identify all belt types and sizes with 100% accuracy.

Foundation Competencies

- Knowledge of belt drive terminology. (Exercise E201-S01)
- Knowledge of belt types. (Exercise E201-S02)

Required Background Reading

- IPT’s Industrial Trades Training Manual, pgs. 298-313, 321-325. (DAC, #510-MAN)

Tools Required

- Rule, 6".
Components Required

- Tape measure.
- Sheave inspection gauge.

Introductory Discussion

In this exercise you will learn the skills needed to identify the size of fractional horsepower belts, conventional V-belts, wedge (narrow-V) belts, and timing (positive drive) belts. Numbering systems for common belt types have been standardized. However, it should be noted that many manufacturers identify their unique products using their own numbering systems.

A mechanic must be familiar with all common identification systems in order to accurately order, replace, and tension a belt.
Performance Steps

Step 1. Identify the size of a fractional horsepower belt by examining its model number.

- Fractional horsepower belts are marked by standard cross sections of 2L, 3L, 4L and 5L, followed by a number representing the belt length. For example, for a belt marked 2L150, the “2L” designates a 1/4" wide belt, and the “15” identifies it as 15 inches along the outside circumference of the belt. The last digit in the identification number indicates fractions of an inch. In this case its length does not include a fraction of an inch. Fractions are designated in 10ths of an inch.

- To determine the model number of an existing fractional horsepower belt, measure the outside circumference of the belt. The length will follow the cross section, 2L, 3L, 4L, or 5L, as a numerical suffix. For example, a 27.5" long 2L belt, would be identified as a 2L275 belt.

- Using the system described above, identify the cross sections and lengths of the fractional horsepower belts provided with the training aid.

Step 2. Identify the size of a conventional V-belt by examining its model number.

- Conventional V-belts are marked by standard cross sections of A, B, C, D, and E, followed by a number representing the belt length. For example, an A-54 would be a 56" belt, ½" wide.
Model numbers are used to designate the lengths of conventional V-belts. To calculate the model number of a conventional V-belt, measure the outside circumference of the belt and subtract 2" for cross section A, 3" for B, 4" for C, 5" for D, and 7" for E belts. For example, the proper model number for an A belt with an outside circumference of 29" would be A27. A 29" B belt would be a B26. A 29" C belt would be a C25, etc.

Using the system described above, and a chart of V-belt cross sections, identify the width and lengths of the conventional V-belts provided with the training aid.

Due to a change in nomenclature, the terms datum length and datum diameter are often used in place of pitch length and pitch diameter when referring to conventional V-belts.

Step 3. Identify the size of a wedge (narrow-V) belt by examining its model number.

Wedge (narrow-V) belts are marked by standard cross sections of 3V, 5V, and 8V (indicating top width in 1/8ths of an inch), followed by a number representing the belt length, the measurement of the outside circumference of the belt. For example a 3V250 would be a 25" belt, 3/8" wide.

Using the system described above, identify the widths and lengths of the optional wedge belts provided with the training aid.

Step 4. Identify the size of a positive drive (timing or synchronous) belt by examining its model number.

For a description of circular pitch (the distance from one tooth to the next) and pitch line (the measurement along the centerline of the tensile member), refer to illustration #299 on page 322 of IPT for a visual description of circular pitch, and pitch line.

Positive drive belts are marked by a numerical prefix defining belt length (multiplied by 10) at its pitch line, followed by a section designation of MXL, XL, L, H, XH, and XXH (ranging from .080 to 1.25 in. respectively), and ending with a numerical
suffix indicating width in inches (multiplied by 100). For example, a belt marked 630XH200 is a 63" long (based on the pitch line), extra heavy, positive drive belt, 2" in width.

- Using the system described above, identify the widths and lengths of the timing belts provided with the training aid.

Summary

You have just reviewed the identification systems of four commonly used belt types found in industry. Belt numbering systems are unique for each belt variety. While it may seem confusing, once a mechanic examines several belts and becomes familiar with the different methods, the identification of belt size is fairly easy.

The ability to identify a specific belt type and size using its identification code is an important skill needed when ordering replacement belts and determining its installation requirements. Once this skill is mastered, a mechanic will be able to perform belt replacement with confidence.

Optional Tasks

- Confirm all V-belt designations using the Gates Sheave and Belt Inspection Gauge Set and a tape measure.
Resources


