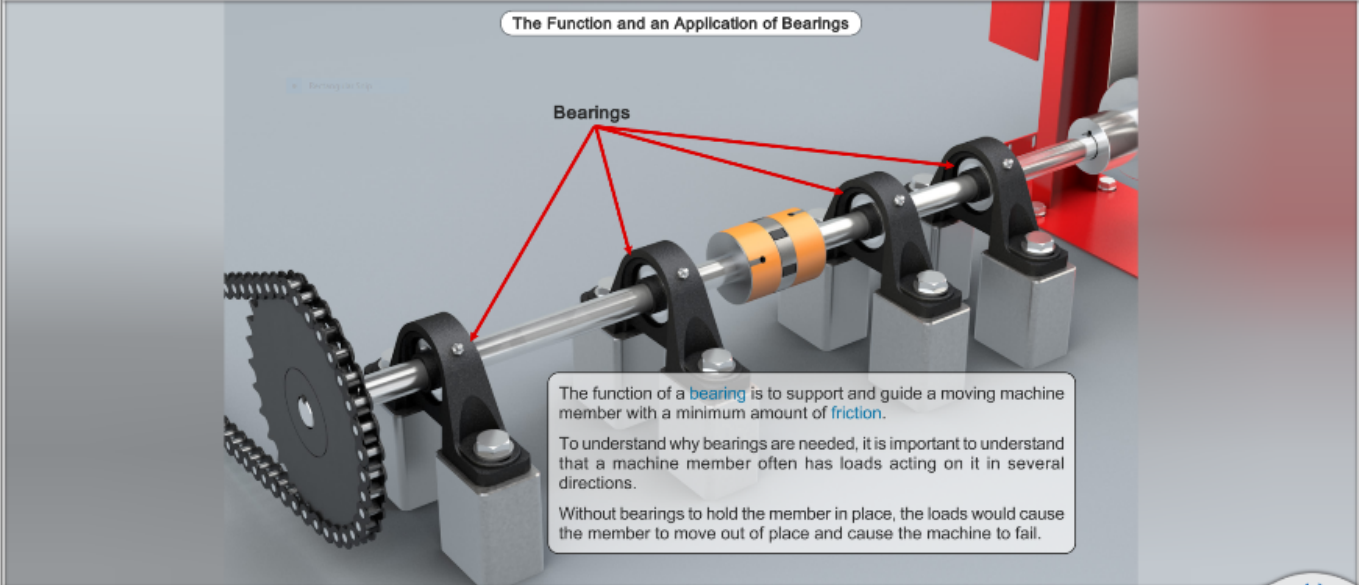


# Mechanical Drives 1 (Metric)| Belts, Chains, & Gears eLearning

Power Transmission Systems - WX19146-XA03UEN-E1

Objective 4: Describe the Function of a Bearing and Give an Application

The Function and an Application of Bearings



The function of a bearing is to support and guide a moving machine member with a minimum amount of friction.

To understand why bearings are needed, it is important to understand that a machine member often has loads acting on it in several directions.

Without bearings to hold the member in place, the loads would cause the member to move out of place and cause the machine to fail.

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## eLearning Course: M19148

Using the Mechanical Drives Training System and the interactive online curriculum, Amatrol's Multimedia Courseware - Mechanical Drives 1 (M19146) teaches learners installation, operation, alignment, and applications of various mechanical drive systems. Learners using Amatrol's mechanical drives eLearning course gain theoretical knowledge by studying about shafts, belts, gears, and chain drives. From these building blocks, learners begin practicing industry-relevant motor skills, such as leveling an electric motor, calculating mechanical efficiency, installing a flexible jaw coupling, and so much more!

### Introduction to Mechanical Drives

Amatrol's eLearning curriculum is unique in that it thoughtfully combines in-depth theoretical knowledge with practical, hands-on skills. This powerful combination of knowledge and skills solidifies understanding and creates a strong foundation for pursuing more advanced skills.

For example, the mechanical drives eLearning course covers important topics, such as:

#### Introduction to Mechanical Drive Systems

Learners begin with an introduction to mechanical drive systems. The module begins by touching on mechanical power transmission safety before moving on to machine installation, motor mounting, and shaft speed measurement. Individual lessons focus on topics like the function and construction of a bedplate, three types of motor mounts, mechanical transmission safety rules, and methods of measuring motor shaft speed. Learners will also practice hands-on skills, such as performing a lockout/tagout, mounting an electric motor, and using a digital tachometer to measure motor speed.

### Key Fasteners & Power Transmission Systems

#### Key Fasteners

Learners continue their journey into Mechanical Drives by studying key fasteners. The module covers keyseat

fasteners, key assembly, torque and power measurement, and mechanical efficiency. Individual lessons focus on topics like the construction of six types of keys, assembling a hub to a shaft, calculating rotary mechanical power, and two methods of measuring shaft torque. Learners will also practice hands-on skills like measuring the size of a key and keyseat, cutting and filing key stock, using a prony brake to measure shaft torque, and measuring electric motor current.

### **Power Transmission Systems**

Learners using Amatrol's mechanical drives eLearning course will also get an introduction into shafts, bearings, and couplings, as well as shaft alignment. Individual lessons focus on topics like four type of shaft materials, how bearings are positioned to support a load, describing the function of a coupling, and the general procedure for shaft alignment. Learners will also practice hands-on skills like identifying a shaft size, installing and adjusting a pillow block anti-friction bearing, installing a flexible jaw coupling, and aligning two shafts using a straight edge and feeler gauge.

## **Belts, Chains, & Gears**

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### **Introduction to V-Belts**

Learners will study various aspect and components of V-belts, including belt drive concepts, V-belt operation, belt tensioning, and belt tension measurement. Individual lessons focus on topics like pitch and its importance, three types of V-belts, determining belt tension, and three methods of measuring belt tension. Learners will also practice hands-on skills like calculating pulley ration, installing and aligning a V-belt drive with a finished bore, adjusting belt tension using an adjustable mounting base, and using a belt tension tester.

### **Introduction to Chain Drives**

Learners continue their training with an introduction to chain drives. The modules begins by focusing on concepts, operation, tensioning, and measurement of chain drives, as well as fixed center chain installation. Individual lessons focus on topics like the function of the three basic components of a chain drive, the four types of roller chain drives, two methods used to adjust chain sag, and the function and operation of a Master Link. The eLearning courseware also includes hands-on skills, such as calculating a sprocket ratio, installing and aligning a roller chain drive system, adjusting chain sag to a specified amount using adjustable centers, and installing and removing a chain with a Master Link.

### **Spur Gear Drives**

Advancing through the eLearning courseware, learners will encounter spur gear drives, including concepts, designs, operation, installation, and analysis of gear drives and spur gears. Individual lessons include the function of three components of a gear drive system, the four types of parallel shaft gears, identifying 12 dimensions of a gear, describing how to determine the allowable backlash in a gear drive, and two methods of measuring spur gear backlash. Learners will also practice hands-on skills, such as calculating gear ratio, calculating the shaft speed and torque of a gear drive system, installing and aligning a spur gear drive system, and how to measure gear backlash.

### **Multiple Shaft Drives**

Finally, learners will finish their Mechanical Drives eLearning by focusing on multiple shaft drives, including gear analysis, drive installation, and sleeve couplings. Individual lessons focus on topics like the function of a compound gear drive system, the direction of rotation of a gear drive, and the operation of a sleeve coupling. Learners will also practice hands-on skills like calculating the torque and speed output of a compound gear drive system, installing and aligning a multiple shaft drive system, and installing and aligning a sleeve coupling and shaft.

## **Additional Info**

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### Computer Requirements

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#### **Address**

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